

**Simplifying Data Management  
In Hybrid And Multi-Cloud Era**



**What If APIs Turn Into  
The Ship Of Theseus?**



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## New Normal is Normal 2.0

If there has been one silver lining in the Covid crisis, then it has to be technology. With the pandemic-lockdown, things would have ground to a halt had it not been for that one thing. Ecommerce stepped up and filled in the vacuum created by shutdowns and social distancing in the market. Drones were used for sanitization in Delhi and aided the police to monitor the lockdown in Punjab. Contact tracing meant that governments could keep track of citizens who had Covid. Israel sent alerts to those who were in proximity to Covid infected thanks to the wonders of GPS.

Video collaboration zoomed and ensured that offices would engage with each other as best as they could, meetings and decision making would continue and the company wouldn't come to a virtual standstill. It also aided schools and colleges. Students complained of the stark coldness of the screen as compared to the warmth of friends in the campus, but that was still much better than sitting at home, doing nothing and getting on the nerves of parents. Insurance agents met clients on video calls, got them to fill online forms and new policies continued unabated.

OTT players like Netflix, Prime and Disney+ Hotstar ensured that the shutting of malls and cinema halls would be at least bearable. Regional OTTs saw to it that there would be no language barrier. Every Indian would be entertained. All this has ensured that 2020 will be remembered as the real beginning of the Work From Home Era. The mobile workforce got a fillip and the flexibility that employees now have is manifold. Telemedicine can take care of at least the first doctor's appointment to know if something is serious or not.

It has been proved that we can both work and get entertained in the cloud world. There are millions of data centers in the world and their numbers will only grow. The amount of data flowing in has increased in the Covid era, but analytic tools are getting more powerful and Artificial Intelligence will be able to take care of a huge lot of problems in the future.

Delivery. Surveillance. Planning. Photography and film shooting. The things you can do with drones are endless, especially in war zones and hazardous areas. They may rule in just a couple of years. Driverless cars could lead to mobile rooms that could be used for anything. Virtual Reality could transform both office collaboration and remote education.

Digitization has been speeded up along with digital transformation. While one aspect of Covid is the tragedy which is unfortunate and cannot be denied, the other side is that it has already ushered in a new technological era which we have called the New Normal which in fact is Normal 2.0.

*Sunil Rajguru*

“  
*Tech enables  
the Covid era*  
”

# LIVING IN THE SURVEILLANCE STATE ERA

We left our anonymity behind in the 20th century. The 21st century has become the Century of Surveillance and 20 years into it, governments have picked up all the tools of the trade to spy on their citizens effectively. They are joined by big corporations, Big Tech in particular, along with various spying agencies, hackers and other bad state actors

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**A**t the turn of the century, when it came to technology, the whole world was consumed with the Y2K crisis or the Millennium Bug. Y2K stands for Year 2000 and it was felt that since computers only used the last two digits for the year, they wouldn't be able to distinguish between 2000 and 1900, which would lead to grave errors. There could be pandemonium at the turn of the century. There were scares that computers would go bust, planes would go down, stock markets would crash etc. Some cults even predicted the end of the world. But we solved that problem without much fuss and India entered the path to becoming an IT services superpower, getting a good chunk of the Y2K outsourcing market.

What really changed the world came a year later. The exact date being September 11, 2001, when the Twin Towers of the World Trade Center in New York came down. 9/11 may have been a great geopolitical event, but it also led to the Patriot Act, which turned America into a Surveillance State. The National Security Agency (NSA) became all powerful and it was just a matter of time before other countries and agencies followed suit.

The second factor was the rise of China as an IT superpower and their use of tech to monitor citizens and streamline their activities effectively. Being a Communist country with no checks and balances, it was tech on steroids when compared to America. A credit score system was introduced. Facial recognition ensured that nobody could escape its reach. Artificial Intelligence became all-powerful. AI courts are gaining ground in China.

Stories of a surveillance state dystopia abound in literature and films, the first famous one being George Orwell's *Nineteen Eighty-four*. If 9/11 set the trend and China provided the tools, then what was left was the opportunity for the world to do so. That came with the Covid-19 crisis. A widespread alarmist global pandemic in the age of surveillance tech meant that governments could monitor the health and movements of all their citizens without protest. Social distancing means that all the no touch technologies can be pushed to the limit and there so many of them.

*A look at the complexities of the global surveillance state that we all live in...*

**Public/digital data growing enormously—so is the cloud:** Once most data was not recorded and what was recorded was in the form of paper which was not very accessible to everyone and required a great deal of red tape. Even with the advent of



the computer, data was localized and hid behind a bureaucratic machine rather than a bureaucratic folder.

Then came the cloud, where an unlimited amount of data could be saved and in multiple places. You no longer needed messy triplicates which had to be stored in faraway godowns. The data that you collected could be increased manifold. It could be recorded directly digitally instead of being converted from paper and it could be accessed by anyone by any device from any part of the world provided you had the right access. Today there are millions of data centres in the world and billions of access devices.

For the first time in history tonnes of data related to all 7 billion odd global citizens is out there. Nobody is anonymous. Anybody can become famous at the click of a button. Anyone can be studied in detail anonymously with the person being studied not knowing about it or even knowing how much data related to him or her was out there in the cloud.

