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ENTERPRISE 5G

FUELLING NEW POSSIBILITIES

The upsurge of 5G networks paves the way for intriguing enterprise services and broader ecosystem innovation. But are businesses ready to maximize the opportunity?

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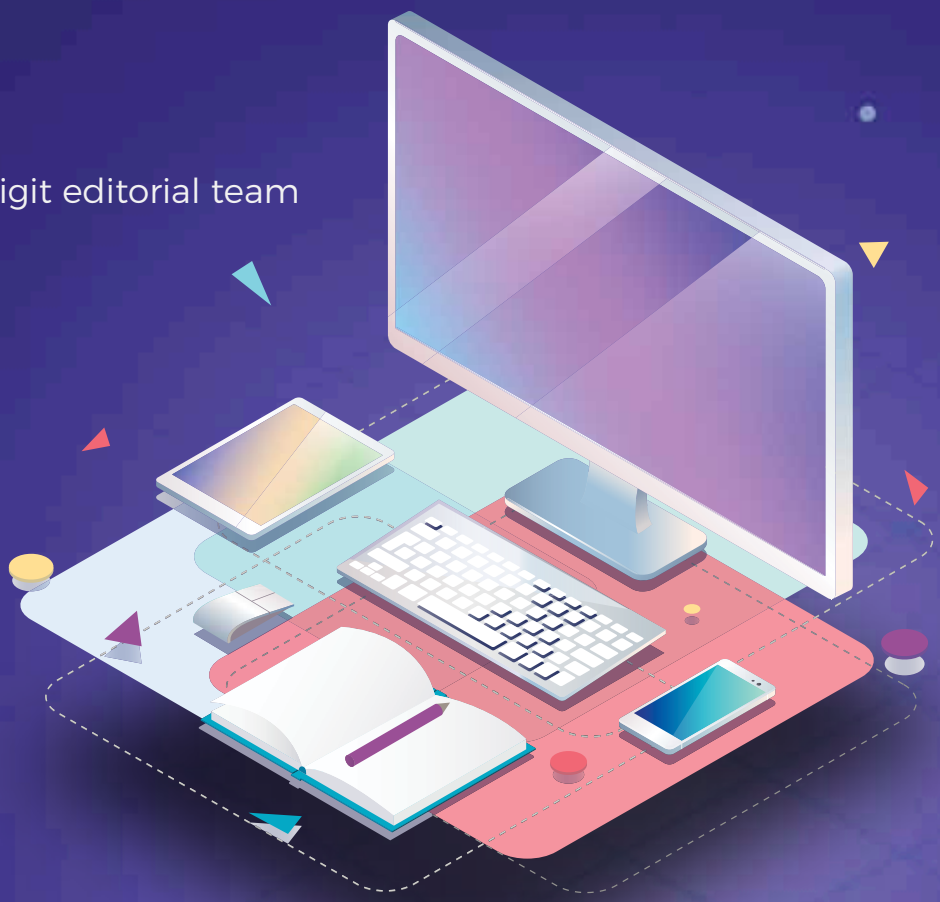

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Restricted only by imagination

Even today, the discussion around 5G, even though they are laden liberally with terms like disruption and revolution, are about applying it to the current processes and making incremental changes

Shyamanuja Das

India is a mobile country. Two of the top three mobile operators in the world are Indian.

In the 90s, IT—no matter how much we pat ourselves on the back as an IT superpower on the strength of our manpower—threatened to accelerate the economic divide in India, a country already with a wide gap between poor and rich. The advent of mobile single-handedly reversed that trend. It is probably the only technology in recent times that can be called a true leveler.

But no technology becomes a leveler by itself. Any new innovation in technology, when applied thoughtlessly, can, at best, result in incremental changes—by making things a little better, faster or more convenient. It happens broadly in two ways. One, someone—it could be a commercial business or policy makers—understands its hidden potential and thinks of what can be done using it. Or there is a situation that forces us to do something radically different in a short time—necessity, as we call it. We do not have to go far to find examples of both. We have seen Reliance Jio's strong data-centered strategy which democratized data and made a lot of things possible. This is an example of the first. For the second, we do not have to look too far off. We all know what COVID-19 did to reinvent ourselves as digital beings. And I am not talking of businesses but of all of us, as individuals.

Yet, even today, the discussion around 5G, even though they are laden liberally with terms like disruption and revolution, are about applying it to the current processes and making incremental changes.

5G is not about speed. It is about new applications.

We have seen education, work, banking, health all becoming virtual. And fast.

More digitization of our lives means more demand for experience (speed), anytime anywhere connectivity (reach) and newer and newer capability (innovation).

All that translates to huge business opportunities for almost all industries. Jio itself has started playing on applications, pushing telecom to the backend and preferring, instead, to become a multi-services aggregator.

Also, 5G is not the only technology that is driving change. We have Industry 4.0. We have a shift to the edge. We have electric vehicles and fleet owners increasingly turning to that. All these are not isolated from each other.

Just imagine if the remote patient health monitoring could effectively speak to hospitals, to ambulances on road, to the bed management system, to oxygen cylinder movements, just as an example. How many deaths could have been prevented?

There are applications in all areas. But the demand for 5G will be incremental if the applications thought about would be incremental.

Any business that can think of a new scenario, then application and finally technology can make the positive disruption a reality.

5G, why any new technology, is hence, about dream, about imagination. ■

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9.9 GROUP

EXTRA Curricular

Up, Up & Away

NEXT100 2019 Winner **Nirmal Kumar**, Senior Technical Program Manager, Saksoft, shares his immense passion for trekking and how it helps in life...

"Life is not the amount of breaths you take, it's the moments that take your breath away" ***– Hitch***

Trekking literally means 'going on a long journey, typically on foot'.

My father was a Central government employee and had a transferable job across India. So, I started enjoying new places, new people and eventually, travelling and exploring new places became my hobby.

Trekking teaches us to see the larger picture and ignore trivial matters

I am also passionate about forts and admire the architectural marvels our ancestors had achieved long back, especially with no modern building tools and advance technology in place.

Pune is surrounded by 'n' number of forts, built on top of mountains, giving a glimpse of the past. When I relocated to Pune in 2006, it was a perfect opportunity for me to fulfil my passion, i.e. going on long journeys across mountains into the forts.

It all started with gatecrashing my roommates' office and going on a night trekking trip to Raigad Fort. Since then, there was no turning back and till now have done 20+ trekking trips in and around Pune. The latest had been in December 2020 to Torna Fort. The elevation was 1,403 metres (4,603 ft) above sea level, making it the highest hill fort in the district.

I love the trail, smell of the grass, views along the way and the sense of fulfillment at the top of the hill onto the forts. Trekking offers me the freedom to choose a path which results in discovery of new terrains and reasserts the fact that we are traversing into nature and must be cautious of our freedom. Even though trekking makes us free, it reminds us that we must be responsible for others too when they are trekking with us.

Trekking is a life changing experience not only because it is exciting but also as it reminds us how small a place we occupy in this world, when we are amidst the imposing elements of nature, at nature's mercy. This helps us see a larger picture as we realize that we should not worry too much over trivial matters and develop a healthier approach towards life. ■

As told to Dipanjan Mitra, Team ITNEXT

Nirmal Kumar

Snapshot

Nirmal Kumar is Senior Technical Program Manager at Saksoft. He has been a NEXT100 winner in 2019. Kumar was previously associated with Tech Mahindra, Rednee, Vodafone, Amdocs and Infosys. He completed his Executive Program in Business Management from IIM-Calcutta and BTech in Electrical & Electronics from IIT-Madras.

Photography is much more than capturing memories

Capturing Unlimited Beauties

NEXT100 2019 Winner **Rohit Khanna**, AGM - Digital Solutions, Hero MotoCorp, shares his immense passion for photography...

"I didn't choose photography, photography chose me" ***– Gerardo Suter***

I was probably 10 or 11 when I was exposed to the idea of a personal camera. Prior to that, a camera for me was an instrument only to be owned by photography studios. Unlike today when the smartphone has enabled everyone with a camera, the 90s were different including the lifecycle of clicking a picture which was elongated and full of anxious waiting.

Our first family camera - a film roll Nikon - is what exposed me to photography. Grappling with the controls and exercising all possible caution, it made me understand the importance of composition. Since I have seen that transition from film roll cameras to digital cameras, it is important to mention that film rolls made you think multiple times before releasing the shutter. The cost of a misplaced composition or incorrect focus was not only losing one film, but the opportunity itself. It took months before we got to see the pictures, we clicked depending on how often we clicked. Everything that I clicked till the time I graduated was with that film roll Nikon and I still treasure it - although I don't use it any longer.

It was way later (around 2007) when I was exposed to a digital camera and that's the point which started my photography journey. Playing around with camera controls, reading about the different configurations, and understanding the optics behind it became my hobby. I got interested in high-speed photography early on and devoted my time to it for a long time. High-speed photography is basically taking pictures of some phenomena which happen at a very fast pace, for instance a splash made by a drop when it falls into a water body. Besides high speed, I tried my hands on macro, portrait and smoke photography and was often treated as the official photographer at home.

Composing a shot gives me that sense of concentration when everything else becomes irrelevant. It gives me a chance to capture things which cannot be seen otherwise with this much detail. For a lot of people, photographs are a means to capture memories. For me, they are much more than that.

When I am not clicking pictures, I like to spend time reading non-fiction books or listening to podcasts on economics and public policy. ■

As told to Dipanjan Mitra, Team ITNEXT

Rohit Khanna

Snapshot

Rohit Khanna is AGM - Digital Solutions at Hero MotoCorp. He has been a NEXT100 winner in 2019. Khanna was earlier associated with Agro Tech Foods and Perot Systems. He completed his MBA in Information Management & Finance from MDI and Bachelors in IT from College of Technology, G.B.P.U.A&T, Pantnagar.

ENTERPRISE 5G

FUELLING NEW POSSIBILITIES

5G networks pave the way for intriguing enterprise services, business models, and broader ecosystem innovation. But are businesses ready to maximize the opportunity?

By Jatinder Singh

The next generation of wireless technology, 5G, is expected to open a future of new and exciting possibilities for enterprises. With a speed that can reach up to 10Gbps, theoretically, 5G can be 100 times faster than its predecessor, 4G LTE, and holds great potential to anchor enterprise digital transformation.

If 4G-Long Term Evolution (LTE) revolutionized the business ecosystem by enabling high-speed data services on mobile, the 5G wireless technology was designed for unlocking real-time decision-making and revolutionizing the customer experience.

Looking back, 4G has aided internet users in making on-the-go crystal clear video calls, stream high-quality data, and exchange information promptly. Still, the wireless standard could not evolve as a trusted alternative to a dedicated wireline pipe. For example, even in a remote work environment, most employees rely on fixed-line links to attend critical video conferencing calls or transfer extensive data.

