



HOT AND HYBRID p. 18



HEALTHCARE FROM A DISTANCE p. 26



DIGITIZING MARKETPLACE p. 34

₹100

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## LET'S GO AGILE

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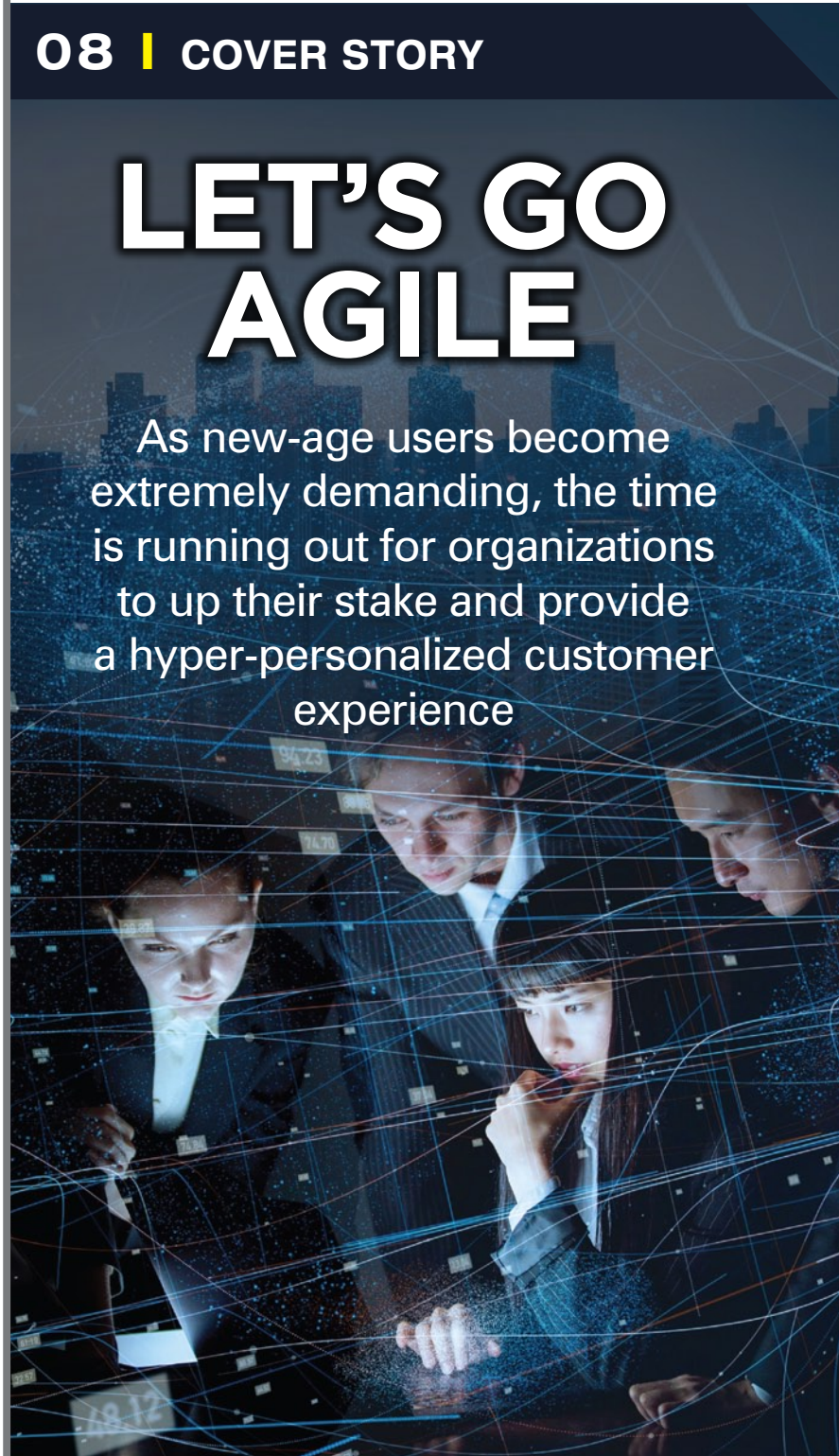
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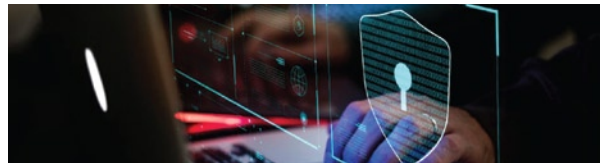
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Shubhendu Parth

## Scale up **Efforts for RAISE**

Talking about the role that Artificial Intelligence can play in improving human life at the virtual summit RAISE 2020 – Responsible AI for Social Empowerment – Prime Minister Narendra Modi said that technology has a big role to play in sectors like agriculture, creating next-generation urban infrastructure, and making disaster management systems stronger. The Prime Minister also said that “together AI and humans can do wonders for our planet”.

According to the AIMResearch report, as of July-August 2020 the AI market in India stood at USD 6.4 billion. The report indicated that IT services with a market share of 41.1% and technology sector – including software and hardware firms – with 23.3% captured the major chunk of the pie; followed by the BFSI sector with a 9.6% market share.

It may be recalled that in June 2018, NITI Aayog had released a discussion paper on the transformative potential of AI in the country. The paper projected that India could add USD 1 trillion to its economy by integrating AI. Since then, the government has approved Rs 3,660 crore-national mission for cyber-physical system technologies involving extensive use of AI, machine learning, deep learning, big data analytics, quantum computing, quantum communication, quantum encryption, data science, and predictive analytics.

But that is where the initiatives seem to end.

Early in 2018, there was a lot of media patting and noise that between 2013 and 2017 India had risen in terms of AI research and implementation and ranked third globally, after China and the USA. However, there is still a lot of ambiguity among policy and decision makers about applications of AI, and even after more than two years of the NITI Aayog paper, Government of India is yet to make a formal policy announcement or establish an AI strategy that is comparable to Europe, China, or the USA.

Interestingly, Japan has been focusing on a developing an integrated Society 5.0, while Germany has earmarked Euro 3 billion (approx. Rs 2,58,95 crore) for implementing AI strategy during 2019-2025. Germany’s strategy includes the mandate of integrating AI into society in ethical, legal, cultural and institutional terms in the context of a broad societal dialogue and active political measures.

While RISE 2020 can be seen as the reiteration of government’s commitment, there is a lot that India needs to do to become an AI global hub.

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# Let's Go Agile

As new-age users become extremely demanding, the time is running out for organizations to up their stake and provide a hyper-personalized customer experience





The year 2020 will always be remembered as the year of Coronavirus and the fact that it has pushed the world into a new reality, and the new normal. Organizations have increased their information technology (IT) capabilities and investments in order to aggressively push digitization and accomplish their transformation goals. While digital transformation can help solve specific business challenges, organizations are using the opportunity to also augment their IT and supply chain capability, and organizational agility.

A big question for many organizations that are looking forward to going the digital path is how to adapt, and what lies ahead in 2020?

Experts point out that businesses need to set themselves up for development today and in the future to improve customer satisfaction and engineering capacity by focusing on quality and bring disciplines together through connected pipelines. No wonder then, most companies – irrespective of their size and scale of operation – are focusing on IT investments to achieve their objectives.

IT capability does contribute to firm agility through enhancing inter-firm supply chain processes and role of IT-enabled intermediated processes and the ways in which IT is used by firms to upgrade core business processes. According to a McKinsey Global Survey of executives, over one-third of the companies have accelerated the digitization of their supply chains, over half of them have speeded up digitization of their customer channels, and two-thirds have moved faster to adopt artificial intelligence and automation. Many other workforce changes are also in progress.

Reports also indicate that adoption of digital and innovative solutions has helped improve business environment and increase business sector resilience during the pandemic. In fact, IT is fast emerging as a huge investment opportunity for both the industry and enterprises and today constitutes the largest single segment of the market, obscuring all others, including the financial and the industrial sector.

The pandemic has also brought to forth the fact that a sustainable future is the major need for us and only businesses that make bold moves during challenging times can turn adversity into advantage.

### DEVELOPING DIGITAL AND IT CAPABILITIES

Digital or IT capability is the term we use to describe the skills and attitudes that businesses need if they are

to thrive in today's world. At an organizational level, we need to consider the extent to which the culture and infrastructure of a business enables and implies digital practices. The use of ICT-based devices, platforms and services enhance the digital proficiency. It not only has an impact on businesses by reducing paperwork and overall documentation, it also enables the system to become a lot more transparent and plain-sailing.

According to ICICI Lombard Chief of Customer Service, Operations and Technology Girish Nayak, "We have always been at the forefront of using new technologies that help us in acquiring, retaining, or servicing our customers better. With ever-increasing customer expectations, customer-centricity has become more important than ever. Moreover, you no longer have years of time to experiment and get your model right in this VUCA – volatile, uncertain, complex, and ambiguous – world. Either you adapt or you perish."

He pointed out that the new normal warrants that insurance companies design new products and distribution partnerships that can suit the lifestyle of today's generation. "So, we continue to move in the direction of helping the customers to buy an insurance policy as seamlessly as possible and in settling claims for such policies in near real-time. Every interaction with the customer is helping us in better understanding their needs, which in turn has helped us in designing some of the new products and services."

"However," Nayak added that the agile and fast-moving world requires that organizations constantly keep looking for new and innovative technologies that can help in creating solutions for customers and stakeholders.

Nayak also highlighted that a lot of artificial intelligence (AI) and machine learning (ML) solutions for ICICI Lombard are developed in-house by data scientists who have learnt these skillsets on the job. "We have deployed these AI/ML solutions on the cloud platform. We have worked with both leading technology providers to arrange for training programs for our employees and in certain cases, company-specific hackathons, which has helped our employees to learn and also create solutions on these platforms," he stated.

In terms of developing capabilities, the World Economic Forum predicts that by 2022, over 42% of core skills required to perform existing jobs are expected to change and that more than a million jobs are likely to be transformed by technology in the next decade.



**YOU NO LONGER HAVE YEARS OF TIME TO EXPERIMENT AND GET YOUR MODEL RIGHT IN THIS VUCA – VOLATILE, UNCERTAIN, COMPLEX, AND AMBIGUOUS – WORLD. EITHER YOU ADAPT OR YOU PERISH**

– Girish Nayak, Chief – Customer Service, Operations and Technology, ICICI Lombard

“While it is true that there will be a larger need to develop technological and scientific skills, it is also going to be equally important to develop specialized skills in how people interact, collaborate, and create new products and solutions. The best way to learn some of these skill sets is to learn this in a real-world scenario. We constantly encourage our employees to develop innovative solutions using some of these new technologies,” Nayak said, highlighting the strategy of developing in-house capacity to meet the specific requirements.

Adds Mashreq Global Services (MGS)-India Senior Vice President and Head of Technology Sessa Sai: “As a global in-house centre for Mashreq Bank, we play an essential role by ensuring that the bank remains at the forefront of all technological development. The disruption caused by the pandemic has enabled us to fast-track our vision to redefine the banking journey by digitizing services end-to-end.”

According to Sai, to develop industry best IT capabilities, MGS has adopted a multi-fold digital transformation approach. “As the industry is working remotely, it is critical to adopt a cloud-native strategy and embrace a data-led culture by leveraging big data to ensure seamless and personalized experiences for customers. At an enterprise level, cloud enables us to induce collaboration amongst teams across various geographies. AI and blockchain have also significantly changed the technological dynamics in the financial services sector,” he said, adding that the organization has invested in these leading technologies to increase automation, reduce error rates, utilize resources better, leading to higher cost efficiencies for the bank and an overhaul in customer experiences.

“Another component which has helped us in our journey towards building robust IT infrastructure and solutions is ongoing partnerships with promising fintech companies.

The ecosystem comprises various players who bring their unique capabilities to the table. We believe in optimizing our solutions for our customers, whether by investing our own resources in building those capabilities in-house or engaging in fruitful collaborations with fintech startups to leverage their expertise,” he stated.

MGS has, so far, partnered with over five fintech startups that has enabled it to create quick go-to-market solutions across green banking, trade finance and payment investigations”

Still, many businesses that seek to go digital are not clear about the best way to set up their IT organizations and develop the tools and talent required to manage digital information and establish and maintain online services and automated processes.

According to Thoughtworks Chief Operating Officer Saptorsi Hore, “We build the organizational and technical capabilities needed to transform our clients into a modern digital business. We prioritize growing their experimentation and delivery muscle, which ensures clients are ready for any disruption that comes their way. We do this by applying design thinking, business strategy and tech to solve our client’s most pressing problems.”

Talking about the approach, he stated that the company focuses on delivering software incrementally, with cutting edge and relevant practices and tools. “This allows clients to market-test early and pivot, if needed, thus, constantly improving customer experiences. In our partnerships, we consistently help clients build software excellence into their organizations by leveraging a lean and agile culture. This ensures technology’s always at the core of the client’s business and stays an enabler.”

For telecom infrastructure major STL, the IT under digital transformation construct has four verticals centred on process design, it stacks, data science, and strategy





## MOST BANKS, IN THEIR JOURNEY OF ADOPTING NEW TECHNOLOGIES, FACE CHALLENGES IN INSTITUTIONALIZING PROTOTYPES AND TAKING THEM TO AN ENTERPRISE-WIDE SCALE

– Sesha Sai, Senior Vice President and Head of Technology, Mashreq Global Services – India

execution. “We are a forerunner in setting up its IT capabilities using the first principle design. We are investing heavily in building technology products and platforms to seamlessly manage our complex business needs and have been very successful in also making this all work in a location free world,” the company’s Chief Transformation Officer Nischal Gupta said.

Gupta further pointed out that STL’s investment in shifting cloud capabilities from over 10% to almost 70% has helped the company balance security, flexibility, and mobility, as also giving it the advantage of always keeping the company IT landscape up to date.

“We have developed a product in-house called InterSTLer that allows us to view the neural network of our global IT landscape from application to databases to server locations and all the STL platforms. This comes handy when we are planning our B2B integrations or even while deploying a new application, any new releases, or even to assess the upstream or downstream impact of any sunseting legacy app,” he stated.

But, in the fast-moving world of digital, finding the necessary tools and talent can be challenging. So, why do some digital transformation efforts succeed while others fail?

According to Sai, “Most banks, in their journey of adopting new technologies, face challenges in institutionalizing prototypes and taking them to an enterprise-wide scale. For many global banks, adhering to different regulatory requirements across multiple regions has proven to be challenging. However, we implement the best governance practices, and this has helped us in good stead. At an industry level, a common challenge we faced prior to COVID-19 was the adoption of digital banking among non-tech-savvy customers.”

He also highlighted that the pandemic-induced lockdowns has forced non-digital customers to embrace the digital banking space. “In the UAE, akin to India, the government

has encouraged customers to move away from manual transactions which has, in turn, supplemented our efforts towards digital banking education, and towards enriching user experiences. Our online front office representatives have played an essential role in getting them on-board and comfortable.”

While the bank and financial institutions may just be a case in the point, the same principle applies to all other sectors and the age-old best practice of think big, start small and scale fast still holds good.

### DRIVING DIGITAL TRANSFORMATION

Post-COVID businesses have fast paced their journey and had different experiences with regard to the business continuity and future of work. Most companies recognize and strategize for these digital differences and scaled up their online capabilities at short notice. To give themselves the best chance of success, CIOs and boards seeking to build their digital-leadership capability should start by understanding their current level of digital acceleration and where, specifically, they need to improve to meet their strategic goals.

Companies must also assess the digital expertise among their current leadership team to understand any gaps and determine the right expertise and model to meet their needs. Also, Digital technology has transformed consumer habits. Mobile devices, apps, machine learning, automation and much more allow customers to get what they want almost exactly at the moment they need it.

What’s more, these new digital technologies have caused a shift in customer expectations, resulting in a new kind of modern buyer who is constantly connected, app-native, and aware of what they can do with technology.

According to GPX Managing Director for India Manoj Paul, digitalization is now firmly embedded across all segments of Indian society. “The rise of new digital business models has played a crucial role in the rapid adoption of the cloud.



## DECENTRALIZATION, ALONG WITH INTEROPERABILITY AND FOCUS ON THE EXPERIENCE OF DATA CONSUMERS ARE THE KEY TO THE DEMOCRATIZATION OF INNOVATION USING DATA

— Saptorsi Hore, Chief Operating Officer, Thoughtworks

Enterprises are looking for on-demand scalability as the uncertainty of markets increases. Having a robust and agile architecture where the 3rd party datacenters and clouds are used optimally, is not an option anymore, but a mandate to be able to stay ahead in the game. With the usual office structures collapsing, enterprises are facing a massive challenge of re-establishing a new system relevant for the current times and that too, seamlessly.”

He also informed that enterprises can deploy “Enterprise Edge Nodes” at low-latency edge datacenters allowing them to choose from the multiple network and cloud connectivity options available and connect to them via a direct cross-connect owned and run by the company operating the data centre. “With the growth in WFH, digital financial transactions and growing use of video conferencing, the role of an edge data centre will become more critical. Enterprises will evaluate data centres with an eye on the ecosystem, which constitutes an essential parameter,” Paul added.

Sharing his experience from the financial sector Sai said, “The impact of technology has been profound on the banking sector as most of the systems and operations have moved from the traditional into the digital space. Digital and analytical tools will help banks scale, build flexibility and resilience for long term growth.”

In this dynamic, yet cluttered environment, organizations that accurately leverage new-age technologies like AI and ML and are able to hyper-personalize customer experiences and journeys, will stay ahead of competition. “We are in an age where customers expect seamless experiences and quick turnaround to queries. Through automation, not only can we cater to their requirements in a swift manner, but also fast track deployment of innovative products and solutions which would otherwise have taken months of planning,” Sai stated, adding that MGS has enhanced the

use of AI across its operations during COVID-19 due to the sudden increase in incoming digital volumes.

“AI in payments investigation protects our customers by identifying conspicuous or fraudulent transactions. We can now prevent credit card fraud using real-time data analytics and meet regulatory and legal requirements for corporate customers with complex needs with increased operational risk. We can thoroughly carry out Anti-Money Laundering (AML)/Know Your Customer (KYC) checks with minimal to zero human intervention. Further, the use of robotics and vision robotics has enhanced operational efficiency within the company,” he explained.

Sai further said that having spent six months in 2020 working remotely, devising, and implanting plans to introduce newer digital solutions to stay ahead of trends, he has seen the role of captives transform completely.

“Global capability centres have fast gained ground as business continuity and innovation partners in this critical time. The banking industry must reinvent technology which will help leap forward in terms of increased productivity and speed. The year has also taught me that digital readiness is critical at any given point in time. We must future-proof our systems in a holistic manner to create more flexible and secure platforms for any potential crisis or unexpected changes we may witness,” he stated.

### FUTURE PRODUCTS AND SOLUTIONS

COVID-19 caused people to adapt to working from home and in isolation. We have seen a lot of data analysis using internet of things (IoT) technology, big data and AI. In fact, AI is an ideal partner in this development because it can accelerate and complement human endeavours. Our current reality will inform future efforts to deploy AI in future development. In this new reality, ICT offers solutions to overcome some of the challenges thrown up by the pandemic.





**PRODUCTS AND SOLUTIONS NEED TO PROVE THEIR ROI BY DEMONSTRATING VALUE BY SOLVING REAL BUSINESS PROBLEM OR BY SUCCESS-BASED INVESTMENT RATHER THAN BY RING-FENCING YOU IN A LICENSING BATTLE**

— Nischal Gupta, Chief Transformation Officer, STL

Looking ahead at the future technology and solution trends, Hore stressed that Thoughtworks has been focusing on number of areas that include Continuous Delivery for Machine Learning (CD4ML), which is a software engineering approach that enables cross-functional teams to produce ML applications based on code, data, and models in small and safe increments.