**People want to make information public:** That's another problem with data privacy, data collection and the rights of citizens is that people actually want to put out data in the public domain indiscriminately and irresponsibly. The age of Social Media has shown that to be the case. People willingly put up their names, relationship details, photos, locations, holidays, political beliefs... you name it. Personal information is there for the taking while official



information is on the cloud. Combine it and you can be tracked by both good and bad state players. Even if you are not on social media, your friends and relatives could be on it and put your information and pictures. It was reported that certain social media sites kept records of such "indirect" accounts too.

**Your mobile knows what you are:** Your mobile knows where you are all the time. So does the Big Tech company making it easier for the government. But more important than "where you are" is the fact that the mobile knows what you are. It knows how much time you spend looking at the screen, what you like and dislike, how much you spend, all the apps that you have installed, how you use them and for how long. It has a rough idea of your personality and your social status. Your mobile is now actually your biggest surveillance device.

**Contact tracing is now legit:** In the pre-Corona



era if you heard that the government was coming out with an app that you would have to download that would keep track of you as part of a national database then you would have either laughed or agitated on the streets. But now the whole world is accepting contact tracing without much fuss. Contact tracing may become compulsory in the future too, if you want to be part of a government department, travel or if epidemic scares keep happening. It's the case with all technology, good or bad. Once it gets a foot in the door, it takes over the entire house.

**Snooping at source:** There are scary stories of intelligence agencies installing spyware at the time of the manufacturing of a mobile phone compromising the device. But then this kind of snooping can be done at any stage. It can be done when you download any app or leave your phone unguarded. NSA whistleblower Edward Snowden demonstrated how easy it was during a live interview where he compromised a mobile in real time as a demo. Again, unlike a desktop or laptop, the mobile has truly penetrated every class in every country of the world. Your mobile is with you all the time, even when you are sleeping or when you go to the bathroom.

**The buy everything online policy:** People give out a tonne load of information on social media. Their mobile devices know everything about them. But the increasing trend to rely on ecommerce for all manner of purchases also gives out your financial details means that that much more of your profile is out there for you to see. Groceries. Dinners. Holidays. Small and big-ticket purchases. All are being done increasingly online.

**Snooping devices on the rise:** While Siri was a virtual assistant on the iPhone, soon these took a life of their own with the likes of Google Home and Alexa. If the data revolution and mobile were



not enough, now we have home assistants that can listen to you all day. The Amazon Ring was a doorbell with a camera that could detect criminals outside your home and even alert the police. Then came an indoor version so there was video capture with an audio. There's one version that has a flying drone that survey your entire home! Quite handy! but all the information of your home also sits in some faraway server! And this is data collection 24X7 in real time!

**Will power Smart Work From Homes (SWFH):**

While both Smart Homes and Work From Homes have been around for some time, the Covid era will push Smart Work From Homes and in the long run they will invariably be powered by the above mentioned home assistants. With a smart TV, smart fridge, smart vacuum cleaner... smart everything, the "s" in smart homes could well stand for surveillance.

**Facial recognition works for States: As**



mentioned before, the Chinese have taken facial recognition to the next level so much so that it has become a central tenet of governance there. Now there is no escaping for both criminals and citizens who have committed even minor offences. London used to be the CCTV camera capital of the world crossing half a million some time back. But China has taken a clear lead with many cities having more than 1 million cameras each.

With the Covid crisis, expect all major airports and city centres of the world to adopt cameras with greater gusto and that tech will slowly spread throughout the interiors of every country. The cloud revolution is enabling this and everything else and storing and accessing tremendous amounts of data is becoming easier by the day. There is even something called Video Surveillance as a Service (VSaaS).

Facial recognition is a very popular form of

payment, because it is so easy. It is even easier than mobile money. That's the thing about most of these technologies. Their ease of use makes life so much better, but they come with a rider and that's your privacy.

**Drones:** Cameras are numerous but fixed. That



way even one drone can cover a large area. While drones have multiple applications, one of them is surveillance and they can go almost everywhere. There are drone surveillance companies and in America recently multiple cities were under drone surveillance during the protests.

**Even your car can spy on you:** Driverless cars are



imminent, connected cars are already here and soon they will dominate the market. So that means already someone knows where your car is, where it is headed to, whether it is speeding or not and whether it has broken other traffic rules or not. You may not be surprised to know that there is an Amazon Ring version for your car too.

#### **So can your watch:**

That's another hot market. Wearable IoTs which can monitor your physical health and track your jogging routes. It is beneficial if you have that for your health insurance and going forward it could become compulsory. But then that's just one more device that knows where you are and transmits data about you.