However, the widespread rollouts of the next generation networks could remarkably transform how enterprises connect and deliver services. The unparalleled network speeds and enhanced bandwidth will enable business users to do superior quality HD or 3D calls without lags. From augmented reality to artificial intelligence-based data-driven applications, 5G will accelerate a new wave of cutting-edge innovations, empowering businesses with much-needed speed, power, and capacity to exchange reliable and real-time information.

Transforming enterprise ecosystems

One of the most significant advantages that 5G offers is an extremely low latency rate, the transmission time between sending and receiving information. For mainstream adoption of autonomous cars, remote delivery of critical healthcare, and all-inclusive adoption of the Internet of Things (IoT), the industry needs exceptional quality bandwidth and low latency.

The success of mission-critical applications such as connected cars depends on reliable and unblemished connectivity that supports real-time communications and various sensors that help

"5G will enable cloud more efficiently, improve enterprise performance and pave the way for a new better-connected world. For instance, the low latency and exceptional bandwidth properties of 5G will significantly transform augmented and virtual reality use cases and raise the bar for immersive and engaging customer experiences. It will enable enterprises to conduct high-quality product and services virtual tours for their customers, especially those at remote locations where physical reach may be an issue."

PERTISTH MANKOTIA
CIO, Sheela Foam

"If 4G-Long Term Evolution (LTE) revolutionized the business ecosystem by enabling high-speed data services on mobile, the 5G wireless technology was designed for real-time decision-making and revolutionizing the customer experience."

them operate with precision. Even a split of network instability or unexpected network lag can cause fatal road accidents. By leveraging 5G technology, applications can run at a trailblazing speed on a network with an extremely low latency rate, as low as one millisecond (1ms).

According to a survey titled, Maximizing the 5G opportunity for enterprise, conducted by EY, various industries are currently at the different trajectory of their 5G investment curves. The survey reveals that while the journey toward 5G may be in the earlier stages, 5G adoption levels are expected to grow considerably in the next couple of years.

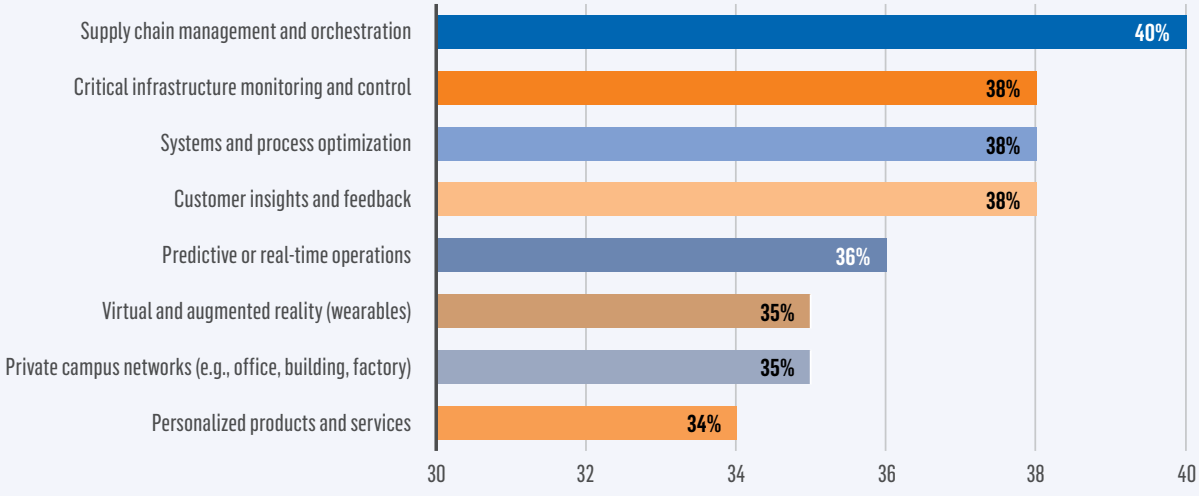
"Currently, 15% of enterprises are investing in 5G, with an additional 54% planning to invest in the next one to three years. By the end of 2022, levels of 5G investment will be on par with IoT," the survey projects.

Let's look at how 5G could enable some sectors to redefine themselves.

Transport and logistics: 5G deployments are likely to disrupt the transport sector. While it is too early to predict all the possible use cases, some emerging trends indicate the upsurge of connected and autonomous vehicles and real-time visibility and control over transportation systems.

Priority application scenarios for 5G-based IoT

(% of respondents currently investing or planning to invest in 5G)



Source: Maximizing the 5G opportunity for enterprise, EY

The ubiquitous 5G networks in metros and cities will enable public transport inspectors to get real-time intelligence to plan traffic movements, track emergency vehicles and anticipate transport capacity.

For example, during a medical emergency, every single minute is critical in securing a patient's life. Hence, the inbuilt 5G-enabled intelligent traffic management systems can ensure that the emergency vehicle finds congestion-free routes to reach the hospital in time. And if the ambulance is 5G-enabled, doctors would monitor the patient's condition remotely through sensors and provide necessary guidance for efficient pre-hospital care.

A survey from Moor Insights and Strategy reveals that for 90% of logistics and shipping providers, lack of supply chain visibility is one of the biggest challenges impacting their operational efficiency.

For logistics companies, 5G will drive significant productivities as it will enable them to monitor, track and check inventories consistently, minimizing the chances of revenue leakage.

In the future, the 5G technology can be beneficial to bring the concept of smart highways into reality to minimize deadly road accidents and congestion. The built-in smart sensors of connected vehicles would communicate and exchange data for giving timely warnings in case of any road instabilities, accidents, or traffic congestion, helping them reach the desired destination efficiently.

Countries like China, Finland, and Hong Kong have already developed prototypes in this direction and testing the waters before implementing them at a broader scale.

Retail: For the retail sector, 5G can provide trusted connectivity for enterprises to support peak-time traffic, keep a check on demand and supply through intelligent analytics, delivering real-time shopping experiences to consumers through AR/VR, and track the goods and services for efficient delivery mechanisms.

While 4G-driven applications enabled enterprises and their employees to stay connected over the internet during the pandemic, they could not create compelling use cases to help retailers manage the surge in demand for home delivery.

For example, since more and more people were homebound and following social distancing measures during the pandemic, the shipment volume proliferated. As a result, retailers had faced enormous stress to deliver the essentials on time using human resources.

Imagine, had there been a widespread 5G network available in India, retail enterprises would have been able to manage the surge in demand for home delivery during lockdowns, with a minimal human touch, by leveraging autonomous-delivery robots. The concept is not altogether new! It has already been tested and implemented in countries, such as the US, Sweden, and China.

"Leveraging 5G capabilities, we worked with the local town to install censors, take real-time data as the rain is falling, detect and prepare for flood response and make sure that people understand hey there is a large concern. All of that is fed through IoT-based sensors."

JAY UPCHURCH
Executive Vice President & CIO, SAS India

For instance, in Stockholm, Sweden, European telecommunications operator, Tele2, leveraging 5G and IoT, recently collaborated with a food delivery partner to pilot Doora, a delivery droid to transport food delivery services across Stockholm during the pandemic.

Similarly, retailers across the globe are leveraging AR/VR tools to strengthen their sales and providing an exceptional customer experience. For instance, a couple of years back, German-based luxury car manufacturer, Audi, introduced a 360-degree Virtual Reality solution that lets consumers get a realistic view of their chosen car on their digital device. Customers can customize the car and change its color, accessories, using hundreds of possible configurations to shortlist the same.

"5G will enable cloud more efficiently, improve enterprise performance and pave the way for a new better-connected world. For instance, the low latency and exceptional bandwidth properties of

"Latency has been a significant deterrent in the way of building a truly autonomous enterprise. There are many autonomous use cases across industries that are ready from a technology standpoint but need ultrafast connectivity to succeed."

RAJESH AGGARWAL
Head of IT at Aamor Inox

5G will significantly transform augmented and virtual reality use cases and raise the bar for immersive and engaging customer experiences. It will enable enterprises to conduct high-quality product and services virtual tours for their customers, especially those at remote locations where physical reach may be an issue," says Pertisth Mankotia, CIO, Sheela Foam.

However, to achieve that consistently, firms in this sector need ultra-fast connectivity to improve productivity levels further and leverage the full potential of advanced technologies such as edge computing, cloud, AI, and machine learning.

With 5G, such immersive experiences will get much better, attract new customers, and improve enterprises' revenues.

Healthcare and public safety: With the proper implementation strategies, 5G can be a big boon for enterprises operating in the healthcare and public safety domain. For example, 5G could enable city-based overloaded hospitals to deploy efficient remote patient monitoring capabilities and delivering quality healthcare through telemedicine.

The current inequality between people with quality broadband and those where it is still not available makes it difficult for healthcare professionals to create effective remote patient care mechanisms. To achieve with 5G, telecom service providers, such as Bharti Airtel, Vodafone-Idea, BSNL, and Jio will need to deploy the necessary infrastructure, signal repeaters, cells, and antennas.

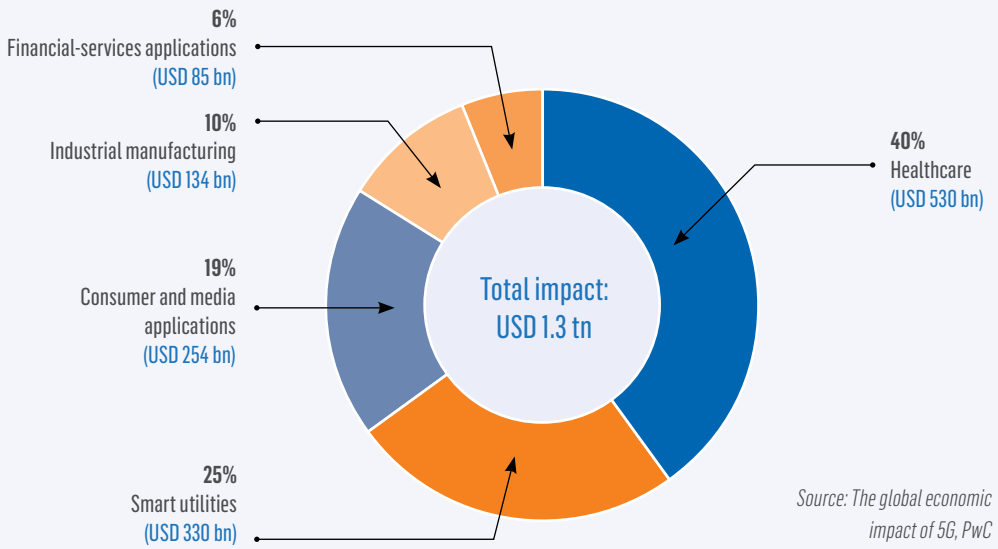
According to PwC, remote care is just one area in which 5G can enable cost savings and better health outcomes. It says that 5G will improve efficiency and productivity in hospitals through advances such as 5G-enabled tracking of medical devices and patient beds and AI to 5G sensor data to trigger actions automatically and accelerate patient handovers.