“These applications can be reproduced and reliably released in short adaptation cycles. Data mesh claims that for big data to fuel innovation, its ownership must be federated among domain data owners who are accountable for providing their data as products. Data mesh also requires a new form of federated governance through automation to enable interoperability of domain-oriented data products. Decentralization, along with interoperability and focus on the experience of data consumers is the key to the democratization of innovation using data,” he stressed.

Hore further pointed out that in the Extended Reality (XR) space, hand-tracking allows a user’s hand to make the leap into virtual reality. An example is Stratos, UltraLeap’s underlying haptic, sensors and software platform, and it can use targeted ultrasound to create haptic feedback in midair. “A use case for this is responding to a driver’s hand gesture to change the air conditioning in the car and providing haptic feedback as part of the interface. We’re excited to see this technology and what creative technologists might do to incorporate it into their use cases,” he said.

Experts also point out that as of now, there’s no single blockchain that could achieve “internet-level” throughput. “As various blockchain platforms develop, we’re seeing new data and value silos. Cross-chain technology is a key topic in the blockchain community. The future of blockchain may be a network of independent parallel blockchains,” Hore said, adding that an example of this

is Cosmos, which, through Tendermint and CosmosSDK, lets developers customize independent blockchains.

“These parallel blockchains could exchange value through the Inter-Blockchain Communication (IBC) protocol and Peg-Zones. ThoughtWorks teams have had great experiences with CosmosSDK, and the IBC protocol is maturing. This architecture could solve blockchain interoperability and scalability issues.”

He also pointed out that there is a visible shift from accidental hybrid or whole-of-estate cloud migration plans to intentional and sophisticated hybrid, poly or portable cloud strategies, where organizations apply multidimensional principles to establish and execute their cloud strategy to host their data and functional assets based on risk, ability to control and performance profiles.

So how can organizations utilize their on-premise infrastructure investments, while reducing cost of operations? Also, how can they take advantage of multiple cloud providers and their unique, differentiated services without creating complexity and friction for users building and operating applications?

In a decentralized identity system, entities – discrete, identifiable units such as people, organizations and things – are free to use any shared root of trust. In contrast, conventional identity management systems are based on centralized authorities and registries such as corporate directory services, certificate authorities or domain name registries.

The development of decentralized identifiers, globally unique, persistent and self-sovereign identifiers that are cryptographically verifiable, is a major enabling standard. Although scaled implementations of decentralized identifiers in the wild are still rare, experts and IT heads are excited by the premise of this movement and have started using the concept in their architecture.



**HAVING A ROBUST AND AGILE ARCHITECTURE WHERE THE 3RD PARTY DATACENTERS AND CLOUDS ARE USED OPTIMALLY, IS NOT AN OPTION ANYMORE, BUT A MANDATE TO BE ABLE TO STAY AHEAD IN THE GAME**

— Manoj Paul, Managing Director – India, GPX

According to Hore, the technology landscape of organizations today is becoming increasingly complex with assets – data, functions, infrastructure and users – spread across security boundaries, such as local hosts, multiple cloud providers and a variety of SaaS vendors. This demands a paradigm shift in enterprise security planning and systems architecture. The move is from static and slow-changing security policy management, based on trust zones and network configurations to dynamic, fine-grained security policy enforcement based on temporal access privileges.

Zero trust architecture (ZTA) is an organization's strategy and journey to implement zero-trust security principles for all of their assets, such as devices, infrastructure, services, data and users, and includes implementing practices such as securing all access and communications regardless of the network location, enforcing policies as code based on the least privilege and as granular as possible, and continuous monitoring and automated mitigation of threats.

Similarly, security policies or rules and procedures that protect systems from threats and disruption are equally important. For example, access control policies define and enforce who can access which services and resources under what circumstances. Network security policies can dynamically limit the traffic rate to a particular service. "The complexity of the technology landscape today demands treating security policy as a code: define and keep policies under version control, automatically validate them, automatically deploy them and monitor their performance," Hore said.

In STL, the company is looking at IT products and solutions that enable self service, self configuration, and

are very agile to implement, particularly that do not bind the organization to any archaic licensing regime. "Many large plus traditional software providers have till now made money from their customers by locking you into long term license based agreements and by strategically spending more money on a battery of lawyers and compliance management than on a battery of developers and product managers with an agile framework and mindset," Gupta pointed out, adding that these providers will soon lose the competitive advantage as the world is waking up to open source, disaggregated solutions or very lite cloud offerings.

"Products and solutions need to prove their RoI by demonstrating value with application to solving a real business problem or by success-based investment rather than by ring fencing you in a licensing battle. The solutions have to get closer to solving real business problems. It has to be viewed as one with the eyes of the (business) customer and not to be pushed as a solution by the software provider. Else it is not a solution," he stressed.

Gupta also highlighted that STL is eyeing products and platforms that provides integrated business insights, small bits of pre-configured ML codes which can work on the most critical business metrics without having the company to worry about the speed of deployment or its adoption as the latter two should be a given.

To sum it up, he said that it will greatly enhance many ongoing trends that were already well underway before the outbreak and that will continue as companies shift their focus to recovery. Immersive new technologies can increasingly get their experience-based status fixes from virtual experiences.



# Leveraging CyberMedia Network During Covid-19



**FORTINET** | **DATAQUEST**

Standards-based Defence-in-Depth Cybersecurity for Operational Technology

19 August 2020  
03:00 PM - 04:30 PM

**Speakers:**  
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CT Cybersecurity  
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**DATAQUEST** | **Rockwell Automation**

Building a Roadmap for OT Cybersecurity

Tuesday, 28 July 2020  
03:00 PM - 04:00 PM

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**DATAQUEST** | **HITACHI**

Importance of Resilient, Scalable Infrastructure to Power Business Critical Applications

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Delivering on the Promise of Adaptive IP™

Monday, 13 July 2020  
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Digital Networks powered by 5G

Telecom for Enterprise and Social Growth

Thursday, 25 June 2020  
02:45 PM - 03:45 PM

**AJIAS** | **IBM**

A **PCQUEST** Webinar on

STRENGTHENING REMOTE WORK FORCE SECURITY

24 July 2020  
03:30 - 04:30 PM

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"SEE ME ANYTHING" WITH ARUN BABA, MD, GOOGLE CLOUD

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# Building Resilient and Flexible Network

For the joint venture insurance company, establishing centralized and secure connectivity for branches was a challenge until it decided to adopt software-defined WAN

Set up in 2008 as a joint venture by Canara Bank, HSBC Insurance (Asia Pacific) Holdings Limited and Oriental Bank of Commerce (now merged with Punjab National Bank), the Gurugram-based Canara HSBC Oriental Bank of Commerce Life Insurance has over 40 branch offices across India.

While planning for expansion – new, smaller branches – it became evident that the traditional setup could prove a challenge in terms of management and control, particularly since the organization intended to establish central and secure connectivity using the available low-cost public network with an enterprise-level security component.

“This was also well-timed for us as we were also planning to do away with the old network infrastructure and wanted to leapfrog to adopt the latest in networking technology,” Sachin Dutta, Chief Operating Officer, Canara HSBC Oriental Bank of Commerce Life Insurance said.

With their rigor to drive quicker delivery of secure, scalable, stable network environment at new locations, the company planned to migrate to the next-generation network by implementing SD-WAN and SD-LAN in the working environment.

“As we embarked on our journey to refresh the old network devices, we evaluated the market, measured business growth plans and consulted various partners in this space. We reviewed the challenges of setting these branches in a traditional way and found that the cost incurred and time required on setting up these branches was very high,” he explained.

According to Dutta, while traditional MPLS setups guaranteed uptime and limited packet drop, it required more time for setup and there was a clear disadvantage in terms of cost and flexibility. Maintenance and change management also acted as a roadblock at times.

“We had the option of continuing and refreshing the traditional network with the set of new devices, but we

## Key Learning

- Be clear on the business ask
- Evaluate how technology can enable the growth of business while making it resilient, flexible and secure
- Do proper sizing, review cloud readiness, and dependency on existing architecture
- Explain the requirements and business objectives to the vendor and solution partner in clear terms
- Conduct an internal assessment to bridge the gap between the current and the “go-to” state
- Do not follow what others are doing

dropped the idea and decided to actively pursue SD-WAN because of its flexibility, scalability and activation,” he stated.

Canara HSBC Oriental Bank of Commerce Life Insurance initiated the project in November 2019 and completed it in over five months, in March 2020.

## ROLLING IT OUT

The process began with the partner selection process – review of solution design, implementation timelines, and post-production management of the environment. This also included a review of industry-leading solution with a strong implementation experience. The team also consulted partners and industry counterparts who had already adopted SD-WAN and had been reaping the benefits.

“We initiated the deployment with the network design and planning phase, under which we reviewed the existing WAN and LAN setup and deployment of the central environment. This was followed by the deployment at the branches,” Dutta stated.



## THE COMPANY STARTED ITS JOURNEY OF REDEFINING AND INCORPORATING NETWORK ARCHITECTURE REDESIGN TO BRING IN AGILITY AND SUPPORT BUSINESS GROWTH

— Sachin Dutta, COO, Canara HSBC Oriental Bank of Commerce Life Insurance

“The deployment of our SD-LAN built on Software-Defined Access provided automated end-to-end segmentation for separate users, devices and application traffic without the need to redesign the network,” he added.

The setup automates user access policy so that organizations can make sure the right policies are established for users and device for all application across the network and this was accomplished with a single network fabric across LAN and WLAN. “This has helped create a consistent user experience anywhere without compromising on security.”

Interestingly, the company has a hybrid structure at present as it continues to retain MPLS for certain applications. However, it has chalked out a phase-wise plan to do away with the old network system and components one by one.

“Clearly, the objective is to build the experience, gain more confidence, and then expand. An SD-WAN edge router provides this capability to route the traffic dynamically over various channels and data services which include MPLS, broadband, and LTE,” Dutta said, adding that while moving away completely from MPLS will take time. “We will continue to apply the security architecture to both. We are also evaluating its capability to integrate over the cloud solutions.”

One of the key reasons for the smooth rollout was the company’s clear focus on the business ask. The implementation team also evaluated how technology can enable the growth of the business while making it resilient, keeping it flexible and secure. The team also focused on proper sizing of requirements and conducted an audit of its cloud readiness and dependency on existing architecture.

Another factor that made a difference was its ability to

clearly explain the requirements and business objectives to the vendor and solution partner. “The deployment partner with its prior experience ensured that we don’t face any challenges. The transition has been quite smooth with no disruptions, thanks to a comprehensive environment and design review that we initiated for the deployment,” he said.

### HOW DID IT CHANGE THE NETWORK?

The company started its journey of redefining and incorporating network architecture redesign to bring in agility and support business growth. It also strongly believes that backend infrastructure provides necessary resilience, flexibility, cost optimization, agility, and user experience required for the businesses with aggressive growth plans.

“Resilient, flexible, agile, and secure network design is critical to the success of any enterprise,” the COO said. He further added: “The setup is relatively new and we are also adjusting to this internally. The solution will be adopted in any new branch that we open up in the future and we will measure the agility and security. At the same time, the existing solution for the current set of branches has also been upgraded where we see better resilience and uptime.”

He also explained that the maintenance of the new setup is easy, while another big advantage is the ability it provides for real-time monitoring since the solution is powered by software-defined capabilities as compared to hard and rigid routing found in the older setup.

However, with the COVID-19 and the lockdown that has forced its employees to operate from home, the company has not been able to evaluate the real benefit of the deployment. “It will be seen once we start to operate out of these branches in full force,” Dutta said.



# Hot and Hybrid

Idle resources, visibility, hidden costs, security loose-ends and complications of provisioning – can the hybrid cloud addresses such on-ground issues?



**W**hen Cloud came in, it not just disrupted the IT industry, but also dislocated and disoriented a lot of its parts. Soon the “whether or not” question changed into “which one”. Thankfully, hybrid cloud solved the big public or private dilemma by melting the or into a sort of and.

The adoption appetite clearly mirrors the enthusiasm that this welding of two different worlds has led to. Hybrid/multi-cloud has been noted as the predominant strategic posture to manage digital-era IT and business transformation with 62% of enterprises pursuing a hybrid IT strategy, as per 451 Research’s Voice of the Enterprise (VotE): Digital Pulse, Budgets and Outlook 2019. Similarly, an Everest Group Research indicates that 58% enterprise workloads were observed to be on or are expected to be

on hybrid or private cloud. In fact, the projected market value of the hybrid cloud infrastructure market is as big USD 128.01 billion (Mordor Intelligence).

Ok, Hybrid cloud is hot. But it does have one distinctive issue to reckon with: that of idle resources and over-provisioning. That’s not just one issue. It trickles into many more problems.

## **PROVISIONING – PLAYING THE TETRIS**

Organizations are, increasingly but not completely, becoming aware of the idle resources in their cloud infrastructure. According to Shrikant Navelkar, Director – Oracle Relationships, Clover Infotech, “They are realizing that these idle resources are a cause of unnecessary costs. Idle resources result from not having complete visibility



**ORGANIZATIONS MUST HAVE COMPLETE VISIBILITY ON WHEN THE RESOURCES ARE REQUIRED, AND THE IT TEAMS MUST HAVE AUTONOMY TO DECIDE AND PLAN THIS WELL IN ADVANCE**

– Shrikant Navelkar, Director – Oracle Relationships, Clover Infotech

into the cloud utilization and hence procuring resources on the cloud much before it is required. Hence, organizations must have complete visibility on when the resources are required, and the IT teams must have autonomy to decide and plan this well in advance to ensure better return on cloud investments.”

Until recently, enterprises had not necessarily spent too much time studying the idle resources and costs in hybrid cloud environments. According to Kumara Raghavan, Director, SDI, HPC and AI, Lenovo Data Center Group, APAC, since cost has now become an issue, a lot of organizations are now looking at tools that can help them drive financial accountability and deliver accurate visibility into resources and utilization. “Idle resources also present a security threat, as these resources might not get updated to security protocols causing security vulnerabilities. Once idle resources are identified, IT teams can manage and secure these resources easily,” he added.

Cost Management is, and should be a continuous effort, stressed Narendra Bhandari, Senior Vice President at Persistent Systems. He further explained that this will also help build effective policies on moving workloads around and a case for modernizing traditional and

custom workloads to take advantage of Containers and rearchitecting code using Microservices.

**THE LONG TAIL – SECURITY AND INTEGRATION BUMPS**

The word ‘idle’ can be spelt in many ways and interestingly, one of them is ‘fragile’. There is a security implication of these extra machines sitting in the dug-out area. “Organizations clearly understand the need for strong cybersecurity and are quickly realizing the benefits of security-as-a-service. But, as companies migrate to the cloud, the attack surface also expands. This has led to a surge in cyber attacks and many companies are struggling to prioritize projects and tools that can best protect their people and business,” Rohan Vaidya Director of Sales – India, CyberArk stated.

Poor integration and weak deployment velocity of cloud investments also wreak an unexpected blow for developers and security teams alike. Ask Vaidya and he holds a mirror to the not-so-pretty reality out there. “Quick and dirty is a well-versed term when it comes to IT professionals who want to get things done to support the business demands. The business team is constantly



**VISIBILITY IS THE KEY ASPECT WHILE MANAGING SECURITY IN AN ENVIRONMENT WHICH SPANS OUTSIDE THE ORGANIZATION TO CLOUD (HYBRID OR PUBLIC)**

– Murtaza Bhatia, National Manager – Vertical Solutions, NTT Ltd. (India)



## COST MANAGEMENT WILL HELP BUILD EFFECTIVE POLICIES ON MOVING WORKLOADS AROUND AND A CASE FOR MODERNIZING TRADITIONAL AND CUSTOM WORKLOADS

– Narendra Bhandari, Senior Vice President, Persistent Systems

under pressure to catch up with either customer demands and adapting to the external environment or changing the competitive landscape,” he said, adding that their time-to-market in the modern times has a high dependency on the technology teams which support their business applications.

“It’s a tough situation to always balance the velocity of deployment and security guidelines. General perception of non-critical applications or infrastructure may not need as much attention to security guidelines. A modern hacker has been exploiting these vulnerabilities. Emerging technologies give ample of these opportunities for the hacker to exploit effortlessly,” he said.

Among the companies surveyed for Palo Alto Networks Asia-Pacific Cloud Security Study conducted by Ovum Research in India, nearly half (47%) were seen to operate with more than 10 security tools within their infrastructure to secure their cloud. However, according to Riyaz Tambe, Director – Sales Engineering, India and SAARC, Palo Alto Networks, “Having numerous security tools creates a fragmented security posture, adding further complexity to managing security in the cloud, especially if the companies are operating in a multi-cloud environment.”

### ONE MORE RIPPLE – THE DEVELOPER SIDE

The issue of weak integration or clumsy deployment is not restricted to hybrid cloud environment alone, and Navelkar dismisses the idea of putting hybrid clouds in a spotlight here. “This can happen on other infrastructure as well.” He maintains though that the damage that is caused by these things pose heightened burden on developers and security teams. “For instance, if an application is migrated from on-premise to Cloud and it is not integrated well then it will not yield the desired results in terms of performance, output, and strategic impact. The developers would have to then understand the root cause and impact areas and fix

the issues. Such activities will consume their time, which could otherwise be channeled towards productive areas such as new product development and enhancements.”

What eventually happens is that poor integration and weak deployment can increase the perils of data breaches which would imply that the security teams will face unprecedented challenges, unless they closely guard the deployment and integration and take appropriate action proactively.

During that first phase of cloud migration, as Richard Beckett, Public Cloud senior product marketing manager, Sophos described, you are likely to build that infrastructure manually in the cloud provider console, clicking on the console to create your VPC, to create your network, to create your instances, configure security groups and so on.

“But, this infrastructure can be hard to replicate exactly – so when a new development environment is required that mirrors the live production environment exactly, or the organizations need to replicate the infrastructure in another region, it’s very difficult without a recipe to create that exact same infrastructure. And those slight variations in configuration are bad news, not only because they create weak deployment velocity, but they also create bugs and security issues,” Beckett stated.

This issue is compounded as you add more developers, each requiring their own environment. Organizations can end up with development, test, and production environments that will be different. Different OS versions, configuration settings – something will not be aligned. And that all leads to application bugs when each team merge their changes to the live system, and a nightmare for security and operations teams who need to fix security and reliability issues across slightly different environments.

According to Beckett, “To solve that problem, infrastructure as code templates allow development





## ORGANIZATIONS CLEARLY UNDERSTAND THE NEED FOR STRONG CYBERSECURITY AND ARE QUICKLY REALIZING THE BENEFITS OF SECURITY-AS-A-SERVICE

– Rohan Vaidya, Director of Sales – India, CyberArk

to describe infrastructure as a text file – called a Json file. And even better, it will allow teams to update that file to make individual changes once built and increase velocity.”

Tambe suggests it is ideal for organizations to have a central console that uses technologies such as artificial intelligence to help prevent known and unknown malware threats, and quickly re-mediate accidental data exposure when it arises. “Start automating threat intelligence with natively integrated, data-driven, analytics-based approaches (leveraging machine learning/artificial intelligence) to avoid human error.

Experts like Murtaza Bhatia, National Manager, Vertical Solutions, NTT Ltd. (India) believe that an environment that is seamlessly integrated with security controls and visibility solutions that mutually share contexts among them enhances visibility. “It also provides rich data to make it much easier for the automation function to correlate with the information being generated. Integration plays a key role to exchange context between the on-premise and cloud security controls so that uniform policies can

be applied on infrastructure and services spanning across on-premise and cloud,” Bhatia stated.