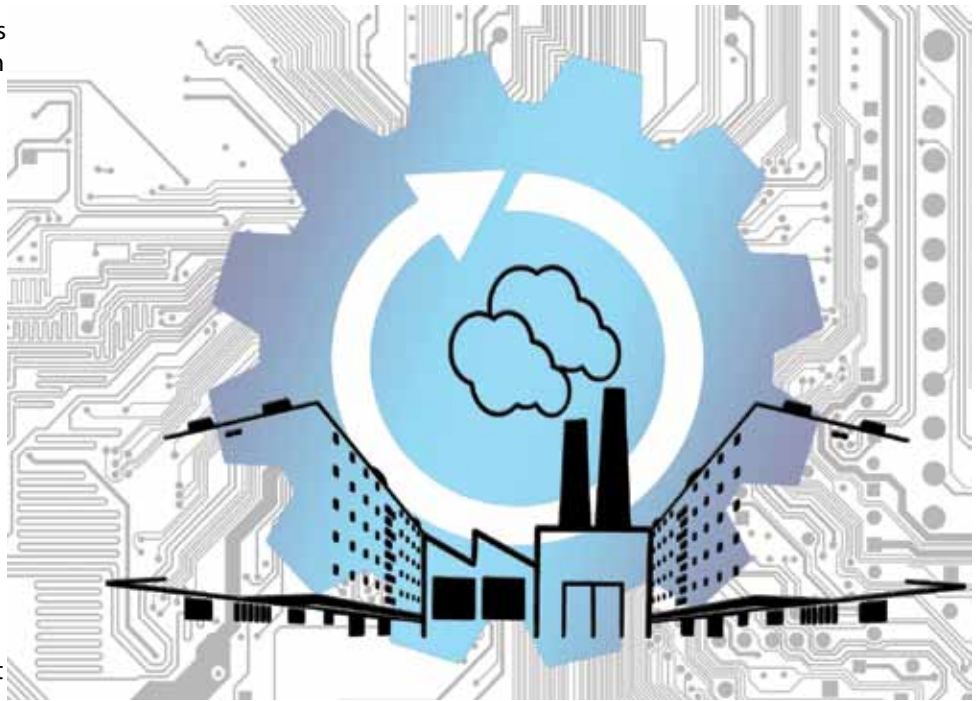
**IoT devices are humongous:** IoT (Internet of Things) devices are already more than the population of the world. The upper limit for 2030 is 500 billion such devices. That means soon you will have IoT devices all around you, in your home, in the streets, transmitting data about various things 24X7.

**5G will make it even more pervasive:** 5G will have smaller, closer towers, with greater bandwidth and will have the capacity to power even more devices. That means the surveillance web will be tightly packed and fast when 5G finally comes.

**RFID microchips:** Another way of monitoring people is RFID (Radio-frequency identification) microchips. While they are being used for limited medical and identification purposes, one doesn't know how widespread they will be in the future. RFID tags are already widespread and if you have them on any of your products, they can be monitored.

**Not even one industry will be spared:** In the past some industries relied heavily in tech and others not so much. But in the era of rapid digitization and technological acceleration, no industry is spared. With disruptions like Covid and social distancing problems that lead to less workers, even small factories will have to rely on high level tech automation.

**Industry 4.0:** All that leads to Industry 4.0 and we



will have smart cities consisting of smart factories, smart offices, smart homes, smart cars, smart utilities... This means that no matter where you are, at home, in the office, or on the street, you cannot escape the prying eyes of technology. For hackers there are multi-point opportunities and they no longer have to hack the fort of the main server. They can attack the network layer or app layer.

**Superior Data Analytics and AI:** One valid point is that if you have tonnes of data of billions of people, who has the time to sift through it? But with analytics getting better all the time and the increasing use of Artificial Intelligence, it is much easier to handle the data. The main thing is the storage of data and later, specific things can be searched at will. The Utah Data Center is a separate township owned by the US government with its own power plant. It can store data in the form of exabytes (1 exabyte = 1 million terabytes) for private emails, mobile call records and other data related to citizens and consumers. Snowden revealed the scope of PRISM which could monitor and search the online activities of citizens in real time.

US artist and filmmaker Andy Warhol declared in the late 1960s, "In the future, everyone will be world-famous for 15 minutes". That led to the term "15 minutes of fame". This is coming true with the advent of social media and ever-changing daily trends. But one smart alec quipped: In the future we will be lucky if we get 15 minutes of anonymity!

# THE WORLD OF NO TOUCH

One of the buzzwords as a result of the Covid-19 crisis has been “No Touch”. Thanks to social distancing, we are supposed to stay away from each other during a pandemic and there are a host of tools that can make this happen

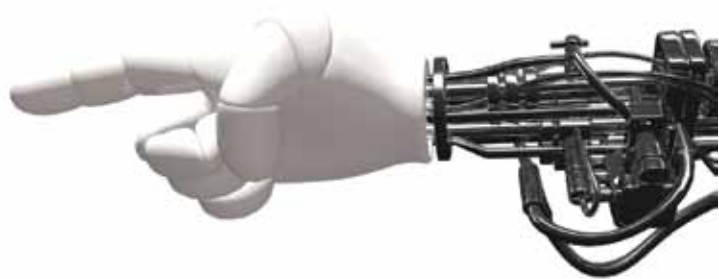
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**Internet of Things:** IoT devices are small, unobtrusive and can be embedded in almost anything. They could be in your watch, TV, fridge or washing machine. They could be spread across roads and traffic signals. They could be in pumps and tractors in the rural areas. They could be in remote equipment where it is difficult for workers to reach.

They sit quietly and collect data and send it to wherever required 24X7 throughout the year. They require very little maintenance and most of us don't even notice them. There are already more IoT devices than there are humans and there could be half a trillion by 2030, at least according to some estimates.

**Robots:** Actual robots can be receptionists in hotel or hospital or do the preliminary checking at the entrance of airports and train-bus stations. They can be used for assistance in offices and around in hospitals. VR powered robots are stacking store shelves in Japan. Police are experimenting with



robotic dogs to break into homes in the US. They are getting better, more flexible and more sophisticated. Some are even getting better using Machine Learning. Robots can be used in war zones for heavy lifting or even companionship at home. Let's see what kind of fillip Covid gives to them.

**Drones:** They already can be used for almost anything. Delivery. Surveillance. Surveying. Reaching populated areas during a pandemic or sparse areas

at any time or disaster zones during things like fires and earthquakes. Aerial photography and videos. 3D mapping. Film shooting. Racing. Monitoring wildlife.