Promising B2B 5G IoT use cases

- Industry 4.0, including autonomous systems in factories (e.g., robots, AGVs, computer vision, and automated or virtual reality tools (VR) for manufacturing)
- Smart cities, with applications such as HD cameras to monitor public safety and traffic management
- Advanced sensors for environmental monitoring
- Smart energy, such as smart grid control
- Border security
- Connected offices, including sensor-based building management
- Video surveillance inside and outside buildings
- Smart security, including the provision of emergency services
- Connected health, such as mobile medical monitoring
- Smart retail (e.g., payments)

Source: The 5G era, New horizons for advanced electronics and industrial companies, McKinsey

5G-powered applications projected impact to global GDP by 2030



Source: The global economic impact of 5G, PwC

By leveraging 5G network slicing, single network connections of 5G can be divided into multiple unique virtual links that help network providers prioritize specific users or devices regarding data connectivity.

"We have a couple of excellent customer stories around the use of IoT, and mainstream processing. One of the great stories out there is around our town here where we are based. We do flood plain management. We get much rain here, and because of the terrain and the surfaces here, it leads to flooding. And that is a safety issue, a public safety issue. And so we worked with the local town to install censors, take real-time data as the rain falls, detect and prepare for flood response and make sure that people understand that there is a large concern. All of that is fed through IoT-based sensors. The sensors are dependent on the cellular networks that are out there. So you can imagine the capability of 5G and the throughput, and I will say the breadth of data that we can consume through these connections. It is fascinating," says Jay Upchurch, Executive Vice President & CIO, SAS India.

Revolutionizing manufacturing: The industrial sector is being touted as the biggest beneficiary of the fifth generation of wireless communications rollouts. Most manufacturing industries are now gearing toward smart factories

"For 5G to fully realize its potential, we need substantial infrastructure investments. I am not sure if we have been able to leverage 4G fully yet. Even today, we are not getting the bandwidth that is needed to run the business. The technology [5G] looks great for all theoretical purposes, but on a practical note, we [India] are not ready from an infrastructure standpoint. There is no technology or application readiness in our country."

AJITSINGH NAWALE
Head of IT at Mahindra CIE Automotive

"With more and more people are using remote connectivity to reach each other, the high-speed fifth-generation network is a blessing for everyone. However, its success will be dependent upon the accelerated infrastructure development and compelling business models. Because even though we are using 4G today, many gaps [such as poor infrastructure] are still prohibiting us from leveraging the full potential of this technology. Enterprises, telcos, and government need to collaborate to make 5G successful in India."

MILIND KHAMKAR
Group CIO at Super-Max

and automating processes for better production and meeting dynamic demand-supply scenarios. Currently, manufacturers depend upon fixed-line networks to meet such requirements.

In the post-pandemic scenario, as businesses continue to acclimatize to the new ways of working, 5G holds immense potential to enable remote workers to improve performance by connecting and collaborating with their stakeholders in real-time.

Not only it equips the remote workforce with faster data processing capability to be more productive, but it also enables them to match the performance of standard office employees.

According to a Capgemini report, 5G in the Manufacturing Industry, in the near future, the industry will witness several other changes such as enhanced IoT that will accelerate the communication between all the connected devices across the spectrum of a factory, from the shop floor to the warehouse and assembly line, enabling real-time control for manufacturers to adjust the process in motion. In addition, 5G will help businesses exploit the massive amount of data collected from operations faster to be utilized for predictive maintenance and monitoring and augmented reality.

"Latency has been a significant deterrent in the way of building a truly autonomous enterprise. There are many autonomous use cases across industries that are ready from a technology standpoint but need ultrafast connectivity to succeed," says Rajesh Aggarwal, Head of IT, Aamor Inox, a leading manufacturer, and exporter of Stainless Steel Bright Bars in India.

Rajesh further elucidates that the ultra-low latency provided by 5G can help overcome the obstacles faced by enterprises in deploying mission-critical applications. "In the manufacturing sector, 5G will empower enterprises to implement Industry 4.0 technologies effectively. Additionally, it will enable them [businesses] to gather timely valuable data insights so that they can monitor equipment in real-time for increased production, compliance, and safety," he adds.

Large organizations, such as Airbus, Ford, Whirlpool, and Worcester Bosch are some early adopters or testers of enterprise 5G networks. Worcester Bosch is one of the first organizations to launch 5G enabled smart factory. The factors comprise advanced sensors for preventive maintenance and generate real-time analysis using AI-based analytics to anticipate any potential failures.

According to a KPMG report, titled Unlocking the benefits of 5G for enterprise customers, in the manufacturing sector, the pervasive 4G thinking typically creates a linear process where materials are ordered, machines are preset and managed by people maintained by lifetime without any wear and tear. But, unfortunately, this creates a high potential for costly breakdowns and waste and a process that cannot quickly respond to changes in demand. And deploying 5G into this kind of environment can support a business transformation enabling dynamic, self-regulating, and self-adjusting processes that translate into agility, speed, and higher productivity.

Eventually, these benefits get passed onto the end customer in the form of customization, quality, and speed of delivery. "The linear process becomes circular and significant value is created," the KPMG report adds.

In addition to the above, 5G is also expected to create tremendous new opportunities for sectors, such as agriculture, media and entertainment, and financial services. Automation of agricultural

systems will enable enterprises operating in this domain to collect real-time data, counsel farmers to increase productivity. In financial services, the technology will allow enterprises to execute complex processes such as Video KYC for obtaining credit at ease. In addition, 5G will enable them to provide unique customer experiences such as video and introducing new innovative mobile apps that support AR and VR experiences.

Driving innovations

5G will cause a massive boom in the use of sensors around us, generating a humongous amount of data to make connected farms, smart cities, and intelligent buildings a reality. Through its ubiquitous coverage, the 5G technology enhances enterprises' time-sensitive automation capabilities by powering millions of IoT-connected devices, helping them work with their stakeholders and users proactively.

Another area where 5G can be instrumental in pushing more and more compute and capability to the edge. In IoT-enabled devices, if networks cannot handle data transmission, it's a lost cause for business. So, it is critical to get the data as soon as possible from the source device so that AI systems can do the analysis and send it to designated people or machines to take action.

Over the next, eight to ten years, widely accessible 5G networks are likely to shape the experiences of businesses and consumers and provide significant digital momentum to all industries. According to PwC, 5G-driven applications in healthcare, smart utilities, consumer and media, industrial manufacturing, and financial services together are expected to add a massive USD 1.3 tn to global GDP by 2030.

Key challenges

Despite all the benefits and several countries rolling out 5G technology, India still lags in infrastructure readiness for the next technological breakthrough. While the government has indicated that the spectrum auctions will happen soon, the country faces a plethora of concerns: lack of use cases/business models, availability of network equipment, and immature device ecosystem.

"There is no doubt that 5G technology stands out as a real game-changer, but I am not sure if we have been able to leverage 4G fully yet. Even today, we are not getting the bandwidth that is needed to run the business. The technology [5G] looks great for all theoretical purposes, but on a practical note, we [India] are not ready from an infrastructure standpoint. There is no technology or application readiness in our country," says Ajitsingh Nawale, Head of IT at Mahindra CIE Automotive.

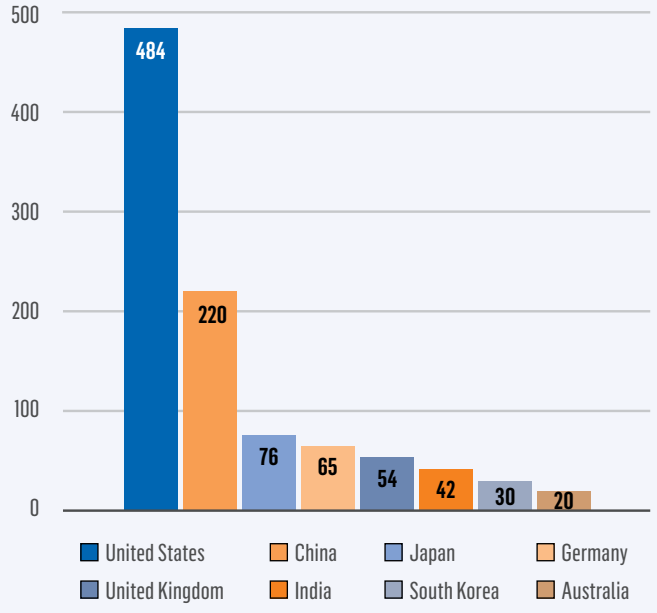
Among enterprises, there are also concerns that to sustain 5G and align it with legacy infrastructure, massive investments might be needed, yet considering the country's present state of infrastructure, they might not get the desired outcomes or productivity gains.

Also, since there are no sufficient 5G use cases in India yet, there could be several complexities at the backend algorithms that might need CIO attention. For example, while an algorithm takes x number of seconds in the current ecosystem, in a 5G environment, it might take x number of nanoseconds. This is a complex scenario for some CIOs who feel that they are unsure if they can run those applications for consumers on the fly and what kind of business benefits it will deliver to the end-user?

"5G can simplify the complexities of diverse working ecosystems. Because of the COVID crisis that we are going through, there are various modalities of working today. For a distributed workforce environment to succeed, one needs the availability of robust high-speed bandwidth [like of 5G] across all locations so that employees can seamlessly connect to multiple organizational ecosystems securely and work becomes business-as-usual."

NIRVAN BISWAS
CTO, National Bulk Handling Corporation & Infinity Fincorp (NBHC)

5G's projected economic impact by country by 2030 (USD 2019 values)



Source: The global economic impact of 5G, PwC

Agrees Milind Khamkar, Group CIO at SuperMax, "With more and more people are using remote connectivity to reach each other; the high-speed fifth-generation network is a blessing for everyone. However, its success will be dependent upon how the overall infrastructure gets developed. Because even though we are using 4G today, many gaps [such as poor infrastructure] are still prohibiting us from leveraging the full potential of this technology. Enterprises, telcos, and government need to collaborate to make 5G successful in India," he elucidates.

Rajesh Aggarwal advises that enterprises should avoid implementing 5G technology at pan India but instead focus on pilot rollouts where there is a high density in 5G. "To gauge the productivity levels 5G can bring for you; enterprises need to test it out in terms of application and transaction. There could be several complexities in the backend using legacy systems."

High-speed connectivity also comes with new security-related threats. With 5G networks expected to be the mainstay for critical IT applications, such as IoT and AI in the future, telecom service providers are expected to improve the ancillary services for robust and secure enterprise connectivity.

"One of the most significant advantages that 5G offers is an extremely low latency rate, the transmission time between sending and receiving information."

What's ahead?

In the years ahead, 5G transformation will help businesses reinvent themselves, improve their productivity levels and help unlock new revenue streams.