He further added that for this to happen, the application must have ‘secure by design’ principles, which requires developers to run the SDLC and move security testing towards the left of the cycle. “This can lead to conflicts between security and development teams in moving the code to production because of testing at each phase of the cycle. However, this can be overcome with the use of modern security testing tools that automate testing processes on code check-in and reveal corresponding vulnerabilities. This provides IT and system integrators with the tools needed to account for each stage of the life cycle – from design, development to deployment and beyond.”

### ONE FOR THE ROAD

These may be uncomfortable questions, but enterprises will have to anticipate them, pre-empt them and confront them.

Incidentally, the 451 Research pointed out an unexpected drift catching up in the enterprise landscape. Enterprises may not be ‘avoiding’ complexity, but actually ‘choosing’ it for the value it delivers in the form of differentiated offerings, more efficient applications, happier customers and lower costs. They want to chase ‘optimization’ rather than ‘resolution.’ It is not just simplification of complexity that they are after but something else. They do not want to lose the value that complexity has created and that’s where ‘optimizing’ helps because it lets complexity remain – but ‘manages’ it.

Counterintuitive and strange, but when has IT been predictable and straight all these decades!

Whether the car goes back in your own garage or a parking lot, a flat tyre can still spoil a good day. What ultimately matters is keeping the toolbox around. And one that works for you.

### India Security Stats

- Enterprises in India with more than 200 employees are not prepared for cloud-related cybersecurity threats, and more importantly, make the assumption that public clouds are secure by default.
- Over 72% of security decision-makers in these enterprises in India believe that the security offered by cloud providers is sufficient to protect them from a cloud-based threats.
- 65 % of all the data breaches reported were based on misconfigurations.

Source: Asia-Pacific Cloud Security Study; Ovum Research. Commissioned by Palo Alto Networks

# The Next Big Wave

With remote healthcare becoming the new normal, India is fast adopting AI to improve human-machine collaboration and drive better patient care



**T**he introduction of information technology in healthcare at various points in history has been largely hailed as watershed moments. Nobody can doubt about the potential of artificial intelligence (AI). When it comes to healthcare sector in India, AI is the new age wheel or fire, which can

revolutionize the entire landscape. Healthcare today, faces significant challenges on quality, accessibility and affordability, for a large section of the Indian population.

At its core, much of healthcare is pattern recognition. It is used across six healthcare segments: hospitals,



## AI-ENABLED SYSTEM IS REQUIRED DUE TO THE BUDGET CONSTRAINTS, RISING COSTS OF ADVANCED MEDICAL TREATMENTS, INCREASED COMPLEXITY, AND COST OF DELIVERING HEALTHCARE

pharmaceuticals, diagnostics, medical equipment and supplies, medical insurance, and telemedicine.

AI enables healthcare services to be delivered at minimum cost with increased efficiency, and an emphasis on the diagnostics. It is also used to predict, comprehend, learn and act. It has the ability to play the main role in the areas of wellness, early detection, diagnosis, decision making, treatment, research, and training. India comprises of a healthcare ecosystem where 80% of the healthcare is expensive. And, 70% of our population is living in rural areas with marginalized, inaccessible healthcare.

For a population of 1,280 million, India has 1,012,000 doctors. Of these, 74% cater to only a third of the urban residents. In other words, there are only about 263,000 doctors catering to the majority of Indians residing on the fringes of urban settlements and in rural areas. The applications of AI can improve the doctor's efficiency and help in tackling challenges like uneven doctor-patient ratio by providing rural populations high-quality healthcare, and training doctors and nurses to handle complex medical procedures. An AI-enabled intelligent support system is required due to the budget constraints, rising costs of advanced medical treatments, increased complexity, and cost of delivering healthcare. There are the increased expectations and demand for quality patient-centered healthcare, as well.

This has resulted in multi-fold of benefits in areas such as drug discovery, personalized care for chronic diseases, predictive healthcare diagnosis, and automation of medical tests. It also enables efficient healthcare delivery and in detection of abnormalities through medical images. The utilization of data analytics to understand the causes of the pandemic is reflective of the substantial transformation in the potential of organizations and governments to collect

a massive amount of data, and use AI algorithms to harness them. Covid-19 has turned out to be a blessing for healthcare. It has made the government and policy makers realize that the healthcare infrastructure needs to be improved drastically.

According to an IDC report "Artificial Intelligence in India Healthcare in the Time of Covid-19", more than 50% of the healthcare organizations expect an increase in demand for AI-based solutions during and after the pandemic in the Asia-Pacific region (excluding Japan). This indicates the importance of healthcare tech and highlights that healthcare organizations in India are working towards enabling human-machine collaboration and AI-driven interfaces to address the future care needs in the country.

### WHY THE RISE?

The IDC report zooms in on certain potential AI start-ups in India by underlining their innovative solutions, as well as, examining the barriers for healthcare organizations in adopting AI solutions. According to Manoj Vallikkat, Research Manager for Healthcare Insights, IDC Asia-Pacific, "COVID-19 has accelerated the adoption of intelligent technologies in the Indian healthcare sector, with hospitals and pharmaceutical companies looking at AI to enhance the accessibility and automation."

Vallikkat also highlighted that as part of resiliency measures, hospitals have adopted telemedicine, robotics, chat-bots and image-based diagnosis to redefine care delivery. This trend will create digital patient data. Hence, many of the systems are set to embed AI solutions. Though the current focus is in ensuring remote care accessibility, fast diagnosis and contactless screening, as part of crisis management, AI adoption will find surge in





**- MANOJ VALLIKKAT**  
Research Manager for Healthcare  
Insights, IDC Asia-Pacific



## DIGITAL HEALTH ID WILL BOOST EMR ADOPTION

### Why are healthcare organizations expecting a rise in demand for AI-based solutions now?

Though the pace of adoption has been slow, artificial intelligence- (AI) based solutions have been penetrating the Indian healthcare organizations, and even before COVID-19. The pandemic has, however, accelerated the adoption of intelligent technologies in the country with hospitals and pharmaceutical companies looking at AI to enhance the accessibility and automation. As part of resiliency measures, hospitals have adopted telemedicine, robotics, chatbots and image-based diagnosis to redefine care delivery.

This trend will create digital patient data. Hence, many of the systems are set to embed AI solutions to further leverage the technology. Though currently the focus is on ensuring remote care accessibility, fast diagnosis and contactless screening as part of the crisis management, we can soon expect adoption of AI to surge in early detection, prevention and for more accurate targeted treatments.

### How can human-machine collaboration and AI-driven interfaces address future healthcare needs?

IDC foresees that human-machine collaboration and AI-driven interfaces are revolutionizing the future of work in healthcare systems and hospitals. Such human-machine collaboration will become more relevant to Indian healthcare

delivery system, with the country suffering from less than one doctor for 1,000 people. Future needs in India, such as faster and accurate diagnosis, remote patient engagement, and early diagnosis, will get strong support from AI in augmenting physicians' efficiency.

### How do you see AI changing the healthcare sector in the country?

Moving forward, Indian healthcare system will witness increased adoption of EMR as the private care constitutes more than 70% of the market. They realize the need for digitalization. Of course, apt government policies would complement these efforts.

Leaders of healthcare providers will have to give priority to data governance, data ethics and data trust to ensure efficient, outcome-based care delivery system. Government needs to firm-up policy frameworks for better control of the digital data. Investors have started mandating that healthtech providers establish codes of ethics as they develop AI solutions, by leveraging the most sensitive data. Data ethics concept adds confidence of the stake holders, resulting in increased adherence.

The CIOs of healthcare providers will start prioritizing data excellence as their organizations migrate from fee-for-service model to value-based care. Data stewards will have critical role to play in ensuring the 'trust' factor, enabling integration and interoperability of data.

### EMRs have been around for long. Where does India stand on adoption front?

The adoption of electronic medical records (EMR) in India is currently at a nascent stage. The healthcare organizations in the country are now prioritizing digital assets. There is an increased focus on EMR in the country aimed at encouraging the adoption and scalability of digital health solutions.

With the need for digital health drive triggered by the pandemic, going ahead the healthcare leaders in the country will focus more on the adoption of EMR. Enhanced awareness, incentivization, lower cost of adoption, adaptability, upskilling and strict data policies would drive the EMR adoption in India. The recently announced national digital health ID will also encourage organizations to adopt EMR.

### What is the status of the clinical decision support system (CDSS)?

CDSS is being used in certain hospitals and yet to attain widespread acceptance and adoption in the country. The government drive towards the deployment of digital health ID is set to revolutionize the creation of digital patient data and boost the EMR adoption. This initiative will have long-lasting benefit as the patients will be the primary owners of healthcare data. This could lead to the creation of common platform for patient data. Anonymized data could further be leveraged for CDSS kind of solutions, with strong algorithms.

As the complexity of diseases increases, to ensure value-based care system, physicians would look for support on CDSS, leveraging on the power of patient data.



## AS PART OF RESILIENCY MEASURES, HOSPITALS HAVE ADOPTED TELEMEDICINE, ROBOTICS, CHAT-BOTS AND IMAGE-BASED DIAGNOSIS TO REDEFINE CARE DELIVERY

early detection, prevention, and more accurate targeted treatments, moving ahead.

He also pointed out that CIOs of healthcare providers will start prioritizing trusted data as their organizations migrate from a fee-for-service model (FFS) to value-based care. “Data stewards will have a critical role to play in ensuring the trust factor,” Vallikkat stated.

### HUMAN-MACHINE COLLABORATION

AI technologies are not merely technical, but rather sociotechnical, and the impact of these applications is closely dependent on the sociopolitical contexts in which they are deployed. The utilization of AI and data analytics to understand the causes of the pandemic is reflective of the substantial transformation in the potential of the organizations and governments to collect a massive amount of data and use AI algorithms to harness them.

India has successfully developed and deployed indigenous mobile apps to provide instant notifications, if the exposure to a COVID-19 infected person has occurred. Government health officials and epidemiologists then use such data sets to track down and screen the exposed individuals and create hot-spot zones where stern isolation is implemented.

Added Rishu Sharma, Principal Analyst, Cloud and Artificial Intelligence, IDC India: “We are seeing the demand for AI/ML bolster in the Indian healthcare space primarily driven by use cases like diagnosis, drug discovery, patient monitoring, and others. Although the cost, lack of skilled personnel, and data trustworthiness, are among the top barriers in the adoption of AI solutions, digital patient data, access to resources, and expertise in selecting the right algorithms will gain priority in the

areas to be addressed for the healthcare organizations in the country.”

Vallikkat noted that IDC foresees human-machine collaboration and AI-driven interfaces revolutionizing the future of work in health systems and hospitals. Such human-machine collaboration will become more relevant to Indian care delivery system, with the country suffering from less than one doctor for 1,000 people. Future needs in India such as faster and accurate diagnosis, remote patient engagement and early diagnosis will get strong support from AI in augmenting physicians’ efficiency.

### SMART HEALTHCARE

IoT is likely to see large adoption across major verticals, such as smart manufacturing and smart healthcare. On the smart healthcare front, AI adoption can transform medical datasets into enablers of process optimization and service area extension.

Still on smart healthcare, collaborative robots or cobots have found their way into medical applications. They are used for a variety of reasons, such as swab testing, sterilization, and mobilized disinfection, disinfection of aircraft seat arm rests, to alleviate the possibility of repetitive strain injuries or infections in humans.

Experts also point out that medical electronics is a segment that now needs full attention, and with the government already promoting clusters in medical electronics, these can grow into an ecosystem. Besides, the IDC report highlights that AI adoption in India will gain momentum with the recently announced ‘Digital Health ID’ by the government. This will also generate an increased number of digital assets, leading to enhanced AI-based solutions to augment physician efficiency in the Indian healthcare system.



—ALOK AWASTHI  
Founder, SeekMed

*SeekMed is a global telemedicine platform that allows patients from anywhere in the world to seek professional and ethical medical advice from India's award-winning and eminent doctors via video consultation. Alok Awasthi, Founder, SeekMed, discusses his work with us*

**W**hat is the foreseeable impact of the Prime Minister's newly-announced National Health Mission on the Indian digital healthcare sector?

This was a much-needed action from the government to optimise the healthcare industry of the nation that serves over 1.3 billion people. Having an individual health ID for every citizen would help in increasing accessibility of healthcare facilities, and ensure deeper penetration of services to the lowest levels of the social pyramid.

During the Covid-19 crisis, the masses have realised the need for digitisation in healthcare. This is an important step that will open doors for numerous technological integrations in the future.

## “ HEALTHCARE FROM A DISTANCE



The pilot project that is being run in 6 union territories would help get a clearer picture of the way ahead, but from the looks of it, the mission seems beneficial for the people specifically the ones from remote areas who currently have limited access to quality care.

NDHM is going to unlock avenues for smarter healthcare delivery, biomedical research and data driven decision-making in India. In many ways, this will set a global benchmark as no other nation would have such a huge medical database covering a significant portion of the population. This would be instrumental in the implementation of better healthcare management policies, and would also make healthcare awareness programs more effective by minimising the gap among various stakeholders in the Indian healthcare system, such as patient community, doctors, pharmacies, hospitals and health insurance providers.

#### **How would the need for stricter guidelines required for data protection in India be addressed?**

While data privacy remains a concern due to the unavailability of adequate laws that are imperative to protect medical records of the patients, there is always a scope to develop norms before the full-fledged implementation of the Health ID. Enforcement of the Digital Information Security in Healthcare Act (DISHA) and Personal Data Protection Bill 2019 (PDPB) is essential for solving the present data security concerns.

The transparency that this mission is going to bring would help in scrutinising and eliminating many unnecessary health procedures that are quite common in India. Many patients lose life due to misleading information and unnecessary treatment processes as a result of unethical practices. Improved oversight will help in weeding out quacks that pose a huge risk for the patients across the country. I also believe that there needs to be a system with qualifying criteria that allows healthtech solutions like SeekMed to access medical records with complete knowledge and consent of the patient.

#### **What is the importance of data security in the digital healthcare industry?**

This health ID that is going to be in the form of a mobile application would help unify all medical records and promote better management of records. Simultaneously, it would also provide patients with the option to choose

the duration for which they want to share their information with specific organisations (hospitals, doctors, insurance companies, and more). This would ensure the privacy of patient data and avoid unintended use. Integration of the digital health ID and Aadhar card is expected to make the process more effective and efficient, helping masses avail the benefits of various government health schemes. This is going to empower the patients as all long drawn unnecessary administrative procedures would be shortened for timely delivery.

People have to understand the more they use email, social media, drives to share medical records, the higher is the risk of data theft through various malware. Even in the USA, it is an administrative burden to accurately transfer a patient's past medical records between doctors/hospitals and due to human intervention, there is always a risk of error and lag. However, this Health ID, if implemented properly, would solve the issue of data interoperability in India.

#### **What recommendations should start-ups and other telemedicine platforms follow to secure EHRs; like, practising good cyber hygiene, building firewall protection, a virtual private network and most importantly staff training to avoid adversities?**

High levels of data security can only be achieved with strict guidelines and norms levied by the government. At SeekMed, our platform is HIPAA (United States's Health Information Privacy law) compliant and provides end to end encryption to patient's data. Data is saved in the cloud (AWS) with servers located in India. Being a global telemedicine platform, we always strive to meet international standards in everything that we do.

Our quality focus is reflected not just in the doctor profiles we're onboarding but also in technology, data privacy and customer service. It's a fallacy that cyber vigilance is all about technology, although it plays a major role in it. It's also about people and processes. Tele-medicine players must adopt processes that value patients' sensitivities around their medical records and securely handle patient information. This is easier said than done but a sustained focus on the importance of patient data and continuous innovation will not only build trust with Indian patients but also further strengthen India's position as the foremost medical tourism destination for the global patient community.

# Vision for the New World

Cloud computing will provide abundant resources and control levels in the network infrastructure to provide protection of data in the next five years

In the past decade, almost every aspect of the digital world has been linked to the cloud in one way or another and as more industries, tech giants find better ways to process data in the wake of the pandemic, uses of the cloud may astonish a lot of industry players. Cloud computing, a billion-dollar economy, has grown to a vast and complex ecosystem of advanced technologies. The cloud is ubiquitous, but invisible, which is one of its strengths. It doesn't take up space and allows data to be shared effortlessly. The cloud ecosystem is composed of three primary types: public cloud, private cloud, and hybrid cloud. The scale of the global demand for cloud computing services is influenced by several variables, including cost-effectiveness and technical capabilities.

The huge processing power of the cloud eliminates ambiguity allowing companies to make decisions with greater confidence than ever before. All this only touches the surface of what's possible using the cloud today. Indeed the importance of cloud computing will grow significantly during the next five years. Here's how.

## CLOUD COMPUTING TRENDS

According to reports, India data center market size is expected to grow at a compound annual growth rate (CAGR) of over 4% during 2019-2025 and cross USD 4.5 billion in the next five years. The cloud market will drive the adoption of Infrastructure as a service (IaaS) at a CAGR of 20% between 2020 and 2025, while the global cloud computing market size is expected to grow from USD 371.4 billion in 2020 to USD 832.1 billion by 2025, at a CAGR of 17.5% during the forecast period.

**Cloud computing and big data analysis will become the leading enterprise technology.** The old-style data processing applications are challenged by big data technology in capturing, storing, analyzing, transferring, visualizing, updating and sharing large amounts of simple and complex data. The three key areas that big data has challenged in the recent years are: volume, variety, and velocity.



Data consumption by users will explode on all online platforms leading to a better understanding of behavioural data points, engagement trends, and subsequently drive better industry-consumer relationships. In the next five years, we will further see development with variations in cloud enlargement and complex data trends improving the technological landscape of IT businesses.

**Modular Programming will become a significant technology.** It is a type of computer software design technique that divides the functionality of a program into autonomous interchangeable segments to implement a particular aspect of the preferred functionality. Cloud computing requires complex modified software and with modular programming, it can provide better security, facilitated to the businesses.

Software programs will become more user-friendly and flexible for all types of consumers. Application of modular programming will provide the biggest advancement to IT industries in terms of cost-cutting and budgeting, as well as time-saving. In the next five years, software development will lead to applications being stored on the cloud as well as different modules and cloud servers. We will see a reduction in the cost of software by a large number as storage of modules of programs on varied storage mediums is economical.



## THE HUGE PROCESSING POWER OF THE CLOUD ELIMINATES AMBIGUITY, ALLOWING COMPANIES TO MAKE DECISIONS WITH GREATER CONFIDENCE THAN EVER BEFORE

**Cloud computing will vastly contribute to revenue generation.** It helps industries improve their overall efficiency and in fostering modernization, not just in maintaining the status quo and traditional software systems. In leading the technology market, the internet of things (IoT) is colossal, as it possesses real-time data analytics on the cloud. It is predicted to use better machine-to-machine communication, data processing with the help of cloud thereby generating more revenues for the industries.

According to a survey, 87% of industries are considering cloud as an important force in revenue growth and expected to fully function on the cloud as their decision markers for future success. Global establishments consider that their ability to effectively apply this technology will be a deciding factor for better revenue generation.

Cloud technology will improve security. As industries transfer large amounts of infrastructure and data to the cloud, they need security. Cloud computing will provide abundant resources, control levels in network infrastructure to provide protection of data in the next five years. Overall, there are three key components of cloud security.

- **Data Security:** Cloud computing will help to provide protocols that protect simple and complex company/user data, sensitive transactions, dealings, information exchange. It will ensure that a third party does not have access to any company data without consent.
- **Flexibility:** It will provide flexibility in data storage infrastructures for the industries. The level of security during high traffic can be protected from crashing by scaling of cloud solutions. The security levels can be scaled down during less traffic to lessen the costs for the company.
- **Compliance Preservation:** Cloud computing technology solutions in a controlled business environment will help manage and preserve improved infrastructures for compliance to protect financial data of the company.