India used them to spray disinfectant as Covid sanitization measures and police even used them to check social distancing norms and curfew violations. Drones can be numerous, can be made in all shapes and sizes and just about used for anything. The only thing that is holding them back is legislation.

**Digital bots:** While all of the above is the physical



world, this is something in the virtual world. We already have millions of digital workers or bots who are doing automated tasks previously handled by humans. A virtual bot can answer basic queries, answer emails and clear cheques. Bots can collect and enter data. They can be made to do rule-based tasks, both simple and complex.

**Driverless vehicles:** If you remove the need for the driver, then you can remove the seat and in fact you can remove all the seats of the vehicle. The driverless vehicle is in fact the mobile room. And this mobile room can travel all over the country and be used for almost anything. Work room. Hotel room. Tourism room. Educational room.

One can't even imagine what the driverless car of tomorrow will look like. You could use it to run errands, always keeping track of it and remote controlling it. Or you could even choose to live in it if it was a large trailer. With electric vehicles getting smarter and battery capacities going up, these could be used for long distance remote work too. Again, the only thing keeping this from happening is legislation.

**Remote working:** While Work From Home has been around for ages, it is only post-Covid that the remote working era has taken off. Now all the collaboration and bandwidth tools have been taken to the next level. We have enough devices to give flexibility to working at home the way you want.



Finally the cloud has also become stable and is expanding at a rapid rate.

**Dark factories:** An aspect of Industry 4.0 is lights out factories where you don't even require workers and everything is automated. These factories won't even know if there is a pandemic going on or if some disaster has taken place nearby. Factories ever since they came have been increasingly automated by the year requiring lesser and lesser workers with some requiring none. Hence the term "lights out" or "dark" as there will be no humans and no need to put the lights on.

**Artificial Intelligence:** The entire no touch



ecosystem can be controlled using AI. As AI gets more sophisticated and as we use more and more of Machine Learning, Deep Learning and Natural Language Processing. The need for human action and intervention gets reduced with each passing year. It's like a No Human rather than a No Touch technology.

# SIMPLIFYING DATA MANAGEMENT IN HYBRID AND MULTI-CLOUD ERA

Businesses' requirements today go beyond traditional backup and recovery, they need help with the portability and mobility of their workloads in a multi-cloud environment and in meeting the governance and compliance requirements as well

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**E**nterprise data is now spread across physical data centers and clouds through file shares, shared storage, and even SaaS platforms and applications. Legacy solutions primarily designed to back up on-premises file shares and

applications not only fall short in meeting the requirements of the hybrid and multi-cloud world, but cost time and resources and put their data at risk.

Improving reliability of backups emerged as a key requirement for the enterprises looking to replace

their existing backup solution, shows a survey done by Veeam capturing the 2020 Data Protection Trends. The second most common driver for change is economics, including both reducing software or hardware costs and improving Return On Investment (ROI)/Total Cost of Ownership (TCO). The third driver is operational improvement, including both improving Recovery Time Objective (RTO)/Recovery Point Objective (RPO). Service-level agreements (SLA) and reducing complexity. Beyond those three meta-trends, cloud usage as well as various form-factor/consumption choices round out the top drivers for change.

**Sandeep Bhambure, VP & MD, India & SAARC and Anthony Spiteri, Senior Global Technologist, Product Strategy, Veeam Software** talk about the data management challenges faced by the enterprises today and explain how Veeam is helping them solve some of those challenges.

**You work with a large set of customers across industries. Could you tell us about the key data management challenges they have been facing regularly?**

**Sandeep Bhambure:** A recent survey that we conducted among more than 1550 enterprises across 18 countries to understand the data protection challenges faced by the enterprises today and what are their expectations from modern availability and backup players shows that unplanned outages or unexpected outages still remains a big concern (95%) for the enterprises. The most common IT challenge

A huge amount of enterprise data still remains unused, lying in tapes, or disk drives mostly. These non-performing data assets pose a big challenge for the enterprises



**SANDEEP BHAMBURE, VP & MD, India & SAARC, Veeam Software**

in 2020 will be cyberthreats (32%). Skill shortage to implement technology (30%) is the next concern. So when it comes to data protection and availability, they look at the vendors who can help them protect against cyber threats. They also expect the software to be very simple to use, and to be extremely reliable with a high degree of automation and reporting and so on.

We stick to our vision to be the trusted provider of backup solutions that deliver on Cloud Data Management. From my experience and my interactions with the CIOs across the country and in this region, I can see that CIOs expectations from the backup solution providers are no longer just protection of data. They go beyond backup, and resonate very well with the cloud data management capabilities that we talk about.

**How do you help them solve some of these challenges?**

**Sandeep Bhambure:** Businesses' requirements today go beyond traditional backup and recovery,



they need help with the portability and mobility of their workloads in a multi-cloud environment and in meeting the governance and compliance requirements as well.

CIOs nowadays don't just ask us to protect the data and help them recover the data within a stipulated time to meet the business SLAs only- they need to be compliant to the regulatory frameworks too. Despite having a legacy backup software, a large private sector bank CIO, for example, has adopted Veeam for protecting their mission-critical model workloads and guaranteed recovery of the workloads in less than five minutes, which the legacy software couldn't deliver. A few Smart Cities' data also gets protected on Veeam. We not only move those data to the AWS cloud, but we also give the ability to recover the workloads straight from AWS clouds to on-prem within minutes.

As customers need to move workloads across physical, virtual and various cloud environments in this hybrid and multi-cloud era, what kind of challenges do they face in terms of cloud data portability? How do Veeam solutions help in this regard?