"5G can simplify the complexities of diverse working ecosystems. Because of the COVID crisis that we are going through, there are various modalities of working today. For a distributed workforce environment to succeed, one needs the availability of robust high-speed bandwidth [like of 5G] across all locations so that employees can seamlessly connect to multiple organizational ecosystems securely and work becomes business-as-usual," says Nirvan Biswas, CTO, National Bulk Handling Corporation & Infinity Fincorp (NBHC).

The telecom industry association, GSMA, anticipates that by 2025, 5G networks are likely to cover one-third of the world's population. "Each industry has its own specific set of 5G-based IoT use cases in mind, while their attitudes to 5G suppliers and supporting ecosystems also vary substantially. Despite these differences, the crisis brought about by the COVID-19 global pandemic is placing a new emphasis on industry resilience and innovation, now and in the future. 5G can play a vital role in achieving this, but only if 5G providers become more vertical-specific in their interactions with enterprises," notes EY report.

In India, 5G's contribution to economic growth may be very minimal for the next few years. Still, this timeframe will be critical for governments and telecom companies to build essential infrastructure and allocate the necessary spectrum for developing robust and industry-wide 5G use cases. ■

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TCS: The New CIO Factory?

As businesses need CIOs with natural flair for business thinking, global IT services firms could be great hunting grounds. Tata Group has already started, and they do not have to look out

By Shyamanuja Das

A couple of months back, Vinod Bhat joined as the CIO of Tata SIA Airlines (Vistara). Before taking over as CIO of Vistara, Bhat was the Global Business Head - Consumer Packaged Goods (CPG) for the UK, Ireland and Europe & Delivery Center Head at Tata Consultancy Services (TCS) for the last 28 years, based out of Noida.

Bhat had never handled an enterprise IT role before. At TCS, he was in a business role, responsible for business and delivery. However, being in one of the world's largest IT services companies, all he was dealing with was technology, ensuring that it gets designed and delivered in the best possible manner for the company's clients.

In other words, Bhat was doing technology but thinking business—something that is expected from each

CIO today, as businesses turn increasingly digital.

Most Indian CIOs come from a technology background and grow by not just doing technology but thinking technology. While there is a sensitization of late that CIOs need to think business—almost every senior CIO repeat that when advising to younger professionals—it is still not quite there. While there are honorable exceptions, most CIOs think they need to solve business problems through technology. Implicit in their thinking is that the 'problem' would be defined for them by someone else.

It is not that they do not understand business. Many of today's CIOs can explain the nuances of their business very well. But many of them still expect others to define the problem.

That is clearly not adequate when organizations are eager to proactively use technology—which explains the popularity of the phrase 'use case'. Even 'excellent' problem solving is not enough. They have to think how best they can create business value by applying technology, even if there is no visible and defined problem. That is when CIOs need to think business first and proactively.

Business executives with solid understanding of technology—as opposed to the reverse, which has been the case so far—hence are now good potential CIOs.

India is home to the world-class IT services industry with plenty of senior executives who satisfy the criterion – business executives who have a thorough understanding of technology.

Vinod Bhat, the new CIO of Vistara, is just one such example, surely not the only one.

It seems Tata Group has consciously been following this path for some time—looking for CIOs for group companies in its IT services behemoth—Tata Consultancy Services.

In the recent years, many CIOs of Tata Group companies have come from TCS.

As many as nine years back, Voltas CIO, Sanjay Sinha, joined from TCS 'on deputation'. That time, that was probably an exception.

That is clearly not adequate when organizations are eager to proactively use technology—which explains the popularity of the phrase 'use case'. Even 'excellent' problem solving is not enough

But four years back, when the group appointed Aarthi Subramanian as the Chief Digital Officer of Tata Sons, reporting directly to Group Chairman, N Chandrasekaran, himself a TCS veteran, it was probably a conscious decision. In her role, Subramanian is responsible for driving digitization in Tata Group companies.

More followed. A year later, in 2018, Jayanta Banerjee, took over as the Group CIO of Tata Steel. Banerjee is a long time TCS veteran.

Again, in 2019, Tata Power hired its Chief Digital and Information Officer, Hasit Kaji, from TCS. Kaji, at that time, was heading Digital Impact Square, an open innovation platform, within TCS.

There have been other CIOs in the past who have come from technology services industry. Viraj Deshpande, CIO of Reliance Industries' petrochemical business has spent considerable time in IT industry – in Accenture and TCS itself.

A few CIOs in the past, like Viral Gandhi of Piramal, have also worked for long in IT industry, specifically TCS in his case.

But today, there is a clear business case and the recent hiring of TCS employees by Tata Group companies as CIOs cannot just be looked like coincidence.

So, are other companies out there to hire a new age 'business-thinking' CIO, listening? ■

Five Fundamentals For Effective Security Design

Creating an effective security design as traditional security solutions and strategies don't work

By Rajesh Maurya

As organizations continue to accelerate their digital innovation initiatives with an effective security design, new network edges are also introduced to their security infrastructure – from data center, LAN, SASE and more. The network continues to expand and splinter the perimeter, allowing new attack vectors to present opportunities for cyber criminals.

Many organizations have accumulated a wide variety of isolated security tools designed to monitor a specific function or protect one segment of the network in isolation. Some of these new environments are essential solutions to urgent business needs, others are often over-trusted and fly under the radar. Given the rate of innovation, there is rarely enough time to make them part of a cohesive or comprehensive security strategy. Nearly 80% of organizations are introducing innovations faster than their ability to secure them against

cyberattacks. When security is deployed so rapidly, the aftermath is a complex network with limited visibility and control.

Creating an Effective Security Design

Cyber criminals are always searching for new ways to bypass security controls, infiltrate networks, and achieve their objectives. Their attacks have grown in sophistication, aiming to attack different network edges simultaneously to obscure their attack methods and identify the most easily exploited link in the security chain. Distributed networks that rely on traditionally isolated point products can't see or defend against these threats. The clear challenge is that the disconnected and isolated security tools put in place to secure rapidly expanding and multiplying network edges don't work together. This disconnection creates security and performance gaps that make it impossible to see and respond with speed and effectiveness to sophisticated and distributed attack sequences.

Five Fundamentals for Effective Security Design

The approach to network security needs to evolve. Here are five fundamental principles and practices that every organization needs to consider to get in front of and stay ahead of their current security challenges:

1. A unified security framework is essential to establish and maintain control over every edge. It must be able to span the distributed and evolving network to detect threats, correlate data, and seamlessly enforce policy. This isn't about selecting a single vendor, rather about choosing the right vendors. Priority needs to be given to those vendors that leverage application programming interfaces (APIs) and common standards to support interoperability—especially those that allow policy decisions to be made outside of their solution.

2. Deployed security solutions also need to have access to common datasets across all network edges, endpoints, and clouds, enriched with real-time global and community threat intelligence shared from every area of the organization. This common intelligence framework enables holistic analysis of the state of security and performance, identifies emerging threats, and enables unified response across the organization.

3. An integrated security framework needs to support and enable advanced data analysis, combined with the ability to automatically create new protections across the full attack cycle when those analytics detect previously unknown threats. This system should also be able to function autonomously within simpler environments and be linked to extended detection and response (XDR), security information and event management (SIEM), and security orchestration, automation, and response (SOAR) solutions for increasingly advanced network operations center (NOC) and security operations center (SOC) environments.

An integrated security framework needs to support and enable advanced data analysis, combined with the ability to automatically create new protections across the full attack cycle when those analytics detect previously unknown threats

4. This security framework needs to be able to rapidly launch a coordinated threat response across the entire ecosystem the moment a threat is detected. This breaks the attack sequence before its objectives can be realized. Leveraging machine learning (ML) and artificial intelligence (AI) tied to dynamically generated playbooks makes this possible without introducing slowdowns or human error.

5. Because change is the only constant in today's digital world, a security framework needs to be dynamic, meaning that it must be designed to scale up and out as the network it is securing evolves and adapts. This requires deep integration between security and the network components and functions so organizations can continually innovate and expand networking and operations ecosystems without a lag in protections.

A Fabric-based Security Strategy Relies on Integration

For organizations to have an effective security design in today's increasingly complex and ever-evolving network, security needs to be effective in providing broad visibility and control. Reducing complexity is the first step in achieving that. Only then can advanced analytics, threat correlation, dynamic adaptability, and integrated threat response be possible. Those functions, combined with the ability to be deployed broadly, deep integration and convergence between security tools and between security and the network, and dynamic automation augmented by AI, are the hallmarks of any security system capable of defending today's dynamic networks and connected ecosystems. ■

The author is Regional Vice President, India & SAARC, Fortinet

Supply Chain Is Dead, Long Live The New Supply Chain Ecosystems

With accelerated speed of digital transformation, in next few years, the supply chain as we know, will become obsolete and will be replaced by a smoothly running, self-regulating utility that optimally manages end-to-end workflows and requires very little human intervention

By Pradeep Agarwal

Supply chain is probably the delicate aspect when we talk about businesses. These supply chains could be inward in terms of utilities, raw materials, etc and could be outward in terms of ready materials to the customers. Every business decision has to be based on supply chain and legacy technologies do not provide the end-to-end transparency. The absence of data can wreak havoc on businesses, and we all have seen that over the last year. Businesses which had the right technology in place survived to tell the tale. With accelerated speed of digital transformation, in next few years, the supply chain as we know, will become obsolete and will be replaced by a smoothly running, self-regulating utility that optimally manages end-to-

end workflows and requires very little human intervention.

With the right technology in palace, business leaders can capture, analyze, integrate, easily access, and interpret high quality, real-time data. This data further fuels process automation, predictive analytics, artificial intelligence, and robotics.

We are working with some leading companies like Apollo Tyres, Unilever, etc, that are already exploring the possibilities. We have witnessed many of our customers using robotics or artificial intelligence to digitize and automate labor-intensive, repetitive tasks and processes, such as purchasing, invoicing, accounts payable, and parts of customer service. Predictive analytics is helping them improve demand forecasting and thus reducing or better managing volatility, increasing asset utilization, and providing customer convenience at optimized cost. Sensor data on machines are helping manufacturers to better estimate any probable break down, so that the downtime is minimized. Blockchains are beginning to revolutionize the way supply chains are monitored and secured. The blitzkrieg speed and accuracy with which COVID -19 vaccines are being supplied and administered is the most striking demonstration of how the union of technology and supply chain can work wonders.

Another key concept that is coming up is the "digital control tower" - a virtual decision center that provides real-time, end-to-end visibility into global supply chains. A typical "tower" is actually a physical room staffed with a team of data analysts working full-time, 24/7, monitoring a wall of high-definition screens. Visual alerts warn of inventory shortfalls or process bottlenecks before they happen, so that teams on the front line can course correct quickly before potential problems become actual ones. Real-time data, unquestioned accuracy, relentless customer focus, process excellence, and analytical leadership underlie the control tower operations.

Another key concept that is coming up is the "digital control tower" - a virtual decision center that provides real-time, end-to-end visibility into global supply chains. A typical "tower" is actually a physical room staffed...