It will contribute in a big way to AI and Machine Learning (ML). Different models of AI and ML use large arrays of

data that are applied to various algorithms. This makes use of cloud computing an imperative. The models gather patterns from large data sets and learn better accuracy, forecasting, and predict better results. For instance, ML can be used to identify the customer behaviour pattern of a single purchase, based on multiple historical purchase reports to channel the system.

In AI, text analytics, vision, and machine language will be more accessible to developers and it can be used by industries in their projects. For the evolution of AI, cloud in the future can be used to create bigger data pools, higher speed networks, universal real-time data connectivity to the web. Reports indicate that by the next five years – by 2025 – AI, ML, and cloud computing will improve the software market by USD 260 billion.

**Cloud computing will change the way industries work.** With Google Cloud, users experience data and digital assessment, and modern data analytics-related services. Google BigQuery, Cloud Storage as a data lake, AutoML, Cloud Natural Language API, Apigee API platform, and Looker BI platform receive the key expertise and experience. Some of the key features to optimize the supply chain include process and performance management, One Version of the Truth (OVT) with enterprise data model and analytics, pervasive AI infusion across processes, hierarchies, and configurability and scalability for global deployments.

With the help of cloud computing, industries will flourish in the future. It is an innovative technology that is dominant, expansive, and beneficial. Its cost-effectiveness, ease of function is the biggest boon of industries in terms of growth and development in the post-COVID-19 era.

It is time for the industry to keep abreast of the latest developments in this space and familiarize our industries continuously with newer technology expansions.

*The author Alok Bansal is the MD and Country Head of Visionet India*





# AI and Data Science Magic

Pairing data-driven decisions with reason in the form of context and experience can make a huge difference in consumer experience



“In God we trust, all others bring data,” had adorned the walls of NASA headquarters for decades. Then, one day on a cold morning in Florida in Jan '86, the Challenger space flight disaster changed everything. Seventy-three seconds into the flight, the spacecraft had disintegrated, killing all seven astronauts. What went wrong? Richard Feynman, Physicist, and Nobel Laureate, who was commissioned to investigate the disaster, concluded – in the absence of data, the scientists had failed to argue by reason.

This story teaches us an important lesson in applying artificial intelligence (AI) and data science to the world

of retail that is led by consumer decisions and choices, which are not always rational. In such a scenario, pairing data-driven decisions with reason in the form of context and experience could make all the difference.

Traditional brick-and-mortar retail has always relied heavily on merchant (or 'buyer') instincts and experiences to run the business. On the contrary, new-age digital commerce has turned to data and experimentation to make business decisions. Omni-channel commerce, mixture of brick-and-mortar and digital, has been the messy middle. This is driving several companies, including the Fortune 50 companies like Lowe's to reinvent itself and stay relevant for the future.

## OMNICHANNEL FOR FUTURE

Retail constitutes three foundational pillars – assortment, experience and value i.e., what products you need to sell, how would you sell them and at what price.

**Experience:** This can be classified as any customer touch point wherein we try to improve the overall customer journey using the applications of AI and Data Science. In the current pandemic, more and more customers are starting their shopping journey online, seeking touchless yet convenient fulfillment options. This is where organizations can leverage initiatives such as collection products to market and sell an entire experience rather than a single product to customers to complete the look in their outdoor living area.

Organisations can also analyse their buying patterns to understand the home improvement projects customers are undertaking while at home, such as kitchen remodeling, and recommending products for their next stage of the project. Our offerings such as Store Curbside pickup or BOPIS have helped serve such customers while they seamlessly transition from one shopping channel to another, providing the same experience.

Further, just as online has been a virtual extension to stores with endless aisles in the past decade, stores have become an extension to online, offering the much needed experiential buying. Lowe's has tested robots for helping in-store customers find products just as the recommendation engines have served for online.

**Assortment:** Stocking seasonally-relevant products that customers are likely to buy in their geography is the holy grail for retail merchandising. With 1700+ Lowe's stores in the US and 40,000+ SKUs in every store (with another few hundred thousand available through our in – store Special Order Sales or on Lowes.com), this problem gets exacerbated and needs scale to advance. This is where we pair state-of-the-art merchandise planning strategy and processes with machine learning models to get the right location-assortment mix.

We build these intelligent models to create the 'customer choice matrix' taking into account hundreds of parameters that range from consumer decision traits such as price affinity, brand propensity and online penetration index to geo-specific factors such as local competition, supplier ecosystem, seasonal patterns among others to increase the likelihood for customers to find what they need. We further leverage optimization

algorithms to ensure we play to category strategies to drive the right sales, margin, and traffic.

**Value:** To drive customer value and positively influence NPS (Net Promoter Score), we price products competitively for 'trip driver' categories or seek price leadership position for 'basket builder' categories, using machine learning models. These models allow us to extract publicly available data on the web, process automated workflows to execute on the category strategy, evaluate price change performance, and self-correct.

In the same vein, when promoting products, we attempt to understand the true intent behind promotions and forecast key performance indicators using machine learning models. This allows us to make conscious choices on which promotions to run – that would positively influence customer buying experience and improve our financial productivity – at what frequency to run these promotions, at what depth of discount and across which SKUs or categories.

## WHAT IS NEXT?

AI in retail thus far has majorly solved for boxed problems that are within constraints. The next phase of AI that we are attempting to work towards is in the areas of Artificial Neural Networks.

The retail process can simply be summed up as: define category strategy -> assort products -> forecast sales -> position inventory -> choose the right price points -> place in the right store locations or fulfillment centers -> promote as needed. Building an 'inter-connected' deep learning model for such a process would be ideal wherein we have clear visibility and command over controllable factors that impact business performance. This can simulate data for unpredictable events such as COVID or trade tariffs to train and improve such deep learning models with the eventual goal that the models' 'self-learn' and react in the most optimal fashion e.g., shortage in product availability -> increase in cost -> assorting complementary items -> reordering and replenishment etc. with the intent to optimize the business objective function without impacting the customer experience.

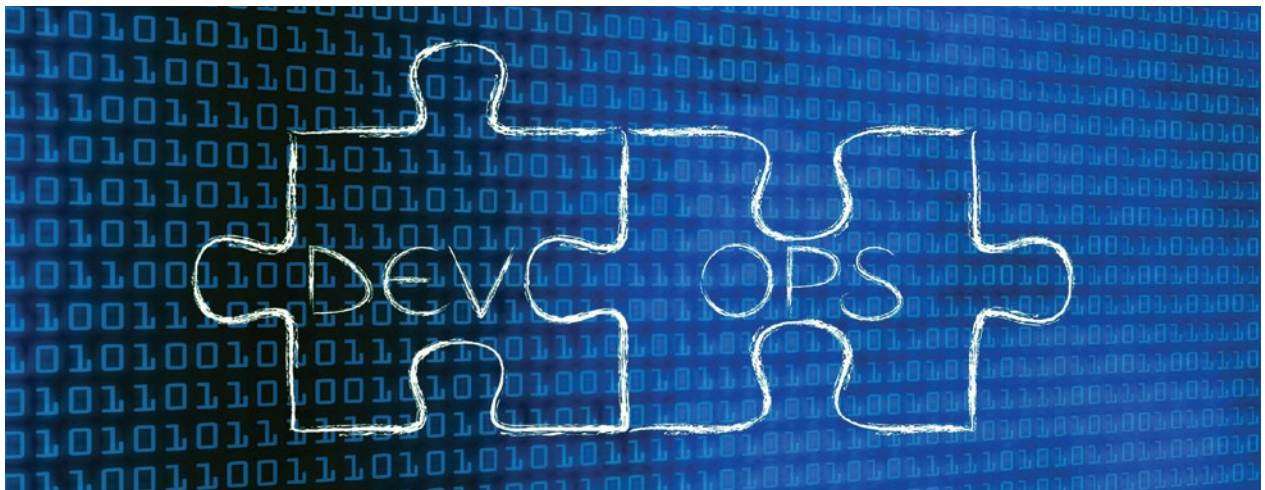
Eventually, an 'interconnected' deep learning model would be able to run such an end-to-end process for any retail organisation most optimally.

*Source: Lowe's*

*The article has been edited to suit the Dataquest style guideline*

# The New Transformation

With anywhere, anytime, any device banking driving the financial sector, DevOps can help players innovate and adapt faster to changing customers' needs



In traditional software delivery, 'Shift Left' is a practice that allows developers to detect and prevent defects early in the delivery process.

The goal is to improve quality by failing fast and recovering quickly, completing and moving tasks to the left at the earliest possible time within the life cycle. With modern businesses transforming at the speed of markets, DevOps has become an increasingly common approach in software delivery, helming the charge of a 'perpetual Shift Left'. Almost every industry leveraging technology today is turning to DevOps to roll out the best quality products with phenomenal lead times, while increasing the agility and efficiency of digital reinvention.

More so in times of 'black swan' events that create disproportionate stress on businesses that fail to adapt to new realities with resilience or create new opportunities in times of crisis. During the 2020 COVID-19 pandemic, the banking industry in India is at a similar point of reinvention with DevOps, where the need to facilitate higher productivity and agility is near real-time.

## CONVENTION TO CONVENIENCE TO COMPULSORY, AND CRUCIAL

The Indian banking sector and financial technology

sector in particular, have come a long way within a short time. Moving on from conventional forms of banking, the nation has received a significant push towards convenience in banking with increasing digital adoption and mobility.

Consumers as well as businesses today, expect to carry out banking operations from anywhere, at any time – using the device of their choice. They are commanding personalized support and innovative software, while transforming the way they are serviced. From 'Digital India' to 'cashless India' the government's push towards financial inclusion has also now made it commonplace to use e-wallets, BHIM, debit/credit card or UPI-based payment services.

During the 2020 pandemic, the banking sector has also come under a lot of pressure with liquidity pressures, fundamentally altering operating models, optimizing costs, augmenting cash flows and mapping risks. Helping themselves along with associated businesses and consumers, banks that were already under pressure for operating margins, are now facing aggravating costs in the aftermath of COVID-19. To ease the following of social restrictions after lockdowns, RBI even issued the allowance of Aadhar based video-KYC authentication,





## DEVOPS METHODS HAVE ‘AUTOMATION BIASES’, AND THEREFORE HELP INCREASE EFFICIENCY, MINIMIZE ERRORS AND FOCUS RESOURCES ON HIGHER-VALUE OPERATIONAL TASKS

so that no one has to step out of their homes and risk exposure to the virus.

These trends have today brought us to four key focus areas that any CIO in the financial services sector needs to take into account. One, there is a need to reduce the cost of incident management by identifying them before they materialize. Two, organizations must optimize change management TAT/duration with agility and automation. Three, quickly triage problems based on criticality, continuously and in real-time; and last but not the least, the need to evolve the technology stack as well as the people to consistently deliver value.

For banks therefore, ensuring the smooth functionality, the rollout of new features with speed – and without lag times or errors in application delivery – is now a cornerstone of digital transformation.

But what role does DevOps play in enabling banks and financial players to innovate and adapt faster?

### DEVOPS TRANSFORMATION: FOR AGILITY AND RESILIENCE

While the digital revolution rages on, timelines for product delivery and analysis of the ocean of data is indeed slim. This is where DevOps holds a lot of promise for financial firms and banks, yet it is not a panacea.

In fact, DevOps is not really any specific cure-for-all object or solution. Instead, it is a set of best practices, structures and tools to bring software ‘Development’ and business ‘Operations’ teams closer. Given that banking as a sector has been heavily siloed due to rigid organizational structure and hurdle-ridden reporting lines, enabling digital transformation has been notoriously change-resistant. On the other hand, embracing a culture of DevOps i.e. being able to integrate and collaborate on a conceptual level has substantial payoffs. When executed correctly – and with discipline – organizations need to work across team boundaries, take joint ownership of delivering value and quickly release software updates

and implement fixes to problems that sometimes may not have occurred yet.

DevOps methods have ‘automation biases’, and therefore help increase efficiency, minimize errors and focus resources on higher-value operational tasks like dispute resolution processes and repetitive administrative tasks. Faster time-to-value allows for quick, efficient and reliable software delivery helping create a distinct competitive advantage. Agility and speed through optimized use of predictive or scenario planning technologies like in supply chain management, is also finding value in banking technologies. A few examples include reducing liquidity risks like mapping M&A risks, portfolio management, and lending; relentlessly, yet effortlessly meeting compliances for e-invoicing and GST filing; and integrating governance through end-to-end operational visibility/transparency.

### IS DEVOPS A REVOLUTION OR AN EVOLUTION?

Let us take stock for a second. Banks today have ROI from digital investments, yet low capital to ensure the success of their investments. They have a simplistic understanding of their customers at the far reaches of the nation, and a vastly complex set of products to offer. Will the winners of 2020 be revolutionaries, or simply a product of inevitable – however, sudden – evolution?

In truth, the answer usually in never one or the other, it is a bit of both. DevOps has left abundant signposts of such an evolutionary change in industries everywhere – most relevantly in the fintech sector. Given the volatility of capital risks we see in the world markets today, the transition of banks from real-estate virtually to our palms (not unlike cinema halls and Netflix) – will be revolutionary indeed.

*The author Sai Kumari Jayanti is Associate Vice President - DevOps / SRE at Maveric Systems*





—DEEP AGARWAL  
Regional Sales Director, Indian Sub-Continent,  
Zebra Technologies, Asia Pacific

*The Covid-19 situation has seen to a growing demand and need for click-and-collect orders and contactless payments. Here, Deep Agarwal, Regional Sales Director, Indian Sub-Continent, Zebra Technologies, Asia Pacific, discusses some aspects of digital logistics*

**H**ow will there be a boost for contactless payments?

According to Capgemini, over 82% of Indian consumers prefer touchless interaction during the pandemic, while approximately 90% of them are comfortable using their mobile phones for payments, especially for in-store purchases. Brick-and-mortar retailers are already seeing a large uptake in the use of card and contactless payments, which reduces interpersonal contact.

Many retailers are deploying mobile point of sale (mPOS) solutions that

“  
**DIGITIZING  
MARKETPLACE**

comprises a handheld mobile device with various payment processing tools, which enables retailers to scan items, process payments and print receipts anywhere.

Here are some ways, whereby, mPOS solutions can be deployed:

- As click-and-collect orders increase, more retailers may introduce curbside pickup for online grocery orders to cope with the rising demand. Once received, they can quickly pick orders using data-rich images and pass up items that they know are out-of-stock. Subsequently, they can pack merchandise and print receipts prior to the customers' arrival to expedite order fulfilment.

Store associates will be notified of customer arrivals by sending real-time alerts to their mobile devices, and they can scan customer coupons or take additional payment and print receipts while the customer remains in the safety of their vehicle. The coronavirus pandemic is making curbside pickup much more valuable to customers, in US alone the number of orders placed online and picked up at bricks-and-mortar stores by customers surged 208% between April 1 and April 20 compared with a year ago, according to data pulled from Adobe Analytics.

- Alternatively, in-store shoppers will prefer shorter checkout lines and payment flexibility where possible, which can be made possible via self-checkout solutions. According to the APAC Shopper Study 2020, self-checkout is one of the technologies that retailers are using to reshape the front-of-store experience. They are also adopting self and mobile checkout in more significant numbers. With up to 87% of the surveyed respondents agreeing that self-checkout improves the shopping experience, while 81% shared that they already see a return on their investment in self-checkout technology.

Prior to the outbreak of Covid-19, brick-and-mortar retailers were already embarking on a gradual digital transformation to compete against e-commerce operations prior to Covid-19. As such, the pandemic will only serve to accelerate the growth of the on-demand economy through increased online shopping due to stay-home measures and social distancing.

Therefore, to stay competitive, the only way forward is for brick-and-mortar retailers to introduce the right technology like mPOS, that can help them achieve

more flexibility, work efficiency, and provide a greater shopping experience.

#### **How can digitisation of inventory help in the future?**

Thanks to the on-demand economy, shoppers today are driven by an insatiable demand for 24/7 product search and purchase and a 'I want it now' mentality, because they can literally shop from anywhere and anytime. In view of stay-home measures and social distancing, the pandemic will only accelerate this growing trend.

To fulfil this shopping desire and the high expectations of today's omnichannel shoppers, both online and brick-and-mortar stores need an efficient inventory system that can provide an accurate, real-time visibility of their stock. This is especially relevant for brick-and-mortar stores. The top reason shoppers visit a physical store is to experience a product because it would be safe to assume that shoppers have already researched about the products online before visiting the brick and mortar stores.

Therefore, these walk-in shoppers will expect the store associates to have as much information as them, if not more. According to the APAC Shopper Study 2020, up to 59% of surveyed customers prefer sales associates to find the latest information for them, and the main reason for them leaving a store without a purchase is because of out of stocks. By knowing what is available, where it is, and exactly how much it costs, this will reduce the chances of retailers losing the shopper to a competitor who has that information readily on hand.

#### **How can the enterprises develop smart warehouses for business continuity?**

Warehousing, distribution and fulfilment operations are undergoing a modern-day makeover as they transform to meet the growing demands of the world's instant gratification, on-demand economy. Faced with an evolving omnichannel landscape, ever-increasing volumes, faster delivery requirements and a global shortage of workers, industry leaders must modernise to keep pace.

While achieving flawless fulfilment continues to be a top priority for warehouse operators, increasing customer demands have forced them to focus far more on the bottom line. As a result, warehouse operators need to perform 'smarter' by operating as efficiently as possible, reducing error rates, and adhering to best practice.





ACCORDING TO THE APAC SHOPPER STUDY 2020, NEARLY 58% OF SURVEYED SHOPPERS PREFER TO SHOP WITH ONLINE RETAILERS THAT ALSO HAVE BRICK AND MORTAR LOCATIONS, WHILE UP TO 48% OF SHOPPERS PREFER TO MAKE PURCHASES VIA MOBILE DEVICES AND SMARTPHONES

While the pandemic has stressed few industries, the expectations of customers on receiving few products and services is higher than ever. The warehouses in these times must work harder to meet the consumer demands. Therefore, warehouses are now prompting warehouse operators to find ways to help their front-line workers to achieve greater productivity and efficiency at work.

As such, we expect warehouse operators to recognize the importance to augment their front-line staff with the right technology to increase their efficiency and productivity to cope with the situation and beyond. By providing them with tools that have a relatively low learning curve, their front-line staff will be able to shorten the onboarding time required and enable them to start using the devices effectively at work sooner.

A good example would be to equip them with Android-powered mobile devices. Besides being a useful tool that can provide them with real-time information that is needed to perform their jobs, the familiar Android user-interface enables warehouse staff to get used to the devices quickly, which greatly reduces the training time which would have

been required otherwise. This allows them to perform at an optimal level much quicker. According to IDC, there are about 450 million smartphone users in India and most of them are familiar with the Android OS.

**Do you see E-commerce to experience a renaissance?**

According to the APAC Shopper Study 2020, nearly 58% of surveyed shoppers prefer to shop with online retailers that also have brick and mortar locations, while up to 48% of shoppers prefer to make purchases via mobile devices and smartphones.

From the statistics, it is quite apparent that online shopping is a trend that is here to stay, while the pandemic only serves to accelerate this trend. Further, shoppers are bringing their expectations built online into brick-and-mortar stores with them. Armed with smartphones, shoppers expect store associates to have all the information they need on hand; what products are available, where are the products located, and exactly how much they cost.

Failing this, shoppers will not hesitate to walk out of the store and shop online. In fact, up to 86% of surveyed millennial shoppers and more than half (56%) of Gen X shoppers indicated they shopped in a store and left without a purchase only to end up buying the item online.

Yet, store associates are not always equipped with the latest technology to ease and enrich the in-store experience. In fact, up to 54% of shoppers felt they had better access to information than the store associates.