**Anthony Spiteri:** It's certainly not as easy as a click of a button. So we've got this concept of the portable data format that enables complete Cloud Mobility including backup, recovery, and migration across multi-cloud environments. The backup file system is agnostic to any underlying file system or architecture. So effectively, you could take a backup from cloud, virtual machines, as well as physical machines and you get that data backed up into our format. And then from there, you can then recover it and restore it into any other platform. A lot of the recoverability functionalities built into the product allows you to recover very easily and without any steps in between. In addition to that, we also offer portability of backup locations leveraging object storage.

### **A lot of enterprise data today remains unused. Do Veeam solutions help enterprises handle this dark data dilemma as well?**

**Sandeep Bhambure:** A huge amount of enterprise data still remains unused, lying in tapes, or disk drives mostly- these non-performing data assets pose a big challenge for the enterprises. We are helping our customers to re-use this data, leverage those data for the business, or mining the data for protecting themselves against ransomware or malware attacks, or for faster development of



**ANTHONY SPITERI**, Senior Global Technologist, Product Strategy, Veeam Software

applications and testing, etc.

Anthony Spiteri: We have built a Data Integration API in the Veeam Backup & Replication v10, which enables effective re-use of the business data. This new feature allows third-party integration into the backups and opens an expanding list of possibilities including Data mining, Data classification, Security analysis, eDiscovery, Data forensics. So the whole point is to make sure that customers are getting value out of the data, which was otherwise just sitting idly and collecting dust before. Also, it was becoming more expensive to store that data, with more and more data being created everyday. But with the technologies that we're leveraging with object storage, it's becoming more and more feasible and cheaper to store that data longer offsite in object storage. But with the regulatory compliances coming into play, businesses need to store more. Now, when you know that you have to pay more for storing that data for longer terms, you will try to get business value out of that data and that's where the Data Integration API comes into play.

# THE DEMOCRATIZATION OF APPLICATION DEVELOPMENT

As more business heads, data scientists and programmers come into contact with low-code, the rate of application delivery and innovation in the market is bound to go up, says Divyesh Kharade, Co-founder and CEO, DronaHQ

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## Can you describe exactly what low-code is in brief?

Simply put, low-code is a visual software development approach that lets users create tools like apps and websites with minimal hand-coding. It enables users to build solutions without the need of proficient coding skills by using drag and drop interfaces and ready to use modules. It is a technology set to shift the power from only the IT teams to the business as well. The business developers or citizen developers can co-create powerful apps for business in collaboration with IT.

## Can it contribute to democratisation of technology?

The ease of access and ease of adoption of cloud-based low code platforms is further contributing to democratization of application development. As more

business heads, data scientists and programmers come into contact with the low-code technology, the rate of application delivery and innovation in the market is bound to go up.

The crux of low code makes it easy for users to adapt and make apps that meet their needs in a more personalized way than their off-the-shelf and pricy alternatives. Something that they build once can be continually iterated upon and optimized. Power and onus of digitization is shifting from IT to business, as business users and managers are co-creating along with IT.

## There is now even a move to teach coding to children from Class 6 onward. Your views?

Teaching kids from a younger age on how to code is good, especially given the growing necessity

for technically sound folks, but in actuality coding develops the understanding of the flow of data, data security, architecture, structural thinking, and logical thinking. Low-code tools help them achieve exactly these and more irrespective of the coding languages.

### **Do you think low-code is more relevant in the post-Covid New Normal?**

The corporate world is really flexing its muscles on digital ever since the onset of the pandemic: Enhancing customer experience, employee experience, adjusting with the new normal—Work From Home.

What more businesses have come to realise is how frail old manual, paper-based processes and legacy systems can be. With that realization growing, the importance of agile framework, online and real-time data access, cloud-based apps is at its peak.

With the need for innovative digital solutions growing at a pace more rapid than IT capacity to keep up, low-code platform attributes make it an effective technology to handle change management. With a lot of secure and ready to use UI modules, Database and API connectors, users can just plug in different data points and make information available to stakeholders in real-time.

### **Do you have concrete examples of how low-code products have benefited the industry?**

Low-code vendors have been able to raise more than \$500 million and the investors are looking into low-code for good reason. Globally there are conglomerates, governments, small and medium enterprises and even freelancers who have taken to loading code in the wake of the pandemic to create apps and keep vital processes running.

At our organization we have Global CPGs building sales engagement apps to keep their field force motivated and boost KPIs up. One of the customer's started out with a sales gamification app to boost new product launch and received an end-user adoption rate as high as 80%. They've introduced the low code platform to their innovation teams to create apps for their ideas and quickly validate them and take them live.

An HR consultant developed a Virtual development center to continue a leadership training program as the world was beginning to go into lockdown. The consultant, in a span of 14 days, created apps that integrated with video conferencing tools and google calendars and emails. So with the app, the consultant not only created an alternative solution to conduct



**DIVYESH KHARADE, Co-Founder and CEO, DronaHQ**

training remotely, his clients also saved a tonne in logistics costs like travel and accommodation.

An Indian bank has recently adopted a low code platform to create employee evaluation apps that allows employees to rate their peers and that data is transferred to the bank's internal SAP tools.

### **India is woefully short in apps becoming popular in the global market. Can low-coding help in our Make in India app campaign?**

The Indian SaaS market is growing 1.5 times faster than its global counterparts and for good reason. Low-code, zero-code is surely gaining popularity in the Indian business place. The Atmanirbhar Bharat initiatives by the government has actually boosted the demand for low-code platforms as we see an increase in paid subscriptions and participation of millennial managers and students in the low-code movement.