The same concept is also being used by manufacturers. Any manufacturer depending upon the scale, typically moves hundreds and thousands of parts and components per day and these control towers flag potential supply issues as they arise, calculate the effects of the problem, and either automatically corrects the issue using predetermined actions or flags it for the escalation team.

Reskilling implications

What do these trends mean? It is amply clear that the machines are replacing the supply chain and are doing a better job. It is only obvious that in the not-so-distant future, automated processes, data governance, advanced analytics, sensors, robotics, artificial intelligence, and a continual learning loop will minimize the need for humans. There will be demand for very niche skill sets in humans. People will be needed who can analyze and validate the data, and are comfortable using digital tools, algorithms, and forecasting. Additionally, specialists will be required for designing technology driven agile supply chains that can remain sturdy in highly dynamic strategy and can cater to requirements and priorities of businesses. People will also be needed at the intersection of operations and technology. These skill sets are not available today, so the companies need to start investing in hiring new people or reskill/upskill its existing workforce. The end of the traditional supply chain is just right around the corner and we need to update our skills to come out a winner while operating the new supply chain. ■

The author is Senior Director - ERP Cloud, Oracle India

The 'Not So Fine' Print Behind Competitive Pricing Of Enterprise Communications Platforms

When it comes to pricing an audio or video call between two individuals, almost every platform can offer a similar, competitive rate card on the surface, but bill a radically different cost for the same call

By Pankaj Gupta

It is a well-established fact that businesses are increasingly looking for enterprise communications solutions to ensure business continuity, create distinct consumer experiences, and enable multilateral collaborations. As most mid and large-size companies look at implementing communications platforms according to their specific needs, often budget becomes the deciding factor between the plethora of options available today. However, the pricing of most CPaaS or Communications APIs service providers is not as simple, transparent, and comparable as it is for, say, telecom providers (think how easy it is to choose among the top 3-4 telecom service providers based on their tariff plans). Thus, CTOs and IT heads need to scratch beneath the surface to compare the pricing of shortlisted service providers to avoid any shockers at the time of billing.

Platforms talk about key metrics such as the number of participants, subscribed minutes, and the call resolution only. However, the fine print is that many of them count every screen share as one additional stream...

Here are some filters that they can use:

- **Video Call Room Size:** The first and foremost consideration is the room size for any video call. While some platforms charge based on the number of participants and the number of minutes that they are part of the call, i.e., for a 2 min video call among 3 participants, the calculation will be 3(participants) x 2(minutes) x tariff; others charge based on other parameters like "per subscribed minutes". Using "subscribed minutes" as a metric makes the billing more complicated as "subscribed minutes" are calculated as N(participants) x (N-1) x Duration, where N is the number of participants and Duration is the total duration of the video call. Using the same example of 3 participants over a 2-minute video call, the resulting charges would be 3 (participants) x (3-1) x 2(minutes) x tariff. So, even if both platforms offer the same tariff, the former is half the total cost of the latter, who are using "subscribed minutes" as their pricing metric. And this example is only based on a 3-party call. Imagine if it is a larger group call, the cost will be exponentially higher!
- **Screen sharing:** Be it online team meetings, a video conference, or a client presentation, we cannot imagine a collaborative digital world without screen sharing. Often, to make the pricing competitive, platforms talk about key metrics such as the number of participants, call minutes, and recording minutes only. However, the fine print is that many of them count every screen share as one additional (up and down) stream of communication, which is treated as an additional participant. This increases the net cost of every session significantly. Thus, it is important to consider using a platform that does not charge clients for screen sharing to make video calls more productive at an optimal cost.
- **Cumulative Resolution:** As businesses look to create 'life-like' digital experiences, high-definition multilateral video calls are not a luxury but a need of the hour. While some platforms explicitly state the price for HD and HD+ calls, they attach a unique meaning to these labels. For instance, even if all the participants on a call are using standard definition, as long as the participant's cumulative video resolution remains more than 921,600 pixels, it is automatically considered an HD+ call. In another case, even if there are merely two people on the call, but one of them is sharing her screen (screen sharing mandatorily needs HD+), the entire call will be charged as HD+. This is a big and deliberate gap in their marketing communication to convince CTOs to subscribe to a seemingly low-cost plan, which may eventually charge HD+ price while offering an SD experience. It is advisable to choose a provider that does charge anything extra for HD+ experience. This allows clients to easily offer an HD+ experience to their stakeholders without having to bother about the nitty-gritty of individual and cumulative resolutions.

The key takeaway from the above is that when it comes to pricing an audio or video call between two individuals, almost every platform can offer a similar, competitive rate card on the surface, but bill a radically different cost for the same call. The game starts changing when businesses scale up and need technology to support deeper, more efficient, and seamless collaboration. The complex tariff formulae carved out of microscopic terms and conditions could lead to billing disasters for businesses. The thumb rule here is to opt for a platform that is upfront about the fine prints and uses a simple billing formula based on the tariff and number of users. There should not be any additional or hidden charges for screen sharing, added resolution, etc. since these are bread and butter for everyone who works in an online environment and cannot be charged as a luxury. The formula also helps businesses project their IT expenses and streamline their budgets with higher certainty and without undue surprises. ■

The author is CEO & Founder, EnableX.io

Using AI To Keep Up With Data Protection And BFSI Compliance Laws

The use of AI-powered tools will ensure BFSI firms can stem security risks in real-time and safeguard both their modern and traditional applications, as well as reduce friction in legitimate customer interactions

By Mohan Veloo

The widespread digitalization of economies has attracted increasing levels of cyber-threats, accompanied by breakneck legislation. Can AI help BFSIs keep pace?

With the global shift to digital economies, banking, financial services, and insurance (BFSI) industries in the Asia Pacific region (APAC) are seeing disruption and digitalization pressures. With the move toward digital banking, several banks have begun to close their physical locations. However, in India larger banks are simplifying their branches and partnering with 'new gen neo banks' to provide a unified customer experience for

their products and services. According to a study, the India Digital Banking Market is expected to grow at a CAGR of more than 22% between 2019 and 2024, owing to increasing technological advancements, increasing internet penetration, and a growing number of smartphone users in India. The neo bank model is expected to raise USD 394 billion by 2026, according to PWC. The number of neo banks in India is growing significantly, we have seen over USD 90 million funded last year.

By 2025, APAC is projected to see 100 new financial institutions fueled by liberalization in several markets. According to a report by IDC and Backbase, 63% of consumers were willing to switch to neo banks over the next five years. With new digital opportunities come new digital risks, as systems must meet increasingly stringent data security and compliance regulations being introduced by governments around the world.

The BFSI security conundrum

Security, anti-money laundering and compliance mandates in the region come with tight deadlines and significant penalties for non-compliance. These requirements include implementing security measures to mitigate the risk of malware infections; ensuring updates are applied in a timely fashion; and enhancing user authentication for critical systems.

Such regulations are deemed necessary as digitalization exposes organizations to more risks, including online identity theft and data breaches. Governments are also responding to citizen's own concerns about security and data privacy. High-profile breaches in the news and popular shows like Netflix's 'Social Dilemma' have added to this increasing awareness and concerns.

Further complicating matters is the apparent disconnect between consumer expectations and their behavior. Unsurprisingly, security is one of the biggest challenges that businesses surveyed faced in their DX efforts. In fact, the financial services industry is a popular target for cybercriminals and the volume of malicious attacks will only intensify as digitalization and transaction volumes increase.

> Poorly developed applications present vulnerabilities for exploitation by attackers to gain access to sensitive data and the corporate network

Apps at the center of BFSI cybersecurity

The increasing importance of applications is adding to an already-complex landscape that BFSI must navigate. Fundamentally, in a digital world, applications are the front of customer experience and, for many consumers, their only interaction point with such firms.

Our research indicates that 74% of organizations viewed applications as essential to business, while 26% of respondents felt that applications played a key role in driving competitive advantage and supporting their business. In addition, business-critical applications increasingly run in the cloud, which 60% of BFSI respondents described as the most strategically important technology for the next two to three years.

Security should therefore be top of mind regardless of where these applications are hosted, be it in the cloud or in on-premises data centers. Poorly developed applications present vulnerabilities for exploitation by attackers to gain access to sensitive data and the corporate network. This can lead to costly business disruptions, damaged brand reputation and potentially government fines.

Using AI capabilities to fight cyberthreats

As online transactions continue to grow, it will become increasingly be difficult to monitor and guard against malicious traffic. The shortage in trained cybersecurity professionals globally only exacerbates this situation. The use of AI tools not only helps BFSI companies make better decisions, but also enables them to secure their apps more effectively without adding layers of security checks that can degrade user experience.

AI-enabled solutions can accurately determine in real-time whether an application request is from a fraudulent source. Such tools can swiftly mitigate potential fraud risks and, at the same time, allow legitimate customer requests to proceed seamlessly. The use of AI-powered tools will ensure BFSI firms can stem security risks in real-time and safeguard both their modern and traditional applications, as well as reduce friction in legitimate customer interactions.

This is a brave new world for banks, financial services organizations, and insurers. The rules have changed, and the competitive landscape is far broader than it has ever been. At the same time, the growth of the digital banking space offers ambitious players in this sector a tremendous opportunity to grow.

To build scale, outpace their new competitors and thrive, traditional BFSI players must embrace new technologies like AI, sharpen their security posture and plan for a future that delivers extraordinary digital experiences. ■

The author is Vice President - Global Solutions Engineering, F5

Air India Data Breach Exposes India's Cybersecurity Deficiencies

India is swiftly becoming one of the favorite hunting spots for cybercriminals. It's time the country takes concrete measures to secure the personal data of its citizens

By Jatinder Singh

The country's national carrier, Air India, recently disclosed an infringement on its passenger service system that compromised the personal data – including date of birth, contact particulars, passport, and credit card details – of 45 lakh passengers.

The attack was part of well-coordinated hack series on the passenger service system servers of Société Internationale de Télécommunications Aéronautiques (SITA). This global ICT solution provider delivers services to 90% of the worldwide aviation industry. The data security incident impacted several international airlines, such as Singapore Airlines, Lufthansa, Malaysian Airlines, and Finnair. The level of data breach impact varied from one airline to another.

Data breach response plan

While the Geneva-based solution pro-

vider had informed about this incident to all its customers in February 2021, for a bizarre reason, Air India did not feel the urgency to advise its customers on taking necessary precautions such as changing account passwords.

Once again, the incident has revealed India's delayed approach to responding to a cybersecurity urgency and prevalent deficiencies in its IT governance model. It may not be possible to control all network intrusion incidents, impacting even those organizations that deploy robust security solutions and tools. However, companies must provide a roadmap once the breach is discovered and help minimize the damage incurred. Setting up a robust incident response plan is critical. It should be in place to examine the violation, find reasons for the security breach, urgent steps to limit the damage, and efforts needed to beef up the security.

In this case, most of the impacted airline carriers globally immediately informed their travelers about the data breach and the recommended action steps when the incident came to light. Air India surprisingly took almost three months to notify its customers whose data was compromised.