That said, while shoppers increasingly expect and rely on in store technology, they still want human interaction. Therefore, retail technology should strive to provide a friction-free shopping experience, with technology that improve self-service for customers and empower store associates to deliver a better shopping experience.



# DIGITAL INDEX: RANKING OF INDIA'S TOP ENGINEERING COLLEGES

Digital indexing will evaluate the Engineering Colleges for overall **“DIGITAL INFRASTRUCTURE, DIGITAL TEACHING & LEARNING PRACTICES, ADOPTING DIGITAL TECHNOLOGIES, DIGITAL SKILL DEVELOPMENT, ATTRIBUTING NEW DIGITAL CULTURE”**.

Does your Institute meet the **DIGITAL INFRASTRUCTURE** demand for New age learners?

Is your Institute **FUTURE READY ?**

The biggest question of the decade. Are these colleges providing quality education equipped with the new age infrastructure and how are they coping with the situation in Pandemic?

**DATAQUEST T-SCHOOL SURVEY & RANKING |  
DATAQUEST DIGITAL INDEXING | DATAQUEST EMPLOYABILITY INDEX**

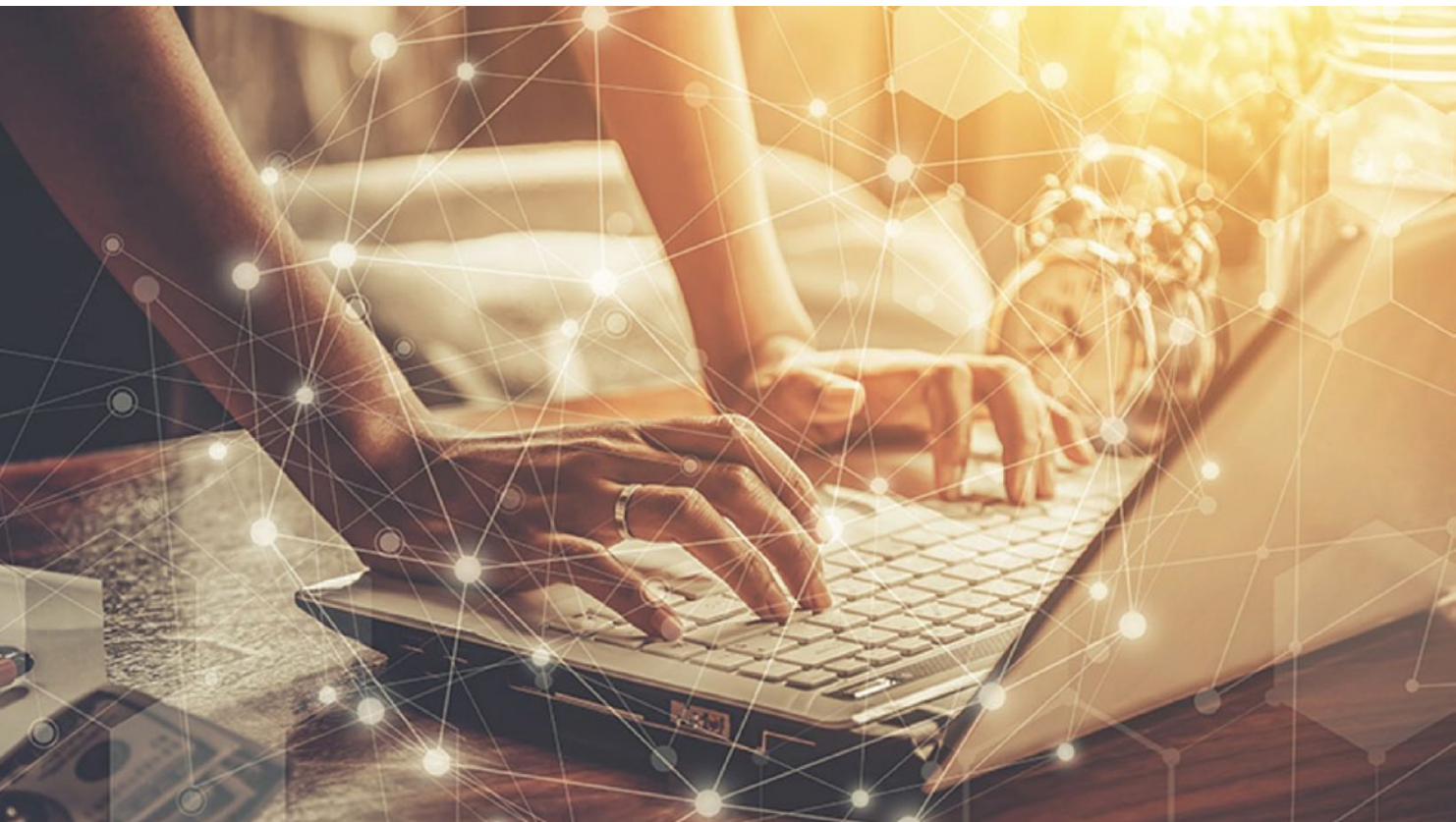
## Key Highlights

- Survey of **1000+** Engineering Colleges
- **10,000+** students
- Digital Skill Development and many more

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## Remote-managing business

Managing new normal may be more challenging than perceived. Here is what organizations must consider before investing in remote access for their workforce



It would not be right to say that our lives have not been disrupted due to the COVID-19 pandemic. Businesses are struggling to keep their operations up, enable seamless work from home for employees on unstable and insecure networks, while deadline with the security challenges, the pandemic has certainly forced us to work the 'new normal' way – that is working remotely.

From a business standpoint, requirement is to sustain business continuity with remote access and management. Industries like digital media, broadcasting and entertainment are already showing a steep rise in their compute and networking needs during lockdowns,

as more people are accessing entertainment content or connecting with loved ones.

In the healthcare industry, tele-health and remote monitoring are gaining importance, and more intelligence is being deployed for activities like video surveillance and crowd management to help support quarantine and alleviation measures.

According to Market Research Future, the remote access management market is heavily driven by increasing global employee numbers and the flexibility of working from anywhere at any time. It is simple, flexible and provides cost-effective licensing.





## ORGANIZATIONS MUST SEAMLESSLY INCORPORATE BOTH HARDWARE AND SOFTWARE, WHICH MAY SPAN THROUGH MULTIPLE SITES, MINIMIZING CUSTOMIZATION AND CONFIGURATION

IHS Markit has projected that units of KVM (keyboard, video and mouse) switches and consoles purchased in Asia will grow 4.5% annually from 2019 to 2023. Occupying about 45% of the worldwide market, this region shows a growing trend of implementing such solutions to enhance business competitiveness.

This sudden change of method in daily work is easy in theory, but can be challenging to implement. Here are some key features that organizations must consider when investing in and setting up remote access for their workforce.

**Centralised and uninterrupted control:** Organizations must set up uninterrupted, 24x7 centralised monitoring and control of operations. Monitoring has various aspects, including but not restricted to alerts on the performance of devices and their health, routine general performance checks and detailed investigations.

Ideally, this can be an automated exercise done over the web for management from any place at any time. Round-the-clock access and control allow operations to continue even during unforeseen crises, be it natural or man-made disasters, or a pandemic as the current scenario. Any abnormal activity or potential cyberattacks can be identified and flagged out by tracking remote user and system events and be resolved promptly.

**User privilege authorization and security:** The admin manager or commander can decide the levels of access and the rights given to different personnel, along with centralised authentication and authorization abilities. Equipment control and access based on user-customisable criteria, combined with consolidated logs and audit trails, helps in protecting corporate resources and system integrity.

**Multiple user access:** Providing both remote and local access to multiple users – through smartphones, mobile devices, laptops, PCs, and workstations will allow control of equipment by various levels of

personnel through a corporate network will create uninterrupted networks.

**Remote maintenance:** Periodic maintenance of an organization's systems can be both partially and completely automated. It can be conducted in the background or after office hours.

**Heterogeneous enterprise systems:** It is important that organizations must integrate pre-existing heterogeneous enterprise platforms and systems, including big data analytics and Optical Character Recognition (OCR) technology.

Organizations must also seamlessly incorporate both hardware and software, which may span through multiple sites, minimizing customization and configuration. This will result in reduced time and costs for both setting up and deployment.

**Storage and snapshot collection:** Supervisors or senior management can automatically collect and save video images or snapshots from equipment to view later, and to also share the status of the device with other users.

While this sounds like a comprehensive list, there may be other features that apply to specific industry such as in case of factory automation and integration with complex proprietary processes.

The Coronavirus outbreak has presented itself to businesses as both an unprecedented obstacle and opportunity. There was never any doubt that adopting a remote management strategy may have been inevitable for businesses in the long run, but the pandemic has accelerated the process and necessitates organizations to go digital much sooner than they anticipated.

*The author Anjani Komiseti is Country Manager, India and SAARC of Raritan & Servertech*



## One Step Ahead

Enterprises need to think beyond existing cyber attacks and look for solutions that not just prevent existing threats, but are also future-ready



Security breaches have increased by over 11% since 2018 involving not only external actors but also internal actors. With the recent border tension and emergence of India as one of the powerful countries, has brought local enterprises, organization and government bodies under the limelight of Cyber Criminals. We also saw during the COVID-19 pandemic, an increase in the involvement of internal actors in aiding hackers and ill intention external actors to execute security breaches and leaking critical/sensitive data, resulting in massive data breaches for both monetary and non-monetary benefits.

In a recent survey, it was found that hackers attack in every 39 seconds, with an average of 2,244 times a day targeting enterprises, critical data, the average cost of each breach being at USD 3.9 million. These data breaches include the involvement of internal employees acting as a threat in about 34% of total data breaches, some being financially motivated and others by personal gain, revenge or grudge against the enterprise. Other forms of attacks

include the use of Email platform to enter the enterprises with shielding 95% of malware under office files.

Security has been an on-going and ever-changing process that tries to cope with the existing challenges instead of being prepared for the predicted future. This allows cybercriminals to find loopholes in the current security infrastructure and using it to their benefits.

Let's look at some key trends in the cybercrime space, exploiting the enterprise's weak security.

**Data Threats:** This is the most recent trend in the cyberattack space that the hackers are perfecting their skill on. With data being the most valued asset today, bad actors, both internal and external are targeting enterprise to steal/leak their critical and sensitive data. With today's security measures falling short in understanding the data itself and the inability to control the use of such sensitive data on various business and non-business platform, open to access for business operations exposes these actors to a world of possibilities for exploiting data.



## THE ABILITY TO CONTROL WHAT DATA IS BEING USED ON WHICH PLATFORM, BY WHOM AND AT WHAT LEVEL, ALLOWS ENTERPRISES TO PREVENT ANY POSSIBLE DATA EXPLOITATION

Organizations must have complete visibility and control over the enterprise's data threat plane that makes their data security vulnerable. The ability to control what data is being used on which platform, by whom and at what level, allows enterprises to gain complete control over all data transactions while monitoring the use of it to prevent any possible data exploitation. Moreover, safeguarding employees from intentionally or unintentionally falling prey to cyber-attacks by preventing them to access malicious websites, emails and application help in curbing data threat by a great margin.

**Internal Threats:** It is unfortunate, but true, that internal vulnerabilities are the most ignored threat and it is evident from the recent data breach cases. As enterprises stepped towards creating a digital infrastructure to enable rapid adoption of work from home amidst the COVID-19 pandemic, many of the organizations found their sensitive data still being handled and possessed by internal employees for operation continuity from different network, device and security environment. This has increased the exposure of enterprise data and the threats by over 60%.

Enterprises must ensure that the employees are safeguarded from any external threats and all data transactions done by employees are monitored and controlled. Any anomaly should be reported to the security team for investigation and such communication with the external world should be blocked by bringing the users under the enterprise's security infrastructure.

**Phishing, Social Engineering Attacks:** It is estimated that one in every 99 emails is a phishing attack, and over 30% of these emails make it past basic security measures. These emails are skilfully disguised by malicious actors to fool standard email security tools. As a result, these emails are more likely to be opened by enterprise users, unleashing Business Email Compromise (BEC) attacks and data breaches, causing hefty financial and reputational losses. It is reported that BEC attacks cost enterprises over USD 12 billion across the world in 2018.

To prevent BEC attacks and data breaches resulting from successful phishing attempts, enterprises need an email security solution that scans emails for more than just the contents in the body of the emails including scanning of any embedded URLs that may lead to phishing sites and other malicious content while being Extremely adept at detecting and blocking spam emails, preventing them from being delivered to your users' inboxes, minimizing the chances of them falling prey to phishing attempts.

**IoT Threats:** The use of IoT is booming and will be a crucial part of our daily life in the future. It will also be the most targeted devices by cybercriminals if left unsecured, these devices will be used as a gateway to enter into one's network and take control of their whole ecosystem. We have seen such attacks in the past and will only grow in the future. They will not only be harmful to the person affected but also cybercriminals will use these hacked systems to perform DDOS attacks on various organizations. This can also be used to mask various other attacks. Hence, using a firewall will be very important for people to protect them from not only personal loss, but also to protect them from false framing into a well-planned cyber-attack.

The act of coping with the existing cyber attacks has to go away for good. Enterprises must now look at solutions that not just prevent them from current threats, but also is future-ready. This will work only if we move away from the traditional dying perimeter security approach that is turning useless and switching to a perimeter-less infrastructure and evolve towards protecting and applying security the most valued and targeted asset, the data itself. Security, when applied to data itself will allow enterprises to monitor and control it while keeping aligned threats away, both internal and external, intentional and unintentional.

*The author Sonit Jain is CEO of GajShield Infotech*





# Get Ready to Face the Unknown

The new-generation, easy-to-use end-to-end encrypted solutions can help organizations secure their sensitive data and that of their customers

“The biggest part of digital transformation is changing the way we think,” a quote every industry is currently adapting while facilitating remote-working to their employees. In regular terminology, transformation is any significant change in form, nature, or appearance. At the moment if we look around us, we can see transformation evidently; individuals, organizations, as well as industries, have all transformed or transforming, modifying the traditional methodologies in order to fit into the current landscape.

The onset of COVID-19 has accelerated the path to the cloud. Today, cloud computing has become the core for most organizations, and it will continue to remain the same in times to come. The post-COVID phase would certainly witness stupendous growth in this area as it is affordable, easy to use, and also highly customizable. The dawn of cloud technology brought us closer and made communication one of the most essential aspects of human life easier and faster.

There would occur to be a need to digitize every aspect of a business process that will be beneficial in the longer run. In response to the pandemic, companies have also adopted the requirement of efficient team collaboration tools as a way to ensure remote teams can communicate and collaborate. Collaborative solutions are the need of the hour highlighting the paradigm shifts in business operations.

## COVID, COLLABORATION, CHALLENGES

There exists a certain uncertainty that comes along with digitization and it strictly refers to data security. But concerns over security are genuine and enduring. With the rising concerns over data protection and privacy, many enterprises feel uneasy about passing control of their communications infrastructure to a third party. With security breaches and malfunctioning, it is imperative that we are vigilant and, on our toes, to face unknown challenges.

However, communication on different platforms, such as social media and emails, requires a certain level of



privacy. Moving our communications onto the cloud exposes us to the risks of hacking, identity theft, DDoS attacks, malware, and eavesdropping. Time and again leading organizations have made it to the headlines owing to data breach and it becomes immensely important for organizations to choose collaborative solutions carefully enough to not end up as the victim.

Thus evolved the need for end-to-end encryption, a communication system wherein when a user sends an email or a message to someone, no one is monitoring the network or can see the content of the user's message. Encryption is the basic building block of data security, it doesn't just stop people accessing user's data or eavesdropping on conversations it offers protection and ensures a computer system's information can't be stolen and read by someone else.



## THE RISKS OF BEING UNABLE TO SECURE AN ORGANIZATION'S DATA ARE IMMENSE, BUT PROPERLY ENCRYPTING CORPORATE INFORMATION CAN SAVE USD 385,000 PER BREACH

### WHY E2E ENCRYPTION?

The end-to-end encrypted cloud allows one to get a higher level of security for their data, one of the most important ways to ensure data integrity on any computer or phone. It blocks third parties from accessing the data and saves us from the trouble that can be caused by a malicious hacker.

Most individuals struggle to understand the need for end-to-end encryption, with the advancement in technology we need to acknowledge the fact that nearly half the population is actively using digital spaces to communicate and connect with the global audience. With more and more people gaining access to online communication on various platforms there has been a significant rise of data breaches and cybercrimes across these platforms. End-to-end encryption allows us to continue the conversation without the fear that our private information is being read or secretly modified, by anyone else except the sender or receiver(s).

Whenever communication occurs on a cloud, they have no ability to see the content. That's because the encryption and decryption of messages sent occur entirely on the device. Prior to a message leaving the device, it is protected with a cryptographic lock, and only the receiver has the keys to unlock the same. The keys change with every message that's sent. All of this happens behind the scenes confirming the conversations to be safe and secured.

The pandemic has however changed the scenario of the existing work culture and there has been a major shift towards remote working. Remote working has enabled individuals the comfort to work from home without getting exposed to COVID-19, however, this further reflects the increase of individuals accessing their home networks for the same. This resurfaces a common dilemma of the users instating chances of interruption/hacking or other malicious attacks. However, having an end-to-end encrypted cloud interface back up allows one to ease out the tension of malicious attacks or data breaches.

The risks of being unable to secure an organization's data are immense, but properly encrypting corporate information can save USD 385,000 per breach, according to a recent study. The new generation of secure, easy-to-use, and competitively priced end-to-end encrypted solutions now present in the market are effective tools that can help organizations secure their sensitive data and that of their customers. All this occurs while providing easy access to stakeholders through advanced security features.

End-to-end encryption implements Transport Layer Security (TLS) which is intended to prevent data the messages are encrypted by the sender but the third party should not have the means to decrypt them. Such prevention is possible because plain text messages are encrypted in the form of ciphertext and then again decrypted when the recipient is expected to receive it. We can say that encryption is the transformation of data from a readable format into an encoded format that can only be read or processed after it's been decrypted.

End-to-end encryption works on certain encryption algorithms. The message sent is encrypted with the help of an algorithm; the same can be decoded by using a particular key. This key can be stored on the receiver system and the same can further be transmitted with the data that has been encrypted.

In today's parlance with the fast-evolving technologies, there is a new challenge every day, but with new challenges there arises a need for newer ideas and solutions. There is an increased dependency on the IT sector to innovate and equip ourselves for what lies ahead. Cloud communications have become one of the most significant aspects today, in areas of technological development in order to devise enterprise-class security protections designed to counter those risks.

*The author Pramod Sharda is CEO for India & Middle East at IceWarp*





—SANGEET KUMAR  
Founder and CEO Addverb

*With the growth in automation and robotics, industrial technology is making an overhaul in infrastructure. Sangeet Kumar, Founder and CEO Addverb, discusses this aspect*

**W**hat are the latest trends in India's supply chain and manufacturing sector?

There have been some key triggers in last 5 years that have changed India's supply chain and manufacturing sector. The rise of e-Commerce and it's spread into every nook and corner of the country after internet data revolution, the growth of organized retail in major towns and cities, the implementation of GST, which led to the consolidation of small warehouses into mega distribution centers, the high real-estate prices in cities, which forced the consumer warehouses to move outside the city, and the supply and demand fluctuations.

These triggers necessitated a flexible supply chain to accommodate the demand surges and reliable warehousing operations that help in fulfilling the requirement within stipulated time and in an accurate manner. As operations scale up, it is critical to improve the productivity of people working in the warehouses and factories and people are also becoming more conscious about doing more productive and meaningful work.