### **Going forward, can low-code handle the complex issues of traditional coding or does it have certain limitations?**

Low-code can very well handle complex issues given its plug and play attribute. DronaHQ and a handful of other low code players have the provision for developers to bolt in their custom code if they hit a ceiling or need a highly specific functionality like a custom traveling salesman algorithm or a customer onboarding workflow implemented.

# ACCIDENTAL CONVERGENCE CAN QUASH THE MOST SECURE AIR-GAPS

Although isolating IT and OT systems by implementing an air-gap strategy is perceived to be bullet-proof, it's not completely immune to breaches and hence, provides a false sense of security that no longer reflects reality in today's business environment

Dick Bussiere



**R**eading the news about several high-profile incidents of industrial sabotage in supposedly secure environments is like witnessing a sinister Hollywood scenario unfold. Unfortunately, these scenarios of cyberattacks disrupting industrial environments and critical infrastructure are a reality that organizations have to contend with today. Based on a Tenable study done by Forrester Consulting, 97 per cent of organizations in India suffered one or more business-impacting attacks and of those, 67 per cent of respondents said the attacks impacted operational technology (OT).

## Scepticism around IT/OT convergence

More recently, many companies have opted to converge their IT and OT systems to increase efficiency and efficacy. This was not without risk since melding IT and OT systems can create new attack vectors and surfaces. Since IT and OT environments are often interconnected, an attack that originates

on an IT network can move laterally to the OT environment and vice versa.

While some organizations readily embraced this convergence with open arms, others have remained sceptical for strategic, technical and business reasons. They have instead chosen to isolate IT and OT systems by implementing an air-gap strategy.

Air-gapping is perceived to be bullet-proof given that OT systems are physically isolated from online networks. In reality, air-gapped networks still have a large number of attack vectors. The introduction of one seemingly harmless variable such as a thumb drive or a compromised laptop can permanently destroy the most stringently enforced air-gap. This is known as "accidental convergence."

There are numerous examples of strongly implemented air-gapped installations that have experienced a breach due to something as basic and harmless as a laptop being brought in for use. One such event took place in 2019 when a nuclear

facility deployed brand new Windows-based PCs in their OT network for command and control purposes. These new PCs arrived with a major vulnerability. Only weeks thereafter the vulnerability was exploited resulting in an OT incident that forced the emergency shutdown of two of the reactors.

A typical OT environment is composed of a heterogeneous mix of devices of which 20% are standard IT hardware and software. When a company introduces or accelerates IT and OT convergence by implementing an Industry 4.0 initiative, the amount of IT equipment can increase to 40%. With this increase comes the additional risks that the unsecured merging of the equipment brings.

### **Air-gaps are impractical today**

In this day and age, true air-gapped networks are virtually impossible to implement or maintain. At best, the air-gap model provides a false sense of security that no longer reflects reality in today's business environment. This is because organizations require information transfer between the internal (air-gapped) and external networks (everything else) to be efficient. A USB thumb drive, for example, behaves just like any other storage device, which means that if an attacker gains a foothold on a computer in the IT space, they can easily infect any asset connected to that station. When that same storage device is introduced into the OT environment, the so-called air-gap is breached and the infection is introduced to the IT assets resident in the OT world. It's that simple.

### **The Best of both worlds**

The convergence of IT and OT operations, whether planned or unplanned, is in almost all cases a reality. Setting the appropriate safeguards will help ensure secured operations for your organization. What should you consider?

- Gaining a single view of IT and OT gear, along with the conversations happening between the two worlds, is essential. This "single pane of glass" view can help illuminate potential attack vectors and asset blind spots that may have eluded traditional security strategies.
- The life cycles of OT and IT infrastructure differ greatly. While IT infrastructures update regularly, some OT infrastructures may be as ancient as the plant itself. Since it is impossible to secure unknown assets, it is essential to have a detailed inventory and full situational analysis of all the assets in the environment. Gaining deep situational analysis is essential



**DICK BUSSIERE**, Technical Director, Tenable APAC

to secure the new converged environment because it is impossible to secure what you do not know about.

- New vulnerabilities can exist in both IT and OT. Gaining full awareness of the vulnerabilities that are relevant to your environment, along with a triaged list of exploitable vulnerabilities and critical assets, will enable security teams to prioritize threats with the highest risk score, thereby dramatically reducing your cyber exposure profile.
- As cyber risk can originate and travel anywhere, organizations should utilise multiple methodologies to find the risk of exposure. This includes the ability to use a hybrid threat detection engine that can detect threats in a variety of ways including signature, anomaly and policy.