One may argue that the national carrier was ascertaining the level and scope of the data security attack and wanted to know the full details of travelers whose data was compromised. But in any cybersecurity breach, timely action can help activate a successful incident response mechanism, something which Air India could not do.

Growing incidents a colossal concern

Ever since the COVID-19 pandemic began, there has been a steep rise in the cases related to data breaches in India. In an era where companies are growing their digital footprints and remote-working has become a new norm, endpoint abuse has increased multiple times among enterprises of all sizes.

According to IBM Security's annual Cost of Data Breach report, which

Companies must provide a roadmap once the breach is discovered and help minimize the damage incurred. Setting up a robust incident response plan is critical. It should be in place to examine it

covered 524 organizations globally, India reported the second most cyber-attacks after Japan in the Asia Pacific region in 2020. With almost a 10% increase, the financial impact of these breaches was about INR 140 million. More than the financial loss, such violations can make a severe dent in business reputation, and influence customer trust.

In Nov 2020, online grocer, Bigbasket, came to know about a major data breach on its network when it found leaked data of its two crore customers was up for sale for INR 30 lakh on the Dark Web. In May 2020, Bangalore-based learning platform, Unacademy's corporate data, the details of its 20 million user accounts, was hacked and being sold on the Dark Web for about INR 1.5 lakh.

Pizza restaurant chain, Domino's Pizza, became the latest victim of an enormous data breach, compromising the credit card details, name, mobile numbers, and location history of its 180 million customers.

In the post-covid era, hackers are expected to get even more innovative. With the number of unsecured endpoints increasing, coupled with enterprises focusing on integrating their processes with new-age technologies, networks are becoming more susceptible and need significant investment and research efforts.

The urgency of strong data protection law

In the current digital age, modern security threats are becoming complex. While organizations need to invest significantly in their research and technology capabilities to mitigate such breaches, the Indian government also needs to expedite the process to introduce strong data security laws. Like European Union's GDPR law, Indian data protection laws also need to classify privacy as a fundamental right.

The absence of a proper legislative framework makes it difficult for Indian citizens to get clarity around their rights in case of any violation of their privacy. The country that aims to become the IT superpower has been waiting for express legislation, data protection bill, that deals with data protection.

For instance, if we had the robust data protection bill, a national carrier like Air India would have been bound to notify its flyers about the data breach incident in a specific timeframe. In most advanced countries, companies are required to undertake necessary actions within 72 hours of becoming aware of the data breach incident. Any inefficiency may result in significant fines.

The Personal Data Protection Bill, proposed in 2017, needs urgent implementation with solid parameters to define user privacy. In the digital economy, data is the goldmine that gives companies an edge to build great products and services. If the same data continues to be compromised for malicious and exploitive purposes, consumers' trust in the new shining digital economy will get weakened. ■

Microsoft Sets Windows 10 Expiry Date. Are Enterprises Ready For An Upgrade?

The US tech behemoth takes a radical leap by announcing a significant upgrade to Windows 10 this month. But it may not be easy for businesses to jump to it straight away

By Jatinder Singh

Microsoft has recently launched Windows 11, which has a more intuitive user interface, better enterprise management, lower cost of ownership, compelling remote work administration features, and enhanced security.

Satya Nadella, the CEO of Microsoft, first shared the idea of the new OS during the 'Build' developer conference, held earlier this year. "Soon, we will share one of the most significant updates to Windows of the past decade to unlock greater economic

opportunity for developers and creators. I've been self-hosting it over the past several months, and I'm incredibly excited about the next generation of Windows OS," he proclaimed.

The US tech giant has already disclosed its intentions of not continuing with Windows 10. Its Windows lifecycle fact sheet states that the company will end all support for Windows 10 (Windows 10 Home, Pro, Pro for Workstations, and Pro Education) by 14 October 2025.

There is no doubt that Windows upgrade could be a gamechanger for the world's second most valued company and drive more significant revenues for Microsoft in the years to come. But the critical question is: are enterprises ready to adapt to the new OS environment and willing to initiate an extensive mass migration exercise?

Migration is a significant challenge for enterprises

Since the 1990s, enterprises have been compelled to migrate to new and upgraded Windows environments every three to six years. The enterprise-wide migration is not easy and can pose serious business continuity threats such as compatibility issues with any mission-critical enterprise app or lack of adequate drivers in legacy hardware.

In the past, many public and private sector companies have faced significant challenges while jumping to a new Windows environment and upgrading their line-of-business applications. It is not just in terms of cost but also because of the enormous efforts to re-train talent and make users aware of the usage/features of the new platform. In the ever-growing complex ecosystem that continues to grow at an astounding pace, many businesses often scramble to architect and validate a speedy and cost-effective migration.

For many small enterprises, short of time and technical resources to test and deploy the new environment, any porting plan needs labor-intensive efforts, a robust implementation strategy, and sharp change management tactics. These are not always possible in small business setups, which are not equipped enough to carry out the migration or pay hefty consulting fees to technology partners to manage their devices and shift to the new Windows environment. Expecting them to invest that kind of money on Windows upgrade at a time when most of them are trying to stabilize after facing business disruption and dealing with the consequences of the pandemic.

The biggest challenge that comes in any upgrade is the possibility of data loss due to migration process discrepancies. While enterprises can reduce this risk by having a solid data-backup partner onboard, implementing an organization-wide data-backup strategy entails effective communication and training efforts. Businesses should inform all users to secure their critical data in local backup folders to avoid any work-performance issues.

In the ever-growing complex ecosystem that continues to grow at an astounding pace, many businesses often scramble to architect a speedy migration

A possible shift from as-a-service model

The new edition of Windows conflicts with Microsoft's erstwhile declaration of Windows 10, launched in 2015, as its last operating system. At that time, Microsoft wanted to take an as-a-service route for Windows by providing continuous updates and bi-annual feature enhancements like the Android and iOS platforms to add new features, functionalities and bring overall innovations.

As a result, many enterprises and IT managers at that time felt a huge sigh of relief, hoping that they would not need to take extensive migration efforts every few years.

The Silicon Valley giant stuck to its strategy for over five years. Still, it seemed to have changed gears after witnessing the pandemic-forced digital transformation acceleration and a massive surge in PC demand during the pandemic. The reasons for a significant roll-out soon after the impact of pandemic subsides worldwide can be attributed to the unprecedented remote-workforce activation and massive uptake of cloud, which also gave Microsoft a 33% jump in its profits to touch USD 15.5 billion for the December 2020 quarter.

The relevance of Windows OS has become more than ever for workforce productivity in the age of fast-track technology adoption. And historically, Microsoft's PC sales ramp up whenever the company announces a new Windows upgrade.

While businesses still have time until 2025 to upgrade their systems to the new Microsoft environment, many global companies might feel tempted to elevate themselves early as a result of this breakthrough innovation. That will leave many young companies facing a dilemma to find the right processes to overcome the upgrade issues.

Nevertheless, it is advisable to avoid any rush-implementation efforts of the new Windows ecosystem since any hassled approach can negatively affect the user experience if they are not ready to adapt or are not production-ready. ■

Are India's New IT Laws A Step In The Right Direction?

The government can make the regulations more secure and user-friendly by adopting a multi-stakeholder consultative approach

By Jatinder Singh

India's new Intermediary Guidelines and Digital Media Ethics Code under IT rules has created many wrangles between the top digital platforms and the Indian government. In a surprising and unprecedented move, Facebook-owned WhatsApp recently sued the Indian government over the new internet laws, arguing that the new regulations, which also give Indian authorities the right to trace individual messages, is an attempt to breach the privacy of its users.

By far the most popular social channel in India, WhatsApp's recent move is sidesplitting and reflects the company's arbitrarily and differential-standard treatment. In January this year, WhatsApp had introduced separate privacy and data sharing policies for Europe and India. As part of its policy, Facebook mandated its Indian users to share their data with Facebook and other associated platforms while relaxing this new diktat for its users in Europe, citing stringent General Data Protection Regulation (GDPR).

Allegedly, WhatsApp has been sending repetitive push notifications to trick users into taking their consent for its updated privacy policy. And now, when the Indian government is trying to fill the regulatory vacuum and take stringent measures to protect its national interests, Facebook is projecting itself as a privacy activist.

"WhatsApp argues against the government's new guidelines on the pretext of servicing its users' privacy interest. However, questionably, it also tries to make blatant misuse of its dominant position by enforcing a policy on its users which they don't approve of," says Deepak Kumar, Founder Analyst at B&M Nxt.

However, a section of industry experts feels that WhatsApp has not done anything surprising and may need more time and deliberations to develop suitable solutions to adhere to the new IT laws.

"These guidelines are a good step and must be welcomed, especially from the lens of women and child safety. However, given the pandemic, the three-month timeline granted is significantly less and needs further deliberation," says Kanishk Gaur, Founder, India Future Foundation.

Gaur explains that all messaging platforms like iMessage, WhatsApp, or Signal use leading end-to-end encryption protocols. Therefore, finding the right set of solutions requires careful deliberation and rigorous auditing.

"These protocols use rigorously audited algorithms for reliable exchange of keys. If we have to track the first originator of the message, which the guideline talks about, we'll have to mark every message with a "stamp" as none of these platforms have a way of knowing which message may become problematic. Experts generally believe that this may undermine the security and privacy guaranteed by the underlying algorithms. The current issue needs more extensive deliberation and understanding as currently, no proposed cryptographic solution has tested full proof from a cybersecurity lens. At the same time, the government is saying that you come up with solutions but move forward in our direction. The government certainly has a legitimate interest in seeking this information, but this may require a longer and more collaborative effort to ensure users on platforms like iMessage, Signal, and WhatsApp do not feel insecure, especially in a very precarious cybersecurity landscape," he adds.

Interestingly, the digital platforms had over three months to raise their concerns as the government had given them the deadline of 25th May 2021 to comply with the norms. Yet, none of the social media giants took the government notifications seriously initially to raise their apprehensions.

Need for more accountability

The new IT rules are a step forward in India's attempt to make social and digital media platforms more accountable for the content shared on their channels and put necessary checks to curb technology abuse. The regulations mandate social media and digital giants with more than 50 lakh users — such as WhatsApp, Facebook, Twitter, and YouTube — to adopt significant compliance and grievance redressal mechanisms and be more responsive to user complaints.

WhatsApp's recent move is sidesplitting and reflects the company's arbitrarily and differential-standard treatment. In January this year, WhatsApp had introduced separate privacy and data sharing policies for Europe and India

For almost two decades, it appears that there has been a lack of political will to implement strong Indian Cyber Laws. Now the IT rules 2021 represent a different paradigm entirely. They have given immense power to the central government. These rules stand for strengthening the cyber sovereignty of India.