## LATEST IN INDUSTRIAL AUTOMATION



In line with that the demand for picking technologies like Pick to Light, Pick by Voice and Pick by Vision-based systems and mobile robotics applications to move material, is increasing as these can improve the productivity as compared to manual operations by almost 10-20 times. Also, the packaging robots, once constrained to the assembly line, are making way into the warehouses for different applications such as bin picking, pick-and-place, etc. Then, mobile robots that are used for multiple applications of material transfer inside the warehouses. More importantly, during the last 5 years, due to the technological advancements, automation has emerged as a necessity more than a luxury.

#### **How can the Dynamo, Addverb's AMR, work alongside humans in warehouses and do materials movement?**

Dynamo, our in-house built autonomous mobile robot is used for material movement of different payloads from 100 kg to 1000 kg and works in collaboration with humans. It moves at a speed of 1.5 m/s and is guided by LIDAR based natural navigation.

It's 2-stage sensor mechanism, one to slow down; and another to stop the robot, in case there are any obstacles/human intervention in the environment, coupled with the warning & alarm signals makes it very safe to work with humans. The robot's movement is completely autonomous where in the map of the entire layout is fed at the beginning by taking it for a walk & then it starts working within it by finding out the shortest and less congested path for a given mission (movement operation). This entire operational set up procedure takes less than 20 minutes and a fleet of bots will be ready to perform material handling operations.

The exceptional features that make Dynamo stand out are:

- **Robust:** It can operate in harsh environments like deep-freeze or hazardous areas.
- **Dynamic planning:** In the case of an obstacle it will find an optimal path to reach the target
- **Easy integration:** Seamless addition to existing assembly/production line without changing the present layout.
- **Flexible movement:** Allows free roaming, unlike conveyors, and require less space than conventional forklifts, allowing for narrower aisles.

#### **How is Addverb ensuring adequate social distancing on shopfloor using robots?**

We have a huge variety of automation solutions that can

mechanize various functions of a warehouse, right from inbound to the final dispatch to the customers. At any point, the major objective is to automate the repetitive, mundane, and heavy jobs. For the inbound palletization we use telescopic conveyors, which transfer crates at a speed of 2 m/s and require max one person to unload the truck.

From there, we use articulated robots/gantry robots depending on the speed required, or the nature of the inventory do palletization. We transfer these pallet loads using either pallet conveyors or driverless forklifts to the dense shelving pallet storage system where Cruiser & Multi-pro, our mother shuttle and child shuttle duo will do the storage and retrieval.

We also provide other ASRS systems such as crane based multi-load ASRS, crane-based unit load ASRS system, tray-based ASRS system etc., and all these ASRS systems are completely automatic. The retrieved pallets can be either depalletized or decanted and the material kept in crates can be transferred through mobile robots/a web of smart conveyors to the carton storage dense racking system, where Quadron, our carton shuttle does the storage and retrieval of carton loads and retrieved crates will be transferred to the picking stations, where a picker does the order picking and packing operation.

Then, these packed order crates will be scheduled for dispatch as per the routes, delivery time, truck carriers, etc. Along with the above systems, we also provide multiple automation systems such as goods to person picking technologies through spider bot picking, cobots picking, conventional storage of c-class items through Veloce, a multi-purpose vehicle.

All these systems require very minimal human intervention and can work in perfect symphony under the instructions of our warehouse software such as Mobinity, Optimus, etc. These are the range of solutions we are providing for automating the warehouses, either the customers can go for the automation of their whole facility or some parts of it can be automated – the modular and the plug and play nature of our products allow us to easily customize the solution as per customers' need.

#### **How have the executives set up a profitable company within a span of three years without any VC funding?**

All the six co-founders (us) were working with Asian Paints and setting up some of the most automated factories in the world. This helped us experience how technology was disrupting manufacturing.

As we all had a passion for technology and had seen first-hand how robotics and automation can help manufacturing, and also due to the dearth of robotics players suitable to serve businesses in Indian conditions, we decided to start our own robotics and automation venture.

The aim is to help the businesses embrace automation and Industry 4.0 for their supply chain and manufacturing operation. They can also achieve flexibility, scalability and improved operational performance. Despite the multiple challenges, being a young company, against decade old-industry behemoths, we worked our way slowly and customer by customer. In the initial two years, we always chose to do a pilot implementation to the customer and delivered the promised results with the promised level of customization, this gained us the confidence of the customers.

This not only helped us bag big orders, but also helped us to spread the word across, which brought us some more orders and gave us a credibility. Keeping the customer in center of everything we do, keen research into the problem, innovative solutioning, world-class manufacturing coupled with the best and passionate team of engineers for executing.

A dedicated after-sales team positioned us to be the preferred automation partner for some of the industry players like HUL, Reliance, Flipkart, CEAT, J&J etc., to name a few. We raised a Series A funding of 10 Million USD in 2018 with a view to build a world-class manufacturing facility.

### **What are the big changes and challenges faced by the logistics sector during Covid-19, and how is Addverb Technologies addressing them?**

The biggest challenges Covid-19 posed for the logistics and the intra-logistics sector are –

- **Transport:** It was completely closed in all three modes – sea, road, air; both domestic and international. This resulted in complete stopping of transport of raw materials from suppliers to then manufacturers and the final goods to customers.
- **Shortage of labour:** As most people left for the hometowns, there was very less availability.
- **Lack of strong contingency plan:** Many businesses have not been prepared to handle this unprecedented crisis and at this scale. Certain industries like essentials such as

groceries, FMCG, medicines, etc., have seen a demand surge, and some other industries like entertainment, travel, luxury shopping etc., took a worse hit.

- **Reduced consumer spends:** The uncertainty prevailed in the market and made consumers spend averse, except on the essentials. As the economy came to a standstill, there is no availability of liquid cash in the market.

While some industries had an adverse blow due to the shutdown of the economy and the lockdown, some other industries flourished, especially the groceries, F&B, pharma and FMCG. To meet increased demand and handicapped supply chain, automation has emerged as the levelling point. With it, various distribution concepts, such as micro fulfillment centers arose.

Till now, the concept of micro fulfillment centers was restricted to some of the advanced countries. Now, they are mushrooming in India. With a diverse range automation product portfolio, we can design multiple solutions of micro fulfillment centers. Some of the major components that can fulfil the customer order fulfilment within an area of 2k to 10k sqft and within 2 hours of order placement are Dynamo - our autonomous mobile robots, Quadron – our carton shuttle bots, Veloce – our multi-purpose vehicle, Box-it: our picking stations, and the web of conveyors.

Also, to successfully fight the pandemic and assist the frontline warriors of Covid-19, we have designed and deployed Decimator – our disinfectant mobile robot across hospitals, and quarantine centers. This can be used across multiple public places such as shopping malls, airports, railways stations, schools, etc., to disinfect with UV rays.

With 50mj/cm<sup>2</sup> UV light, it kills the virus/bacteria/fungus to 99.99% & helps in reducing the contraction of facility acquired infections by keeping the surroundings clean. With the natural navigation capability and the computer vision Decimator moves from place to place and sprays UV rays in 360 degree.

### **What are your business goals for FY 2020-21 and plans for the next year?**

The last three years have been very eventful for us. We have onboarded clients from various sectors and have deployed our automation solutions across the length and breadth of the country. We very strongly feel that this is the time to take Indian technology global. We have opened up

an office in Singapore and completed a couple of big-ticket automation projects in Europe.

Our global footprint is expanding rapidly, and we aim to make a stronghold in global markets in the coming years. India continues to be our focus area and we will continue to provide affordable Robotic and automation solutions thus leading to higher adoption among Indian companies and we will also penetrate the education, hotels, and airports industries.

#### **How is Addverb's picking solution helping business in improving customer SLA?**

One of the major objectives of operating a warehouse or running a fulfilment operation is to increase the dispatch accuracies and to improve inventory accuracy. Our picking solutions help the customer to keep inventory levels accurate and also improves the dispatch accuracy upto 99.9%. The real-time update of stocks and the resulting accuracy levels helps business in optimising their cost of operations by more than 15% on an average.

#### **Elaborate on Addverb's voice-based picking technology 'Khushi' and image-based picking solution 'Quimo'**

Addverb's robust products based on Industry 4.0, enables us to design innovative warehouse and intra-logistics automation solutions. Addverb's Voice Picking system, Khushi (Pick by Voice) offers paperless hands-free order picking and fulfilment solutions that gives high accuracy and productivity. Upon activation, Khushi gives verbal instructions to the picker on which location to go, how much quantity to pick, and a double check on the product picked, and then the location of the next order.

If an operator can pick up to 60 items in an hour when he is using pen and paper to search and locate the item, the same operator can pick up to 240 items in an hour if he is using a Pick-By-Voice. It can be installed on any Android smartphone, and is available in 14 Indian languages, including Hindi and English. Khushi is enabled with speech-to-text and vice-versa algorithms enabled with AI and ML.

It continuously interacts with the picker during the picking that makes the picker to be more engaged in the job; it also showcases the dashboard of various performance indicators, helping pickers to keep a track of how they are performing vis-a-vis with their peers.

Quimo, our pick by vision system is another Person to Goods picking technology designed to enhance the productivity of the pickers and the overall order picking accuracy. It is an augmented reality system, offers hands-free operation with 100% error-free picking and improves quality control. It is best suited for large DCs with thousands of orders processed daily.

Vision Picking glasses comprises an integrated navigation system that guides the operator through AR and provides the shortest travel path to reach the destination. Integrated camera in vision picking glasses optically displays order information providing the source and target locations. They are connected with an existing network for real-time inventory management and updating all the stocks accordingly. Pick by vision fits the requirement for fast picking environments enabling workflow improvement and process optimization.

#### **What is the imperative need for shop floor and warehouse automation in the post-pandemic world?**

Sangeet Kumar: Right now, the availability of workforce in warehouses is limited as most of the working class left for their hometowns due to the fear of Covid-19. Even after their return, due to social distancing norms, factories and warehouses will not be able to deploy full force. Hence, in order to operate at full capacity, now there is the need of automation more than ever – AMRs that move material from one place to other, driverless forklifts, IoT that provide visibility etc.

Also, it is essential to maintain minimum no. of touches on the product while it is inside the warehouses, so automation systems can be used for that, like goods-to-person technologies such as shuttles, ASRS systems and the respective software.

The rise of e-commerce, especially for essentials like groceries, medicines, etc., has necessitated the warehouses to be located near to the customer that is inside the cities, which led to the rise of micro fulfilment centres. These MFCs are mini distribution centres, enclosed in an area of 2k to 10k sq.ft., and can help deliver the orders to customers within 2 hours of order placement. To minimize the operational expenses of these MFCs and to fulfil the customer expectations of < 2-hour delivery, MFC need to use automation. That is a big boost to the automation industry in the post-Covid-19 world.





—**RANJEET KOUL**  
VP & Country Manager, Aeris Communications

*IoT is taking many forms with the emerging technologies and with the prospects of 5G on the way. Ranjeet Koul, VP & Country Manager, Aeris Communications discusses some of these aspects*

**W**hat are your initiatives in the IoT & 5G sphere? How are technologies like 5G and AI playing an important role in defining IoT in a better manner?

The market for AI & the Internet of Things (IoT) is on the rise, moving onto a stage where these technologies will soon be deeply entrenched in our lives, as proven with the dynamic shift towards connected technologies during the Covid-19 breakout. While 5G among other benefits brings in super speed for data transfer from connected IoT devices; AI brings in the power of advanced analytics to data models leading to more accuracy and real time information availability for sound decision making.

In the post-pandemic world, businesses have no option but to go digital, incorporate data centricity for decision-making, invest in automation and all this can be done by adopting technologies such as 5G, AI, ML &

## “ WHERE IS IoT GOING?”

IoT that bring in operational efficiencies from process to performance, yield better ROIs, increase revenue and delighted customers.

To this effect, Aeris continuously invests in R&D for keeping ahead of the curve. Aeris has joined 5G Open Innovation Lab and will work closely with the Lab's founding partners, Intel, T-Mobile and other partners, to help entrepreneurs and developers gain access to engineering, technology and industry insights to take advantage of AI, 5G and Aeris IoT Platform to create solutions and capabilities which address new and relevant use cases for broader market categories.

### **How can we ensure strong energy management deployments with IoT into consideration?**

India's T&D losses are almost 20% of generation according to EIA; more than twice the world average and nearly three times as large as T&D losses in the United States. Electricity losses are the result of technical inefficiency and theft and both these issues can be addressed by the using technology for building smart grids, which then translates to smart transmission of energy to end-users, i.e. consumers and industries.

Smart grid is an electrical grid with automation, communication and connected technologies, and IT systems that can monitor power flows from points of generation to points of consumption (even down to appliances level) and control the power flow or curtail the load to match generation in real time or near real time. Smart grids can be achieved by implementing efficient transmission and distribution systems, system operations, consumer integration and renewable integration.

The pace of IoT deployments have substantially increased with the launch of the 'National Smart Grid Mission', as approved by the Indian Ministry of Power on 27 March 2015. Currently, it has allocated 14 smart grid pilot projects across India that will be implemented by state-owned distribution utilities.

Smart grid uses sensors and IoT solutions which helps to monitor, measure and control power flows in real time that can contribute to identification of losses and thereby appropriate technical and managerial actions can be taken to arrest the losses. IoT also holds the key to convert the traditional brownfield grids to smart grids.

On the front-end, we have started the uptick in the

application of smart meters which enables energy users to manage their utilisation and enjoy the flexibility of pay per use models. In addition, it also helps the energy providers to catch and analyse the leakage at the consumer level and plug revenue leakage.

For green and clean energy, such as, solar deployments, cellular connectivity is reliable connectivity, offering unparalleled uptime and geographic coverage that other wireless connections can't match. Additionally, two-way data transfers allow for more sophisticated billing models, including dynamic pricing.

As a recommendation, solar management companies can install an Aeris global SIM at the point of manufacture, reducing both supply chain costs and deployment time. Also, by utilising Aeris' single global access point name (APN), a solar-powered system can be deployed on a simple plug-and-play basis without the need to reconfigure to local network settings. Therefore, reducing manpower requirements and provides significant cost savings.

### **Where do you see the future of the IoT industry going?**

#### **What is the effect of this pandemic on this industry?**

The pandemic has again reinforced the importance of hygiene in the physical realm, as well as the digital realm. Virtual is becoming the most effective way of managing the organisational efficiency and its role in industry starts right from the machine deployed in the factory to the consumer buying the product in the market.

In my opinion, automation and availability of data driven analytics in real-time powered by the IoT, will be the key in getting industry and economies back on track. Industry experts are already predicting a permanent uptick in IoT adoption in the post pandemic world. Businesses have been aiming to adopt the technologies that define Industry 4.0 - in particular, industrial Internet of Things (IoT) systems, combined with the cloud and analytics.

As with remote working tools, the accelerated investment in IoT solutions is in direct response to the coronavirus pandemic, but the technology will continue to proliferate post Covid-19 pandemic as it unlocks long-term efficiencies.

### **How does infrastructure helps drive the most demanding cold chain transport systems?**

Intermodal freight planning and optimisation in the transport infrastructure sector is lagging and inefficient



**AERIS HAS THE DEDICATED INFRASTRUCTURE FOR THE MOST DEMANDING COLD CHAIN TRANSPORT SYSTEMS FOR FOOD, PHARMA, AND OTHER PERISHABLE SUPPLY CHAINS. AERIS HELPS CREATE AN UNBROKEN COLD CHAIN SYSTEM CAN TRACK AND ENSURE THE QUALITY OF GOODS FROM MANUFACTURER TO END USER**

transport logistics constrain the competitiveness and productivity of the Indian economy. According to the Food and Agriculture Organisation of the United Nations, approximately 1/3 of food perishes worldwide during transit. And that number doesn't include losses of other non-edible, but perishable, cargo like decorative flowers, a \$100+ billion market on its own.

Cold-chain logistics can be made smart to curb the inefficiencies which negatively affect trade in perishable food and vegetables and other agriculture commodities and impacting farmer income as cold chains are susceptible to mechanical breakdowns, traffic delays, theft, human error, and numerous other factors. When you use IoT monitoring, cold cargo becomes 'intelligent' thanks to smart sensors and oversight capabilities.

Aeris has the dedicated infrastructure for the most demanding cold chain transport systems for food, pharma, and other perishable supply chains. Aeris helps create an unbroken cold chain system can track and ensure the quality of goods from manufacturer to end user.

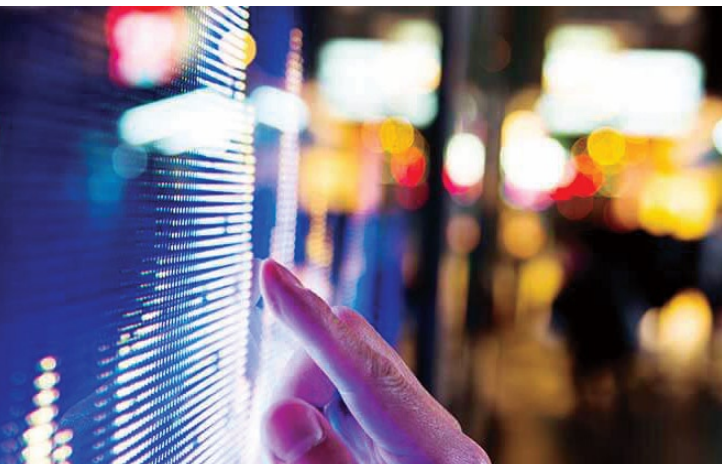
**As a step to boost the Indian agriculture, how can IoT deployment increase farming capabilities & bring down operational costs**

The rapidly expanding human population presents very real challenges to economic, agricultural, and communal infrastructures. Most of the farmers in India are small and medium landholders, hence, they don't have the access to the latest machinery, which can reduce the time to market and help them in increasing/healthy produce per hector. With agriculture predicted to contribute about \$1 trillion of India's GDP by 2022, it is imperative that India shifts its focus to revolutionising this sector.

With new "smart farming" applications based on IoT technologies, the Indian agricultural industry has the power to reduce waste and enhance productivity. IoT-enabled precision agriculture techniques give farmers effective tools to optimize every farming task. These technology-driven practices are focused on increasing crop yields and profitability while lowering the levels of traditional inputs (water, fertilizer, insecticides, and herbicides) that are needed to grow crops.

Essentially, smart farming uses less to grow more. We provide the connectivity & IoT solutions and services that are the backbone of smart farming technology. Our IoT infrastructure gives precision agriculture companies the technology to transform unconnected products into connected devices that generate and analyse important information.

With the Aeris Fusion IoT Network, all agricultural data can be organized and interpreted to achieve optimal resource utilization and efficiency at any field, anywhere in the world. Aeris farm equipment and tractor-as-a-service offerings enable farmers to plant crops in more efficient patterns and optimize travel over and between their fields, saving time and fuel.





# Industry 4.0 Demands a New Approach to Asset Management

APM 4.0 is transforming the way companies produce goods to achieve the maximum level of production efficiency while also increasing sustainability

It is key for organizations to manage their asset base with future flexibility, scalability and control. Businesses acquire other businesses, sites are extended, new buildings and production lines are created as obsolete ones are closed.

This is where current technology makes things very exciting. With the advent of the Internet of Things (IoT), organisations can do much more than understand their asset structure and relationships. Because assets can talk to each other and communicate data, businesses can understand cause, effects, faults and performance on a much wider and more detailed scale. Something commonly known as Asset Performance Management (APM) 4.0.

## Endless Possibilities of APM 4.0

Because of APM 4.0 companies are able to exploit asset usage in a more end-to-end way. This is leading to a range of new possibilities with immediate benefits: saving costs and enhancing ecological footprints, reducing asset downtime and increasing the return on investments.