### **Accidental Convergence, Intentional Security**

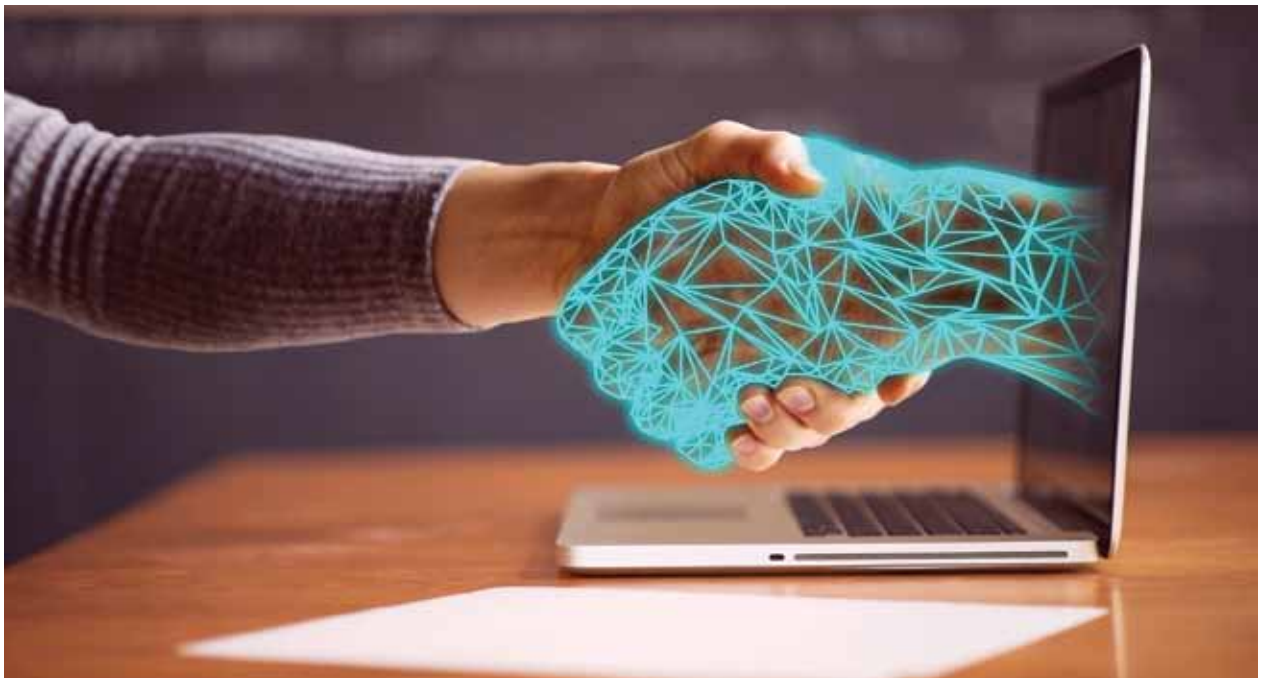
IT and OT teams must find common ground to eliminate the substantial risk factors of both planned and accidental IT/OT convergence. OT security solutions that work in conjunction with IT security solutions can be the catalyst that not only provides the visibility, security and control needed to thwart new cyber threats but also brings these once separate teams together for the common security every manufacturing, critical infrastructure and industrial organization needs to fulfill its core mission efficiently and securely.

The author is Technical Director, Tenable APAC

# TIPS TO GET THE MOST OUT OF YOUR RPA IMPLEMENTATION

The returns of automation will only materialize if the project is well-planned and executed. Here are some tips for successful RPA implementation

Sohini Gandharva



Change has always been a constant, but it is now happening faster than ever before. The pace of innovation around the world is increasing at an exponential rate. And the impacts of this acceleration will be felt everywhere. This is leading to a world of what we call templosion, in which very large things happen in increasingly compressed amounts of time. Templosion will touch every industry – nobody will be immune to its effects.

Today, companies have to think on how to position themselves in the future so that they continue to stay relevant, attract a new type of consumer and evolve in a changing environment. Robotic Process Automation (RPA) is the new wave of revolutionary technology that can automate not just manual, but cognitive tasks. Up to 44% of jobs may be automated

within the next decade (25% within the next five years).

Leading Research firms in the US have stated that the existing worldwide market scene for RPA is worth well over millions of US dollars in every automation focused enterprise. This trend is expected to swell to over 8.75 billion USD by the year 2024.

RPA is all about automating business processes to achieve maximum efficiency and productivity. Some organizations have integrated RPA with other technologies while others are still facing challenges at completely realizing the benefits for RPA within their organization. The business may want to see the automation benefits immediately, but returns will only materialize if the project is well-planned and executed. It's certainly true that RPA can yield

substantial cost and intellect savings to organizations in today's date. Selecting the right processes for automation and businesses persistently working with the automation teams in the initial planning days and then acting as an enabler right through the end of the project is the key to reliable and successful process automation using RPA. For any organization to start and adapt to RPA, the underlying measures should be kept in mind:

### **Automation is cost-cutting by tightening the corners and not cutting them**

RPA Best Practices and Methods for successful adoption:

1. Identify the processes that are the best fit for automation with the help of process discovery tool to assess, qualify and prioritize processes for automation readiness and ease, as well as potential business value
2. Understand the business requirement and standardize the workflow using Lean six sigma techniques to streamline the process before building the automation
3. The key technique for successful automation is process standardization which is rule-based, has high volumes, repetitive in nature and time consuming
4. Stability of the applications that are involved in the workflow is also critical for automation solidity
5. Conduct workshops across all the functions in the Organization to increase the awareness of RPA and its benefits that can yield greater value to the business.