"Service providers have had honeymoon under the Indian cyberlaw for over a decade. They have been given kid-glove treatment, making them believe that they are special and always given preferential treatment. There were no proactive compliances earlier. It looks like this has resulted in some of the digital service providers to have some form of illusion that they [service providers] are special

Top Social Media Intermediaries in India

Platform	Users (in crores)
WhatsApp	53
YouTube	45
Facebook	41
Instagram	21
Twitter	1.8

and therefore above the law," says Pavan Duggal, India's leading cyber law expert.

The government has made clear that non-adherence to the new IT guidelines will revoke the intermediary status of digital players, as per Section 79 of the Indian IT Act.

Duggal further elucidates that this [new IT laws] is a step in the right direction. Now, the government should focus on the speedy implementation of the Personal Data Protection Bill in India. "The message is clear: If any service provider fails to adhere to the new IT guidelines, they will invite deeper legal trouble for themselves," Duggal adds.

Right to the privacy debate

WhatsApp's argument against the latest IT guidelines is that the new laws violate the right to privacy under Indian law. They [WhatsApp] add that, to comply with it and ensure traceability features to identify originators of messages, they [WhatsApp] need to discontinue their end-to-end encryption feature. It would also need them to gather data exchanged between its subscribers regularly and require enormous resources.

But is it a valid dispute? Such laws are primarily essential to effectively deal with detection, investigation, and prosecution of cybercrimes and cybersecurity breaches.

"There is no legal foundation in that argument. No service provider can argue that it cannot tweak its technology to prevent its misuse. Because of certain exclusive features, they will continue to hide the identity of cybercriminals. This argument is legally not permissible to a service provider. If they persist with such arguments, governments can put them in the same category of co-accused or co-conspirator should it [government] find a valid reason that their platform has been used to execute nefarious activities," elucidates Duggal.

In some circles, a perception-based narrative is getting widespread attention, according to which these new laws attempt to create a police state and a censorship-based government. Industry experts discard this theory, and this conjecture is far from the truth. "The government is not looking at any such direction. "If you look at the IT rules 2021, there are only certain limited circumstances in which the government can ask about the information about the originator of the message," Duggal states.

Only in specific limited settings, this information can be sought by the government. And the data can only be passed by the digital media platform provider once the order is passed by competent jurisdiction or by statutory authority under Section 69 of the Indian IT Act.

The section allows the central government to block an intermediary's public access "in the interest of sovereignty and integrity of India, defense of India, state security, cordial

But is it a valid dispute? Such laws are primarily essential to effectively deal with detection, investigation, and prosecution of cybercrimes and cybersecurity breaches

New Rules that Intermediaries Need to Comply With

- **Due diligence to be followed by intermediaries:** In case due diligence is not followed by the intermediary, safe harbor provisions will not apply to them.
- **Grievance redressal mechanism:** Intermediaries, including social media intermediaries, should establish a grievance redressal mechanism for receiving and resolving complaints from the users or victims. The Grievance Officer shall acknowledge the complaint within twenty-four hours and resolve it within fifteen days from its receipt.
- **Ensuring Online Safety and Dignity of Users:** Intermediaries shall remove or disable access within 24 hours of receipt of complaints of sexually explicit material, images or content. Such a complaint can be filed either by the individual or by any other person on his/her behalf.
- **Additional compliance requirements for significant social media intermediaries (those with over 50 lakh users):** The rules require the significant social media intermediaries to follow certain additional due diligence:
  - Appoint a Chief Compliance Officer, Nodal Contact Person (for 24*7 coordination with law enforcement agencies), Resident Grievance Officer. These people should be residents of India.
  - Publish a monthly compliance report mentioning the details of complaints received and action taken on the complaints.
  - Platforms providing services primarily in the nature of messaging shall enable identification of the first originator of the information that is required only for prevention, detection, investigation, prosecution, or punishment of an offense related to sovereignty and integrity of India, the security of the State, friendly relations with foreign States, or public order or of incitement to an offence relating to the above or in relation with rape, sexually explicit material or child sexual abuse material punishable with imprisonment for a term of not less than five years.
  - Significant social media intermediary shall have a physical contact address in India published on its website or mobile app, or both.
  - Voluntary User Verification Mechanism: Users who wish to verify their accounts voluntarily shall be provided an appropriate mechanism to verify their accounts and supplied with the demonstrable and visible mark of verification.
  - Users must be provided an adequate and reasonable opportunity to dispute the action taken by intermediaries.

Source: Ministry of Electronics & IT

relations with foreign states or public order or for preventing incitement to the commission of any cognizable offense relating to above."

"The government has done well by issuing the intermediary guidelines and put the necessary checks in place to safeguard these tools, becoming lawless playgrounds for criminals. There are adequate procedural safeguards. However, the government must maintain the balance by establishing a multi-stakeholder mechanism (panel) to keep a watch on any potential breach and recommend necessary corrective measures or punitive actions to the concerned government authorities," adds Deepak Kumar from B&M Nxt.

The final say

India is not the only nation that has rolled out guidelines around traceability requirements for efficient law enforcement. Australia, for instance, had introduced its encryption law under the Telecommunications and Other Legislation Amendment (Assistance and Access), better known as TOLA, in 2018. As a result, various industry estimates suggest that Australia's law enforcement bodies have become several times more effective in solving robbery and drug-related cases by leveraging encryption-breaking technologies.

The US has also come up with the lawful access to encrypted Data Act Bill in 2020 to strengthen its national security and prevent the misuse of encryption technology by malicious actors. In addition, countries such as the UK, Canada, New Zealand, and Japan are also keenly following the developments and keen to roll out legislation to access encrypted messages to maintain law and order in their respective countries.

However, it is also a valid argument that making traceability compulsory requires herculean efforts from service providers. They [service providers] will have to invest significantly in building capabilities to store and secure users data from hackers and cyber-criminals.

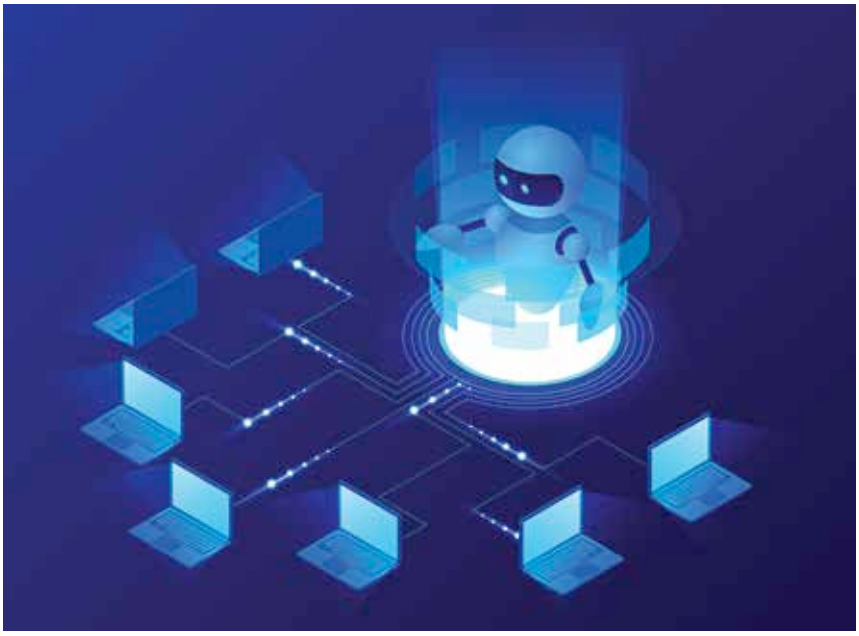
With the country looking to approve its Data Protection Bill soon, engaging with all stakeholders, getting critical learnings from the global markets where such laws have already been implemented, and including technical experts in the core committee to analyze different timelines and technology readiness can pave the way for a robust data protection regime. ■

Real And Unreal AI

Nowadays most of the projects and AI systems have started to create a Real AI, but due to various reasons, they end into Unreal AI system

By Kanu Butani

In this world, that is going from real to Artificial Intelligence, people are becoming relevant to the new concepts of AI and AR, where we see so many techies, technology experts, and technology companies and partners talking about AI and its usefulness in the day-to-day life of a person. Everyone is striving to look into how a manual task can be converted into an automated one, and we can be self-reliant on the technology and see how AI, ML, and its concepts turn into its applied form. In such a scenario where in today's busiest IT industry where no one has time to look into the nitty grittiest of the processes, thus in that purview the main crux of the automation is left behind and only the first layer of AI is worked upon. There are such instances and many other reasons due to which we come across the two AIs called "Real AI" and "Unreal AI". In this article, we will see how these AIs turn into Real and Unreal and what are the factors responsible for that.



It is this photograph that is a real artificial intelligence of a camera system that has made that real moment so nicely captured in itself

AI in ancient age

What a wonderful season and a great time to go through the AI and AR concepts. The rain is created by GOD. The rain is one of the biggest AI that the nature has made. Don't you feel so? The water from the earth evaporates and the clouds formed due to that fall back in the form of rain. What a beautiful concept, predicting AI in a real sense and essence. I would like to divide AI into two categories, based on how real it looks:

1. Real AI
2. Unreal AI

Real AI: When an artificial intelligence system can be related to a thing that is real, it can be termed as 'Real AI'.

Unreal AI: When an AI system cannot be related to a thing that is real, or it looks unreal in its broader sense, then it can be termed as 'Unreal AI'.

Real AI

The Real AI still exists but Unreal AI has vanished because that was either not required or it was so unreal that no AI was itself there. Hence what all we can see, or we have, it is a Real AI. There are many examples, few of which are listed herewith.

When we see a photograph, it is a memory worth living. It is this photograph that is a real artificial intelligence of a camera system that has made that real moment so nicely captured in itself that when we see it, we reach that place and can remember the entire scene. This is what we can call as a Real AI system. Another example is the clock, the oldest AI system that is so real that gives us correct time with its magical system going inside it.

When we go through the older times and think about any AI at that time, we get lot of examples that comes to us that give us the glance of AI and AR.

AI is an extension in the world of computers and a part of computers to play a role of an intelligent system. Since the start of this world, we all are trying to create whatever machines are to make the manual work into automation. It's not a new concept. Even during the time of stone age, to rub two stones together to generate the fire was also a type of AI to automate fire from the stones.

While I was in The Netherlands, I had visited "Zaans Museum" in Amsterdam. There I saw how the windmills actually worked and with the power of wind, the wood was cut, and the saw was generated.