When you add the development of digital technologies such as big data, artificial intelligence (AI) and digital twins and both predictive and prescriptive maintenance, APM 4.0 is transforming the way companies produce goods to achieve the maximum level of production efficiency while also increasing sustainability. It funnels multiple silos and formats of information into a single view. Visualization capabilities garner real-time, actionable insights. In fact, some of our customers have reported improvement in workforce effectiveness by 25%, increased asset availability by up to 15% and reduced maintenance and inspection costs by 50% by using APM 4.0 strategies.

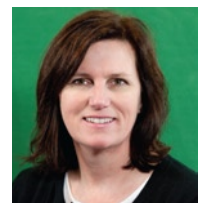


## A Game-Changer for Businesses

The combination of visualisation tools, simulation, modeling, and real-time data acquisition is a game-changer for businesses. Using these tools in the cloud means data can be shared across the global community of suppliers, sales, operations, and customers, so decisions can be made collaboratively and efficiently.

And the good news is that organisations don't need to take on a massive redesign or make huge investments to achieve value from pursuing APM 4.0. In many cases, portions of the technology pillars are already part of a plant's portfolio today. All that is needed to get started pursuing APM 4.0 is the vision, a defined architecture that supports APM 4.0 and the decision to make future technology investments that align with that architecture.

*(Kim Custeau is Global Asset Performance Management Lead, AVEVA)*





—SUDIPTA SANYAL

Design Head, Datacentre Business,  
Sterling & Wilson

*Datacentres can have many diverse formats such as Hyperscale datacentres – conventional brick-and-mortar offerings, modular room-in-room datacentre systems, edge datacentres and containerised datacentres (CDCs). Here, SUDIPTA SANYAL, Design Head, Datacentre Business, Sterling & Wilson, discusses them*

**W**hat are the emerging trends for datacentre infrastructure in 2020+?

Data is being created every day. With the global pandemic, the data and data security have become ever so important. This has led to the increase in datacentre space. As we look forward, the concept of what the datacentres do and what they are tasked to accomplish will continue to evolve. A right datacentre solution is the one that helps the DC managers to get top information of their datacentre on multi-faceted dashboards prompting necessary actions to resolve issues.



## LANDSCAPE OF DATACENTRES

Emerging technologies such as Big Data, AI, ML and IoT will be the key drivers in increasing demand for data storage system and hyper converged infrastructures. Eyeing the growth potential and the recent budget, the Government might look at establishing specific Datacentre parks with prescribed power and water availability, tax incentives to attract foreign investment and accelerate growth. This may help in setting up campuses in class B and C cities.

5G roll out will accelerate the demand for edge computing. Automotive and large-scale manufacturing industries are expected to take the position of early adopters. Application of remote secured modular and micro data centers are few of the emerging trends for datacentre infrastructure.

The major concern, however, is receipt of inadequate monitoring of third-party people accessing the devices and the digitised operations. This has to be addressed on an immediate basis. The datacentre facilities in the future are likely to grant access to a network resource only if it fulfils specific criteria, including the time of the day, location and so on.

### **How are datacentre companies rebalancing the provision of DC services, colocation, and capacity management?**

Virtualisation has enabled creation and deployment of applications faster and store data easier than ever in the past which has helped grow data exponentially. More the data gets generated, it is important to preserve and protect the data with backup and replication, driving the demand for storage. This results in serious challenges for IT departments, especially for those who want to consolidate IT infrastructure with cloud-based applications, virtualisation and file sharing.

In such scenario, rebalancing is utmost important. Rebalancing of datacentre companies are achieved by adopting strategies of capacity augmentation within the same space, performance enhancement i.e. data processing time can be reduced from hours to just minutes – thus, organisations need fewer servers, hard disk drives and fewer software licenses.

Rebalancing continues with compatibility to create a truly unified storage environment, Easy usage to optimize virtual machines with just few clicks so we can deploy as many shares per minutes and not hours. Reliability, looks for systems that have no single point of

failure architecture, and data protection, looks to keep the applications online to improve recovery in the event of any problem. We are also managing capacity through adoption of hybrid and multi-clouds environment and through automatic orchestration between private and public cloud providers. All these need to pair with a meticulous study on the cost economics and financial viability of the strategies in consideration of the problem at hand to derive a winning solution.

### **Which sectors do you see the maximum demand coming from and why?**

The maximum demand will come from the IT sectors, especially the hyperscaler and co-location providers, followed by BFSI sectors and government initiatives, like E-governance. Also, in telecom space, the adoption of 5G technology will accelerate demand for edge data centres. More and more industrial process will adopt IIoTs for automation through use of edge datacentres.

Cloud-based reference architecture will accelerate faster adoption, shift towards digital marketing will lead towards generation of high data volume, new generation of application writing/agile and DevOps will also accelerate the adoption of cloud base platform offerings.

The government initiatives like increased digitalization in offering public services, E-governance, city surveillance, smart city project and National Supercomputing Mission in research institutes. Digitisation in medical and healthcare sector will also add to the datacenter demand. Data Re-repatriation due to restriction in hosting PI data outside the country will also fuel the local DC development/cloud demand.

### **What are the DC infrastructure security solutions being offered by you? Are you doing remote management of datacentres?**

We follow eight layers of security system starting perimeter wall, entrance gate, internal and external security, building area, datacentre infrastructure and server room. Apart from this we follow international guidelines on fire, safety, interior quality and engineering design which provides safe environment for all stakeholders in the value delivery system.

On the remote management front, we do provide DCIM solution which can provide insights in datacentre infrastructures to DC user. Our role is limited to create





THE ENERGY CONSUMPTION IN THE ICT SECTOR HAS INCREASED EXPONENTIALLY IN THE LAST FEW YEARS, MAINLY DUE TO TECHNOLOGICAL ADVANCES SUCH AS THE CLOUD COMPUTING AND THE RAPID GROWTH OF THE USE OF INTERNET SERVICES



physical environment and handover to the client after installation and commissioning.

#### **How are CEOs looking at datacentres amid Covid-19?**

Datacentres are expected to be the next real growth opportunity across country due to global pandemic. Lock-down has forced nation to accelerate the shift online, driving a massive spike in data needs. The current pandemic challenge is throwing the need for data centers to provide rapid, high-availability of data center services. This will enhance the speed of cloud adoption. More and more enterprise will encourage their employees for WFH (work from home). This will require better bandwidth connectivity for reduced latency.

#### **What are the trends for datacentre infrastructure efficiency (DCIE) and power usage effectiveness (PUE) metrics?**

The ICT sector including datacentres generates up to

2% of the global CO2 emissions, a number on par to the aviation sector contribution. The energy consumption in the ICT sector has increased exponentially in the last few years, mainly due to technological advances such as the cloud computing and the rapid growth of the use of Internet services.

In general, the ICT sector nowadays consumes approximately 5% of the global electricity, and it is forecasted that the share will rise to 13% by 2030. Real-time video streaming, online gaming as well as mobile devices already account for 60%. Of all data traffic, and it is predicted that this will rise to 80% by 2025. With the advancement in cooling technologies, water, and air management, the PUE, which is reciprocal of DCIE, has been on decline constantly for the few years current at the global avg. 1.64 and reducing further.

A few DCs operate at PUE at as close to 1.2. A lower PUE means the lower use of energy on physical infrastructures of the data centre. This reduction in PUE makes the industry and the environment more sustainable.

Aanchal Ghatak

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—RAMESWAR MANDALI  
CEO & Founder, SKILL MONKS

*SKILL MONKS is an integrated market place for education. It is an enabler of for diverse skill training. It enables access to information and connect customers with training partners under one platform. Rameswar Mandali, CEO & Founder, SKILL MONKS, tells us about his platform*

### **H**ow do you enable diverse skill training?

Being the first of its kind, SKILL MONKS is India's first integrated market place for education. It allows working professionals, graduates and students in their skilling and exam prep needs by providing career discovery options to help choose the right course and connect to the right partner on our platform by providing quality assurance in EduTech realm. The model is asset light and scalable, with an option to meet diverse skilling needs.

SKILL MONKS offers a shield to their skilling investment by offering 100% course fee refund if quality standards are not met. With transparency at the core of the business, SKILL MONKS offers

## “ INTEGRATING EDUCATION

least course fee, skill financing, choice of certification and placement assistance offered by training companies as a part of the program.

Majorly, SKILL MONKS enables diverse skill training by partnering with training companies that offer courses under the following domains:

- **IT Domain:** Data Science, DevOps, AWS, Cyber security, Digital marketing, Blockchain Python, Deep Learning
- **Government Job:** Civil Services Exams, Bank Exams, SSC-CGL
- **Higher Studies:** CAT, GATE, MAT
- **Study Abroad:** GRE, GMAT, TOEFL and IELTS

Currently, SKILL MONKS caters to skilling needs in the IT, exam preparation and job preparation space addressing a market of close to 9 million skill seekers annually. While we are geared up for Study Abroad programmes, the current COVID situation is not conducive and this will be launched once things improve.

The SKILL MONKS platform facilitates skill seekers learn through classroom, online sessions and also facilitates device based learning. Through our Mobile App we assist Training Companies in scheduling classes, managing course content, communication with students and managing their operations. Constant updates are also sent through the mobile app to skill seekers on the latest trends and industry developments. Mobile app also helps skill seekers to stay connected with SKILL MONKS through their entire skilling journey.

### **How are you connecting students with training institutions in India for Data Science, DevOps, Python, Web Dev etc.?**

After the emergence of Covid-19, we have noticed an increased demand in the skilling environment with a huge interest in IT Domain courses like Cyber security, AWS, DevOps, Data science and Digital Marketing. This is reflective in our partnership with leading training companies that provide the best industry specific courses which help working professionals, graduates at large and students to upskill, reskill and acquire fresh skills. We have on-boarded 100+ training companies specific to the IT domain to provide courses that are keeping pace with the latest trends and provide assistance through certification and placement.

Overall, on our platform, it can be seen that 25% of skill seekers take up Cyber security courses and 40% are taking up Data Science. We are enabling these individuals by connecting them with the best in class cyber security programmes which offer placement assistance. We have also partnered with training companies which offer best in class certification programs in Data sciences which enhances deep learning and opens up new job opportunities. Our tie-up with some of the leading skill financing companies are also helping skill seekers to avail loans at competitive rates to enrol in high quality programs.

### **What sort of career discovery options and proper guidance do you provide in choosing the right career path and outlining courses to support it?**

With roughly 8 million students graduating in India, 5 million need guidance in discovering the right career path. SKILL MONKS is addressing this pressing need, aiming to aid them in their career discovery by connecting aspirants to the right Training Companies that provide quality courses. Aligned with our vision to enable skill seekers, the need of the hour is to support career discovery to help skill seekers choose the right course that can ultimately enhance their job prospects.

It facilitates career discovery through Edvisers who are industry experts and subject matter specialists who guide skill seekers by offering advice on industry trends, competencies and skills they need to acquire. Edvisers help skill seekers in making the right choices. Once you firm up on your choice of course, listing of all training companies on a common platform helps easy enrolment. We have on boarded 100 Edvisers and we are constantly working on getting more Edvisers across diverse industry experience to help more skill seekers in their career discovery.

In our endeavour to offer the best to skill seekers, we have successfully conducted 10+ industry connect programs, 30 tech talk sessions and online demos over the past 6 months which saw 6000+ registered users. Covid-19 has accelerated digital learning and we are fully geared up in our digital offerings to offer seamless experience to skill seekers in their skilling journey. Our SaaS offerings to training companies are state of the art enabling their digital transition and business automation.





**IN INDIA, 95% OF ENGINEERS ARE NOT READY FOR SOFTWARE DEVELOPMENT JOBS ACCORDINGLY TO A STUDY BY ASPIRING MINDS. SO WHILE WE ARE CHURNING OUT A LARGE NUMBER OF ENGINEERS, THEY LACK THE REQUISITE SKILL TO SECURE THE RIGHT JOB**

**Skilling is a main part that seems to be missing. Do we have enough educators in various streams? How are you helping?**

In India, 95% of engineers are not ready for software development jobs accordingly to a study by Aspiring Minds. So while we are churning out a large number of engineers, they lack the requisite skill to secure the right job. For the emerging industry demands and trends there is a short supply of quality educators which is a larger problem coupled with the infrastructure and curriculum which colleges currently offer.

The existing skilling infrastructure is still not adequate and up to the mark which is clearly reflective in the concerns that recruiters have while hiring students from college. They have to undertake significant investments in training fresh recruits so that they possess the necessary skills and are made aware of the functioning of essential systems to thrive in the workplace. The employability of young Indian students is not nearly as high as it should be because of the glaring gap between the skills and education imparted to them at educational institutions, and the actual skills required to get absorbed into the market.

Due to this demand and supply gap, educational institutions must create opportunities and support educators who can help students build diverse skills in tandem with the current demands of the job market. As digitisation makes inroads in the Indian market, there is an urgent need for educators in the realms of programming, coding, data science, cyber security, digital marketing etc.

One of the bigger challenges lies in pedagogy which is in the approach to teaching. Academicians need to embrace the new ways of digital learning. New ways of

learning are not just about online teaching, but are more about delivery of content. Approach has to be focused on shorter duration and capsule based learning for better impact.

The focus has to be more of enablement, rather than lecturing. Online learning brings in its own set of challenges driven by limitations when it comes to experiential learning, one therefore needs to look at alternate options to bring in simulation to replicate learning's which are lab based.

Considering the plethora of information available on the internet, academicians should be willing to expose students to study material exclusive of the curriculum in addition to encouraging them to engage in more self-study so as to make the whole process of teaching and learning more holistic. Focus has to be on digital transition as a part of change management. They also need to bring relevant content and offerings in line with market requirements and industry trends.

We are addressing some of the gaps by helping skill seekers in their career discovery, helping them choose the right courses which cater to the industry demand. By offering courses which have a right blend of concepts with use cases and backed by internships we are trying to address the industry academia gaps.

We are striving hard to create a transparent learning ecosystem focused on quality assurance through our core pillars of Quality, Accessibility and Affordability. We also stay connected through Mobile app with the skill seeker and provide them with relevant updates and job trends. Our platform offers intelligence capability to use skill seekers learning information for future recommendations and also provide corporate connect. Our vision is to be a one stop solution for all skilling needs.

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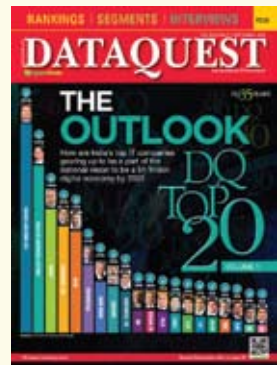


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# Collaborate to Evolve Deep Tech Ecosystem

While industry-academia partnership is critical, India also needs to motivate R&D and investments by the industry to enable the deep tech sector grow



**D**eep technologies have the power to disrupt existing industries and even create their own market. However, to make this happen and benefit from the growing trend, India needs to create an environment that can encourage research and development, as well as drive substantial investment by the government and industry.

Speaking at the DQ Deep Tech Virtual Conference – the largest event on deep technologies in India – Prof S Sadagopan, Director, IIIT Bangalore pointed out that there was an urgent need for all the four components of the

society – academia, industry, government and media – to collaborate to ensure a vibrant deep tech ecosystem in the country.

Moderating the keynote session, Pradeep Gupta, Chairman, CyberMedia Group, highlighted how technology was playing the central role in addressing problems in the post-COVID world. “This technological shift is already being observed with a large number of enterprises, irrespective of their size, adopting several modern technologies such as artificial intelligence, IoT, and data analytics among others,” he said.



SEVERAL STARTUPS MAY NOT HAVE SEEN FINANCIAL AND MARKET SUCCESS, BUT WOULD HAVE MADE GREAT ATTEMPTS. THAT IS WHAT COUNTS AND IS CERTAINLY MORE IMPORTANT

— Prof S Sadagopan, Director, IIIT Bangalore

Pointing out that China and Europe were already doing a lot to contribute towards the development of deep tech in their respective countries, he stressed that the time was ripe for India to bring all the stakeholders on a common platform to discuss the future of deep tech in the country.

“In the days to come, deep tech is likely to become the backbone of the smart planet or the connected world. Startups are in a sense the torchbearers when it comes to innovation in new age technologies, and India has close to 150 deep tech startups and innovators,” he said, adding that, governments around the world have undergone a fundamental shift as far as usage of new technologies was concerned.

So, what are the measures that India needs to take to build a robust Deep Tech ecosystem?

#### **INDUSTRY-ACADEMIA PARTNERSHIP IS THE KEY**

Highlighting the role of academia, industry, government and the media need in creating a vibrant deep tech ecosystem in India, Prof Sadagopan called upon the faculty, students, researchers, tech industries, venture capitalists, government bodies as well as mainstream and social media to play a constructive role in the establishment of the ecosystem.

“From the academia point-of-view, students and faculty need to think about the long-term goals. Multi-year projects with Master’s and Doctoral students should be part of the plan. We academicians need to start thinking big and take risks with the help of the government and the industry,” he said while talking about the need for a common platform to ensure collaborations between academia, industry and the government.

Prof Sadagopan also emphasized on the need for the industry to start investing in academic institutions, and create a cluster of institutions to ensure we move beyond

the critical mass, measure investments in hundreds of billions of dollars, and look for talent beyond just a handful of institutions.

Talking about the human resources required for the deep tech revolution in India, Prof Sadagopan said that there was plenty of talent in the country. “Nevertheless, a certain amount of ‘pivoting’ may be required. There is also a need to give more importance to the gig economy in the organized jobs sector. Job creation in startups must be as important as that in large multi-national companies,” he stated, adding that hiring graduates from open universities must also be normalized.

“The media needs to play a constructive role in developing the deep tech ecosystem. Write about nanocons apart from unicorns. Provoke discussions on solutions created to solve hard problems even if they have failed, rather than just talking about quick and successful solutions to easy problems. Several startups may not have seen financial and market success, but would have made great attempts. That is what counts and is certainly more important. Deep tech will be risky but the rewards are also much higher,” Prof Sadagopan said.

#### **GOVERNMENT INITIATIVES WILL DRIVE DEEP TECH**

The Ministry of Electronics and Information Technology Secretary Ajay Sawhney stated that the government has several roles to play when it comes to building a deep tech ecosystem in India. He also pointed out that the government has implemented and is currently working on a large number of e-governance projects, including in the agriculture and healthcare sectors.

“These projects are now vibrant systems that are in place, and are also producing a huge amount of data that helps the government provide better services,” he said.

“When these intricacies are woven together into an ecosystem, which transcends the entire domain, they



THE GOVERNMENT PLANS TO BUILD A LARGE PARTICIPANT BASE THROUGH CENTRES OF EXCELLENCE IN COLLABORATION WITH THE INDUSTRY, THUS BRINGING TOGETHER ALL THE STAKEHOLDERS

– Ajay Sawhney, Secretary, Ministry of Electronics and Information Technology, Government of India



STARTUPS ARE IN A SENSE THE TORCHBEARERS WHEN IT COMES TO INNOVATION IN NEW AGE TECHNOLOGIES, AND INDIA HAS CLOSE TO 150 DEEP TECH STARTUPS AND INNOVATORS

– Pradeep Gupta, Chairman, CyberMedia Group

make it possible to bring the national scale into being,” Sawhney stated, adding that there existed a lot of scope for usage of the best technologies under such circumstances since it provided economies of scale critical for returns on investments. “The industry can build on this foundation,” he stressed.

According to Sawhney, the government was already making this happen through Aadhaar, Unified Payments Interface, GeM, and GSTN. “This kind of a situation is ideal and a win-win state of affairs for all the players involved. For instance good services are delivered to citizens, and opportunities are provided to businesses to create an innovative product through the implementation of technology,” he said.

Sawhney highlighted that the government also plans to build a large participant base through Centres of Excellence in collaboration with the industry, thus bringing together all the stakeholders required to build a tech ecosystem.