Unreal AI

These all things are so innovative and yet so simply solves an issue and makes this world understand what AI actually is. We always think that AI is new and wonder what AI will do to our lives, but AI when we think is existing, since we have come on this earth and we need something whatever we

The Real AI and the Unreal AI go together when a project begins, and the owner of that project needs to check if they are going more towards creating a Real or Unreal AI

invent has been AI so far, we are then good to go and accept the Real AI. This would really help humankind in some way or the other. The one thing that we are afraid of is that Robots and AI will destroy the world or will rule the humans, and this is what I call as Unreal AI, since that is never going to happen. The computers or any machine whatsoever will always be a machine and it is far away from the reach of human intelligence. Why? Because humans have gone through generations over generations to develop such a brain and its functions and such a wonderful nervous system. If you go through the "Evolution Theory of Man", you will come to know that how humans have evolved and how much old a human is. So, for a machine to come to the human brain understanding will also require so many generations of AI to come up to that speed and to overtake human brain. The pixels that our eye has is, 560 px, that clarity we have and in today's world we have 30 px camera and we feel happy with the clarity of it. Just imagine the human body intelligence creating the AI system requires a fair understanding of the problem and the steps necessary to take to make it a Real AI system. Nowadays most of the projects and AI systems have started to create a Real AI, but due to various reasons, they end into Unreal AI system. Some of the issues can be as follows:

1. The unclear problem
2. No issue but just to create
3. AI hype
4. Big Bang approach
5. Threat of AI
6. Treating AI as a normal solution

Earlier we were dealing problems of simple things and tried to convert them to analog like clock or so on... but now we are trying to convert them into digital. Hence, we arrive to two instances of AI that are: Analog AI and Digital AI. Be it any AI, it must be committed to work as a perfect servant and not the master.

The Controlled AI and Non-controlled AI are the two variants that we always come along, based on the servant and master. The AI must always be controlled and most of them are, and they are RealAI systems, because we can control them, understand them and rely on them. Whereas the uncontrolled is just a hype mostly if we do or create some uncontrolled it would be useless, and hence also the unreal AI. Thus, it is only to show off in the hyped manner or to create a sci-fi movie to create a story interesting thereof. But that doesn't mean we can't create an uncontrolled AI system, we can for example, if we run a "never ending for loop", we have created an uncontrolled system, but just imagine is it useful, it's not. Or if we want to create a robot for destruction only, how much destruction we will need or AI can do, and in first place, why we need any AI for destruction.

Conclusion

The Real AI and the Unreal AI go together when a project begins, and the owner of that project needs to check if he/she is going more towards creating a Real AI or Unreal AI. It depends on his/her decisions and his/her experience, which decides about this. If the Unreal AI is created, the project will go accordingly and finally fail. There will be no advantage to anyone. Thus, before beginning with the project, during the assessment phase, this aspect is to be reviewed and checked and if we have complete confidence on the project and we know that we will create a Real AI system that will be of help to many people, doing the manual work into automation, then we can proceed further. Even a small process that we convert into automation, would be then extremely helpful for the organization. ■

The author is a Software professional, based in Mumbai

How Technology Is Reshaping The Construction Landscape In India

Technology is empowering contractors with access to real-time information anytime, anywhere from any device

By Ashok Wani

The global construction spectrum is undergoing an extensive transformation. Though 2020 instilled uncertainty all over the world, businesses have started to recover again, paving the way for better opportunities in the pipeline.

This recovery cycle also comes with an extraordinary pressure on construction players due to competitive bids and lack of skilled labor, compelling developers to run projects understaffed with tighter deadlines. As a proactive approach, Engineering, Construction & Infrastructure enterprises (EC&O) are trying to unwind the pressure by embracing advanced construction management technology.

Technology & Construction

Technology is a proven enabler of growth in the construction industry. It's helping infra players improve their

existing operations and legacy practices. Some of these technological trends, like digitization, cloud-based software solutions, drones, etc., are widely adopted due to their ability to improve collaboration between site teams, office staff, contractors, and project owners.

Also, they can experience advancements related to productivity, information sharing, and sustainability while driving secure data capture practices.

However, many construction companies and contractors are not able to or not willing to upgrade their operational practices. A report shared by McKinsey & Company showed a drop in productivity during the last 20 years for the construction sector. On the other hand, the manufacturing industry has sustained to leverage technology for their business benefits through enhanced productivity.

The Role of Construction Technology in the Last Decade

The global construction industry witnessed growth from USD 7,200 billion in 2010 to USD 11,217.4 billion in 2019 and then taking a drop to USD 10,566.8 billion in 2020 due to the pandemic. Presently, the construction industry is one of the fastest-growing sectors across the globe. The need for advanced infrastructure development has opened the way for many opportunities. While the industry grew over the past decade, it also witnessed considerable downtime due to some unexpected highs and lows.

Whether it is the current pandemic, the global recession, demand crisis, inflation and more, the construction industry has had a huge impact on GDP, causing loss of business, jobs, and overall position of the construction industry in the past decade. However, the active efforts of the construction companies and technology were major contributors that helped the recovery. The large-scale adoption of advanced construction project management software technology helped construction firms drive productivity while streamlining everything from supply chain to project management.

Impact of Technology on Construction Functions

Infrastructure and construction technology has positively impacted many functions for on-premises and off-premises operations of a project:

Accounting & Reporting

In times of recession, most contractors lost grip on cash flow due to old-school legacy practices and outdated systems. However, the advent of advanced construction accounting tools has simplified operational processes, providing real-time checks on data and reporting.

Budgeting & Planning

The modern-day project management software allows contractors to take full command over all financial data and expenses. The entire function of budgeting and planning becomes much easier with these tools. From allocating the budget to measuring the backup resources, these solutions allow project managers to ensure smooth progress.

Project Management

Project management solutions like ERP systems, BIM or Virtual Design systems, workflow automation tools, etc., have empowered contractors to benefit from an improved and more intuitive experience working toward project management goals. These tools have helped the industry with time tracking, communicating, documenting, and field productivity management.

Human Resources

Contractors who were reluctant to use construction software to manage their labor resources often struggled with overpayments and time theft issues. On the other hand, deploying a construction ERP solution is helping project managers monitor productivity hours to ensure no cost buildups are endured on labor resources.

Productivity

Technology is empowering contractors with access to real-time information anytime, anywhere from any device. This has significantly disrupted and improved the tedious chain of command and related information churn. With 93% of contractors using smartphones, project owners and managers could easily keep in tandem with them regarding existing and upcoming project progress.

On the other hand, deploying a construction ERP solution is helping project managers monitor productivity hours to ensure no cost buildups are endured on labor resources

Walking Towards the Future

The construction companies have a strong inclination towards legacy practices and are more likely to stick with the traditional techniques that are more guesswork than data-driven. However, the reality is that the new-age technology enables contractors to gauge the financial impacts in real-time while working on sustainable productivity. Hence, we can expect more hyper-automation software making its way to the infrastructure sector, helping them recover, regrow and revolutionize the industry even more. ■

The author is Head - Technology & Innovation at Highbar Technocrat

Double Scoop

Two times the revelation

Karthick Raja

Head - IT, Baxter Pharmaceuticals

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Pudhu Vellai Mazhai from Roja

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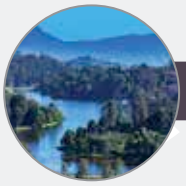
CISM Review Manual



MY FAVORITE GETAWAY

Kodaikanal

MY FAVORITE ACTIVITY DURING COVID 2ND WAVE

Spending time with family and sharing the household work

A TECH SHOW I LIKE TO WATCH

Auto Tech Forum shows

MY PEER IN THE IT COMMUNITY

Shridhar Sharma, Manager - IT, Maruti Suzuki India

Shridhar Sharma

Manager - IT, Maruti Suzuki India

MY FAVORITE POLITICIAN

Narendra Modi

AN EMERGING TECH WHICH WILL TRANSFORM THE INDIAN HEALTHCARE SYSTEM

AI-ML

MY FAVORITE SPORT

Cricket

A TECH IDOL I ADMIRE

Mark Russinovich

A SONG WHICH I KEEP HUMMING

Chala jata hun, kisi ki dhun mein dhadakte dil ke

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डिजिट
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देश का सबसे लोकप्रिय और विश्वसनीय टेक्नोलॉजी वेबसाइट डिजिट अब हिंदी में उपलब्ध हैं। नयी हिंदी वेबसाइट आपको टेक्नोलॉजी से जुड़े हर छोटी बड़ी घटनाओ से अवगत रखेगी। साथ में नए हिंदी वेबसाइट पर आपको डिजिट टेस्ट लैब से विस्तृत गैजेट रिव्यु से लेकर टेक सुझाव मिलेंगे। डिजिट जल्द ही और भी अन्य भारतीय भाषाओ में उपलब्ध होगा।

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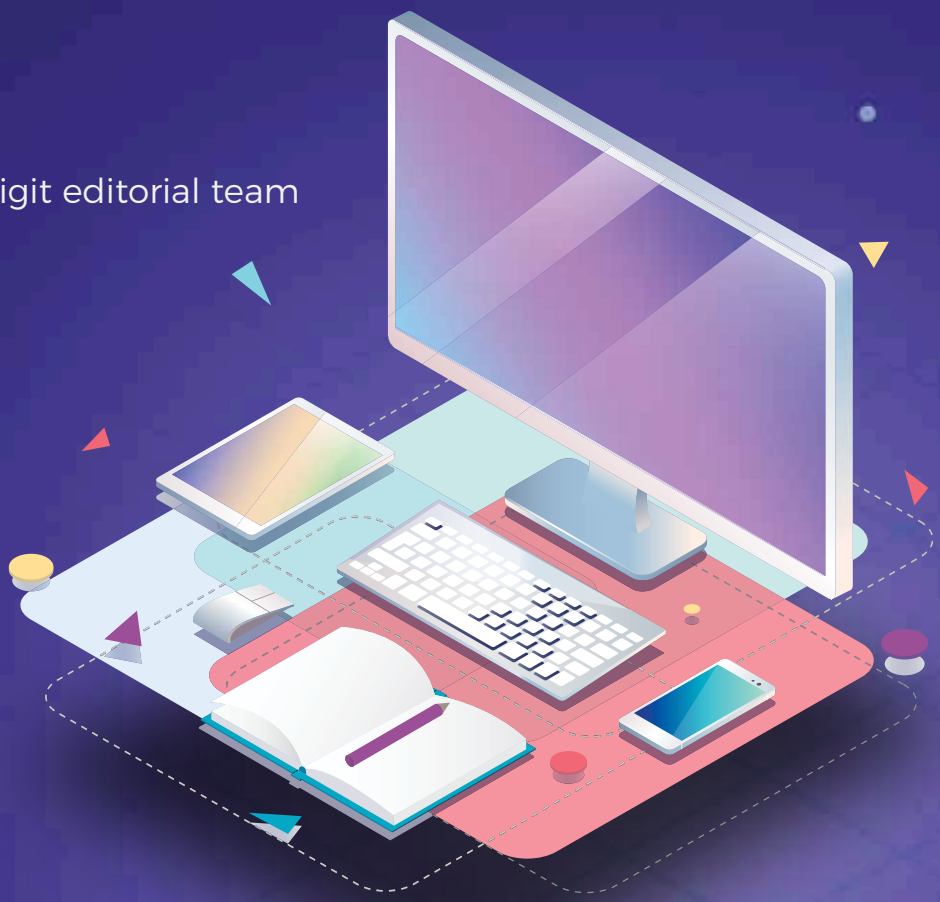

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