Apart from these initiatives, startups are also being encouraged through the provision of initial impetus with small orders by the government for an infusion of funds, and then putting them onto the government marketplace so that all buyers are given access to these solutions.

Furthermore, innovation challenges are being organized by the Central Government, which is helping the country to discover and tap into authentic talent in the tech domain, Sawhney said.

Talking about resources, the Secretary informed that deep tech was seeping into every domain. “The best way to invest in these technologies is to play the leadership role in each domain and to understand the fact that deep tech will determine their survival and success in the near future,” he stated. He also said that insurance and pension funds, which are typically invested in what are considered as safer areas can be invested in deep tech to encourage the smartest and high-net worth individuals in the country.

“Media can disseminate the relevant information on deep tech and provide the awareness required to build the ecosystem. It can also talk about the huge opportunities these technologies can bring our way. It is certain these technologies are going to be disruptive, and some of the best companies and technologies will be built around deep tech. It is only a question of who will do it, where, when and how. And it is extremely important that we are a part of this answer” Sawhney said.



# Intelligent Electronics and Beyond

5G, Edutech, meditech, agrotech, intelligent electronics are the order of the day. These are given impetus by Digital India and Startup India. But what are our needs and what should we do to go ahead?



**T**he IESA Vision Summit 2020 was held recently. Welcoming the audience, Navin Bishnoi, Senior Director, Central Engineering ASIC Design Services, Marvell Semiconductor, and moderator, said that the Vision Summit was earlier slated for March 2020. “We had to defer it, due to Covid-19. We are now having it virtually. We are focusing on intelligent

electronics. There are multiple topics that we will touch, such as 5G and beyond, edutech, medical electronics, agritech, etc.”

## The Enabler

Delivering the opening address, Dr. C.N. Ashwath Narayan, Deputy Chief Minister of Karnataka, said that by



WE NEED TO HAVE TECHNOLOGY FOR ALL AND THE INDIA MODEL. THERE SHOULD BE SOLUTIONS FOR INDIA, FROM STARTUPS, INNOVATORS, RESEARCHERS AND ENTERPRISES. THERE SHOULD BE SCALABLE, DISTRIBUTED ARCHITECTURE, OPEN PLATFORM THAT EVOLVES WITH THE ECOSYSTEM, AND INDIA-SPECIFIC IPS AND TECHNOLOGY CHOICES

2025, the electronics market is expected to grow to \$400 billion. The Covid-19 pandemic led to drastic change at the way businesses are done. Digital India and Startup India have become more important. The major driver is the private sector.

The Indian government is playing the role of the enabler. Karnataka is a very important state for India, and is the undisputed leader in such sectors. Our state government has a target to reach \$500 million by 2025. We contribute 60% to India's ESDM exports. We need to scale up further. Karnataka is also the largest chip designer hub. All of the major players are present here.

Karnataka has adopted a multi-faceted approach for the adoption of ESDM. We have established the SFAL for the first time to encourage engineers. We have a VLSI Incubation Center in Hubli. We have industrial sectors in 13 districts. We have 7 SEZ areas for the ESDM sector. There are many opportunities for attracting investment in Karnataka. The Government of India has approved three schemes in April 2020 for the ESDM sector. The vision of Atmanirbhar Bharat is also flourishing. There are proposals for 20 champions in electronics components.

We have also given schemes for the establishment of the ESDM setups in Karnataka. There is capital investment subsidy of up to 25% on land. This is the first time that a government is providing land subsidy. We are also providing 100% exemption from electricity. Free operative clearance is also given for a minimum of three years. We are looking to meet all the challenges with the use of technology. We also need to promote the prevention of

and cure from Covid-19. We have set up Karnataka Digital Economy Mission.

Karnataka Digital Economy Mission or new company will be incorporated under Section 8 of the Companies Act, 2013 with the Government of Karnataka holding 49% and the remaining 51% by the industries and other stakeholders.

#### **Towards Intelligent Electronics**

In the inaugural keynote, Vinod Dham, Founder and Executive Managing Partner, Indo-US Venture, spoke about how intelligent electronics will be making 'New India' self-reliant.

He asked: "Why is this the right time for India to have a domestic chip fab? Moore's Law's relentless march is slowing down. India can jump in the fray. Semicon chips are the heart of everything, including cell phones, PCs, cars, cloud computing, drones, etc. Twenty years of Moore's Law is coming to a halt. Recent international events have precipitated a need for India to be a centre for chip design and embedded software. India can develop IoT devices, as well."

We need to jumpstart IoT chips and devices. Chip design is more capital intensive. The government needs to kick start the initiative by supplying critical seed capital. An amount of \$500 million per year should be injected side by side. We need to complete the electronics manufacturing ecosystem. In recent years, the ATMP business has been re-invigorated by new needs for disparate chips such as RF, sensors and processors to be packaged together of



## ELECTRONICS IS A CATALYST FOR STRATEGIC GROWTH. THERE SHOULD BE MANUFACTURING, INNOVATION AND LEADERSHIP. MANUFACTURING IS CRITICAL

variety IoTs and new packaging technologies like chiplets. The government should also provide soft incentives to fabless MNCs.

He added that it is time to make big, bold commitments. The SCL fab should be upgraded to a 65nm fab or higher, to meet the growing strategic defense needs. India needs a product that is highly reliable and robust. We also need to set up a new 14nm fab, jointly between the Government and India Inc., for fabricating the emerging IoT chips and smart processors.

There is a clear message for a self-reliant India. It is recommended that the Indian Government should launch an independent and fully autonomous National Electronics Commission, which should come under the Prime Minister.

### Tech-led Disruptions

In her keynote, Nivruti Rai, VP, DCG, Intel, said that we are looking at a \$5 trillion economy, going towards transforming 1.3 billion lives. Today, there are technology-led disruptions. The 2000 began the connected era. There are 100 billion intelligent connected devices. We have moved from a compute era, to a connected era, on to an intelligent era. Every device will be connected and talking to each other. Each car or vehicle will actually talk to each other. That's where the real value will come from.

The number of dependent people is getting fewer. The middle class is rising. India loves to consume digital data, about 12GB per month. There are digital native innovators and startups. India is no. 3 in the global startup ecosystem. Pushing for innovation is critical for an Atmanirbhar Bharat. India also has world-class academics and research.

There are business models innovations for scale, such as XaaS models, affordability and accessibility. AI is

simply scratching the surface of the opportunity before us. We can show many more business models. All of the technologies will be driven by cloudification, AI and data analytics, network and connectivity, and technology manufacturing is prime. Apple, Samsung, etc., are investing a lot in India. We should drive value creation towards transforming India.

Technology and business model innovation are driving the standard of living. Business model innovation is happening on demand, gig economy, mobile e-commerce and transport-as-a-service. Technology convergence is happening across the Internet, smartphone, mobile web, cloud computing, EV and AI, autonomous vehicles, etc. Moore's Law has been challenging us. It has been brought to you to innovate. There needs to be convergence of technologies, in line with the business models.

We need to have technology for all and the India model. There should be solutions for India, from startups, innovators, researchers and enterprises. There should be scalable, distributed architecture, open platform that evolves with the ecosystem, and India-specific IPs and technology choices.

Electronics is a catalyst for strategic growth. There should be manufacturing, innovation and leadership. Manufacturing is critical. The opportunity lies by scaling with India platforms. We also need to accelerate the core technology development with global collaboration, deploy and scale with some platform-centric approach. Manufacturing in India, should actually be manufacturing for the world.

Earlier, Dr. Satya Gupta, chairman, IESA, invited Dr. C.N. Ashwath Narayan, Vinod Dham, Ms. Nivruti Rai for the lighting of the lamp.



# Teaming Up

Ransomware is the fastest growing cybercrime. It's causing businesses greater financial losses every year. As the recent cyberattack on Honda proves, no company is immune



**C**isco and Cohesity have teamed up to offer a holistic approach to cybersecurity that prevents your backups from being targets for ransomware. Having an integrated solution protects your enterprise. A webinar was held to discuss this. The participants were Alan Stearn, Technical Solutions Architect, Cisco; and Derek Cowan, Head of System Engineering, ANZ, Cohesity.

Derek Cowan said Cohesity was founded in 2013. It has a highly experienced team working for Nutanix, Google, VMware etc. Cohesity data management is redefined on Cisco UCS. Cohesity DataPlatform is powered by SpanFS. It also has the Cohesity Marketplace and Cohesity Helios.

## How is the Environment?

Alan Stearn said that partnerships take on lot of different characteristics. Cisco has invested in Cohesity. Customers can buy and deploy the solutions from Cisco. Solution support is critical. It is really an end-to-end integration.

There are many ransomware attacks. How is the environment? Cowan said there are bad guys trying to exploit the opportunity. There is a very big financial impact. There is about \$2.1 trillion cost to the global economy due to cyberattacks. There is \$11.5 billion due to cost of ransomware attacks. There is \$1.2-\$2.5 billion average cost of downtime. There are entry points through the user action and vulnerabilities are getting exploited. In fact, organisations still have vulnerable systems that are attacked.



THERE IS ABOUT \$2.1 TRILLION COST TO THE GLOBAL ECONOMY DUE TO CYBERATTACKS. THERE IS \$11.5 BILLION DUE TO COST OF RANSOMWARE ATTACKS. THERE IS \$1.2-\$2.5 BILLION AVERAGE COST OF DOWNTIME

— Derek Cowan, Head of System Engineering, ANZ, Cohesity



INTEGRATED THREAT DEFENCE ARCHITECTURE SAVES DOLLARS. IT PROVIDES 38% TCO REDUCTION. WE BRING THE OVERALL ARCHITECTURE FOR CUSTOMERS. ALL THE PLATFORMS ARE TESTED AND HARDENED. THEY HAVE DATA-AT-REST PROTECTION PLATFORM

— Alan Stearn, Technical Solutions Architect, Cisco

### Are Enterprises Ready?

So, are the enterprises ready? At least, 21% have contingency plans to recover from ransomware attacks. That means, 80% are not prepared. There are 11% who can recover data and apps within three days after an attack. 58% said data and apps can be recovered after an attack. There is also loss of customer trust.

You can reduce the attack surface on one data management platform. That is, you can protect, control and leverage your data. Consolidate backups, files and objects etc., globally dedupe, index and search all data, manage all operations with a single UI and run the apps on the same platform. You can improve the security posture of your files and objects. There is machine-driven anomaly protection. Ransomware targets backup copies.

Cohesity anti-ransomware protection looks to defend data. You can prevent with immutable file system, DataLock (WORM) and multi-factor authentication. You

can detect with machine-driven anomaly protection and automated alert. You can respond with scalable file system to store worth years of backup copies. There is instant mass-restore. Respond to ransomware attack with global search and instant mass restore. Detect ransomware attack on production with ML-driven action.

Alan Stearn noted that Cisco has a global visibility, threat research and analytics. It has an architectural approach. Integrated threat defence architecture saves dollars. It provides 38% TCO reduction. We bring the overall architecture for customers. All the platforms are tested and hardened. They have data-at-rest protection platform.

He added that Cisco and Cohesity are creating tremendous value. There are critical items. Derek Cowan concluded stating that they are redefining backup and data management, along with Cisco. They are also reducing TCO by over 70%.

## Indium Launches Automated Testing Platform

Indium Software has launched its smart unified testing platform uphoriX. The all-in-one quality assurance and test automation platform integrates functional testing, performance testing, security and compatibility. This will help increase the pace and frequency of software/application release, the company stated. The highly agile testing platform addresses the needs of various business categories, from start-ups to large enterprises.

According to a company release, it has designed uphoriX to reduce the overall complexity in the testing processes by automating and increasing the test coverage, and thereby reducing test creation time as well as maintenance efforts. "The platform endures 30-40% of the end-to-end testing lifecycle, to speed up development and in turn accelerates

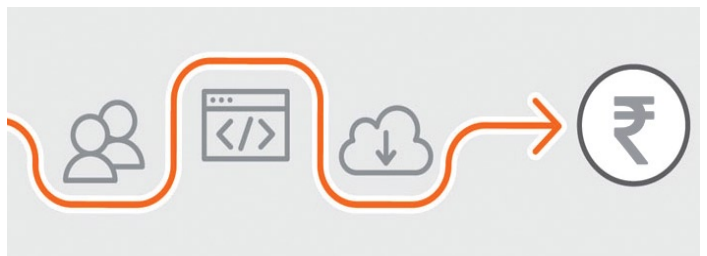


digital transformation across industries. It automates the tests over the cloud and is compatible with all testing tools and easily integrates with most of the DevOps tools enabling CI/CD and also supports automation in an Agile Sprint model," the release stated.

## Avalara Introduces E-invoicing Solution

Cloud-based tax compliance automation solution provider Avalara has announced the availability of its end-to-end GST e-invoicing solution that can help companies manage requirements and comply with India's e-invoicing reform. The new offering builds on the company's range of technological solutions available to improve the Goods and Services Tax (GST) compliance experience for businesses in India by validating, storing, and managing invoices, and providing the option to automate GST returns and e-way bills.

The GST e-Invoicing solution can be leveraged as an integrated solution or as a stand-alone module for



generating e-invoices and supporting compliance needs in India. It can also be combined with Avalara AvaTax for tax calculations across business transactions and other indirect tax types, including the US Sales and Use Tax.

## SpringPeople, Udacity to Offer New Tech Training

SpringPeople, IT training provider of India has partnered with California-based educational institution Udacity, to train employees of the IT sector on new technologies and applications. The training will address accelerating digital technology adoption, across enterprises through in-demand technology learning paths.

Talking on the partnership, Gabe Dalporto, CEO of Udacity said, "The increasing demand of AI, RPA and data science in professional fields raises the demands of employees in such areas. The nanodegree programs are designed to provide hands-on training in emerging and

cutting-edge technology so that enterprises can recreate their own candidates from within their employee pool."

Udacity specializes in providing industrial training and skill development programs to the learners. It partners with leading technology companies to learn how innovation is transforming industries and further imparts the knowledge and upskills the workforce. Through this partnership, SpringPeople aims to offer Udacity's 46 nanodegree programs on artificial intelligence (AI), data science, robotic process automation, self-driving cars, and AI for healthcare to its network of 500+ IT enterprises.



## HERE Offers Access to Rich Geospatial Data

With the demand for high-quality geospatial data skyrocketing across industries, HERE Technologies has announced the release of its Data Layers to improve software developer and data scientists' access to the rich cartographic features and attributes captured within an enterprise-grade mapping platform.

"HERE Data Layers are standalone geospatial representations of the world's road networks, pathways, buildings, structures, places, land use and land cover. They serve as a menu for developers and data scientists to select the datasets needed to power today's location-based functions, applications and customer experiences," the company said in a press release.

The new offering consists of customizable high value urban geospatial data sets in GeoJSON format and can be used in a range of use cases from map display, spatial analytics, and business intelligence to AI/ML analysis.

"Today, we're 'disaggregating' our map via the HERE platform to empower users across all industries to tap the value of high-quality geospatial data," said the company



Vice President, Developer Relations Mithun Dhar. "We are proud to support developers and customers in achieving better outcomes, whether that's by driving more engaging experiences, improving fleet, supply chain and road safety efficiencies, or by helping them to operate more sustainably," he added.

## Flock registers 40% revenue growth

Workplace communication and collaboration platform company Flock has seen robust revenue growth in the last three quarters and has become the go-to platform for multiple industries and organizations across India. Flock has also doubled its number of paid users in the last two quarters and has proven to be one of the most convenient platforms to use while working remotely in the current times, the company said in a press release.

As the COVID-19 pandemic continues, employers have

turned to collaboration platforms like Flock to ensure business continuity. Flock's daily active users now spend more than 90 minutes on the platform on average per day, with the most active users spending upwards of 300 minutes collaborating with team members every day. The company has become the de-facto platform for all work communication for thousands of companies both in India and across the globe. Moreover, companies have continued to use Flock as their platform of choice, even as many of their employees have retired to offices.

## Kerala startup BestDoc raises USD 2.1 million

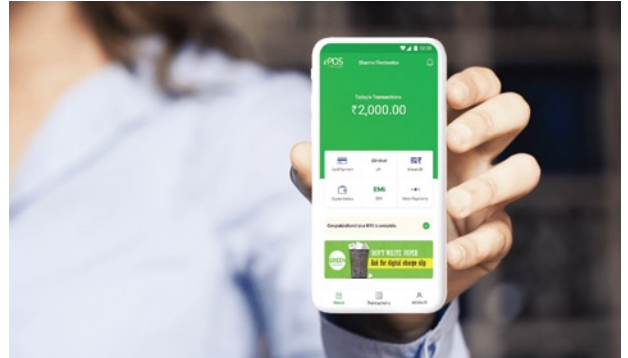
BestDoc, a fast-growing healthtech software as a service (SaaS) startup has raised about Rs 16 crore (USD 2.1 million) from US-based Accel and Bengaluru-based Arkam Ventures in their Pre-Series A round. The firm's existing investor SEA Fund from Bengaluru also participated. The healthtech startup is supported by Kerala Startup Mission (KSUM).

BestDoc is an Intelligent Patient Relationship Management (PRM) system for hospitals and other healthcare providers in India. Founded by Mr Afsal Salu, Mr Fayaz Bin Abdu and Ms Soudabi Neduvanchery in 2016, BestDoc started off as a marketplace for doctor appointments for tier2 and smaller towns. Later, they embraced a B2B model, realizing the potential of digital adoption in healthcare system.

## Pine Labs Updates In-store Payment and Gateway

Merchant commerce platforms Pine Labs, has announced that the company has integrated over 50 third-party business apps with its payments infrastructure. These can be downloaded and used on the company's Android PoS, Plutus Smart. "This has helped create an integrated app ecosystem for small merchants who can now use Plutus Smart for GST billing, inventory management, barcode scanning, and loyalty solutions," the company stated in a press release.

Small businesses like kirana stores, mobile stores, and pharmacies are major beneficiaries of this democratization of technology as they now have access to an integrated platform through Pine Labs' Android PoS, right out of the box. Commenting on the app ecosystem, the company CTO Sanjeev Kumar said, "We have strong built-in security checks and balances to ensure all these third-party applications that are introduced into our payment infrastructure are compliant and safe for our merchants.



Only authorised PoS terminals can download and run these apps which undergo vulnerability testing checks before making it live. Even after the testing phase, the apps need to be signed using Pine Labs keys before they are made live, thereby eliminating any possibility of unauthorised use."

## Tata Elxsi Opens Global Engineering Center

Design and technology services company Tata Elxsi has announced opening of its Global Engineering Center (GEC). The GEC has been set up with Schaeffler Technologies AG & Co. KG, a world leader in providing mechatronics solutions for the transportation industry.

The company has been selected as the global engineering services partner by Schaeffler, and the GEC is part of a strategic multi-year engineering services engagement. "The GEC center in Pune will focus on mechatronics, digital and embedded technologies with the highest level of talent in line with Schaeffler's vision for driving Mobility for Tomorrow," the company said in a press release. This center will be pivotal to help accelerate innovation and drive digital transformation and growth for Schaeffler's mechatronics business.

Commenting on the announcement, Lars Noetzig, VP, Central Mechatronics, Schaeffler Technologies AG said, "Tata Elxsi brings in the right blend of technical expertise, program management skills, forward looking technological investments to support Schaeffler in its all-important journey. They will help us in collaboration with our centers in India and Germany to build the required talent bases for the increasing footprint of mechatronics products of the company."



"We are delighted to be selected as a strategic partner to Schaeffler supporting their mechatronics transformation, through our expertise in product development and digital technologies. This further consolidates our automotive position in Europe and fortifies the focused investments that we have pursued over these years as a design led engineering solutions provider," Nitin Pai, Chief Marketing and Strategy Office, Tata Elxsi said.



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