### **Automation applied to an inefficient operation will magnify the inefficiency**

RPA Best Practices to deliver fast and quality automation:

1. An Agile/Scrum approach emphasizes creativity and innovation to maximize the business value of the solution, companies can benefit from regular adaptation to changing circumstances with utmost attention to technical excellence and good design
2. Faster product development with incremental progress and it is continuously deployed
3. Effective stakeholder management with regular connections between business people and developers which is the most efficient and effective form of communication for the success of the project



**SOHINI GANDHARVA, RPA CoE Leader & Manager, Virtual Implementation, CDK Global**

4. With proper planning and analysis, project risks can be mitigated at the early stages of the RPA delivery cycle
5. Scalability of automation is best of its use in RPA, Large and complex projects with peak volumes also can be delivered faster by proper planning and design

### **Complimenting with other technologies and the future of RPA**

In the past few years, RPA had a major leap forward with the advancement of cloud-based APIs and common data formats, which supported all kinds of services to communicate at all levels in automated workflows. With a modernization vision, most of the companies are developing custom automation solutions that can handshake with RPA to increase the success rate with cost optimization. Converging Artificial Intelligence disciplines like Natural language processing (NLP) and Optical character recognition (OCR) techniques with RPA facilitates businesses to automate more complex, uncertain end-to-end processes than ever before, and integrate predictive analytics and insights into these processes to help humans work smarter and faster for process optimization.

The author is RPA CoE Leader & Manager, Virtual Implementation, CDK Global

# THERE'S A LOT YOU CAN DO WITH XR

Till a few years back the common man thought that Virtual Reality was just a novelty which might be used in things like gaming. We've come a long way and even Facebook has invested in Oculus. Many are betting big on VR, AR (Augmented Reality) and MR (Mixed Reality). An umbrella term used for this is XR—Extended Reality

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In 2016, the world saw the sale of 5 million head-mounted VR displays. This year, with most people being forced to stay at home and the Covid crisis accelerating digitization and digital transformation, one estimate puts the sale to be in the region of 68 million. At this rate, VR headsets could become mainstream and more affordable in a few years. And there's a lot you can do with XR.

### Transform education:

It looks like remote/online education is here to stay. But Staring at a screen all day is tough on the students, especially the younger ones at school. While offline breaks are a must, another thing to break the monotony and enrich experiences could be to change the reality.

It could be handy in the geography where you could explore the globe and visit places virtually. The same with history except you would be visiting places in the past. Medical students could also really get familiar with the human body. There are applications in every possible subject like engineering, architecture, archaeology etc.

**Make training easier:** While the education industry is one thing, it is useful in in military war simulations. In the corporate world it can reduce training costs, help in product demonstrations, and help in visualization. The same for industrial training.

**Collaboration:** Collaboration has already taken off and bandwidths are increasing. It is just a matter of time before 3D collaboration catches on. When it comes to Zoom calls, a certain amount



of screen fatigue has set in. A more immersive kind of collaboration could do the trick in terms of interacting, sharing virtual images and scenarios to help business.

**Boost tourism:** When we visit historical places many times they are in ruins. Roaming around with an XR headset would enhance the experience to the very next level and you could view it as it was once upon a time. When driverless cars come, they could become XR powered mobile rooms that would enhance large landscapes with virtual information.

**Digital Reality India:** If every government office had a VR headset, then it would be easier to view projects, plans and documents for both officials and citizens. It's not inconceivable for every Indian to own a cheap VR headset paired with the ubiquitous smartphone. Citizens could participate on a large-scale with things like city planning. It can be made part of e-governance.



# THIS IS HOW YOU USE CYPHER IN VALORANT, AGENT GUIDE DONE RIGHT

Sushant Rohan Singh

**V**alorant is probably the only game released till now that has managed to end the reign of Valve's Counter Strike both for gamers and the professional esports scene as well. It is still a marvel of sorts if one takes sometime to think about it. Counter Strike was the king of FPS games and we're not talking for a year or two but for years. So much royalty was attached to CS: GO that any professional player of the game was considered royalty. That is exactly what Valorant has changed and they did it by making the game be CS: Go without being CS: GO. Valorant has an agent system in it. These agents have special abilities that players can use in the match. There are many agents in Valorant but we're going to be focusing on Cypher here.

## Who is Cypher in Valorant?

The Moroccan information broker, Cypher is a one-man surveillance network that keeps tabs on the enemy's every move. No secret is safe. No maneuver goes unseen. Cypher is always watching.

## What can Cypher Do in Valorant?

Cypher just like most Valorant agents has his own special abilities and skills which are more suited to players who prefer stealth over bangs. These abilities of Cypher in Valorant makes him perfect for hiding and ambushing opponents.

**Cyber Cage:** Press Q on your keyboard and Cypher will instantly toss the cyber cage. Cyber cage



activates a zone that blocks vision and slows enemies who pass through it. This does not affect Cypher but will hurt the enemy team.

**Spy Cam:** Cypher is a spy of sorts and spy cams are his specialty. Press E on your keyboard and Cypher will equip the spy cam and throw it at the location you put your target to. These spy cams can shoot darts as well that will reveal the location of any player struck by them. Players can also reuse this ability to take control of the camera's view.

**Trapwire:** Equip a Trapwire. Fire to Place a Destructible and Covert Tripwire at the Targeted Location Creating a Line That Spans Between the Placed Location and the Wall Opposite. Enemy Players Who Cross a Tripwire Will Be Tethered, Revealed, and Dazed After a Short Period If They Do Not Destroy the Device in Time. This Ability Can Be Picked Up to Be Redeployed.

**Neural Theft:** Use it on a dead enemy player in your crosshairs to reveal the location of all living enemy players.

# HOW ESPORTS GAMING CAN BE TRANSFORMED BY 5G

5G is the ultimate dream come true for gamers who love multiplayer experiences as the technology's strength to handle simultaneous connections means even bigger multiplayer experiences

Yash Pariani



**T**he gaming industry thrives on innovation. To hold the players' attention and to continue being profitable it needs to keep adapting and offering something new from time to time. Otherwise, it can lose its relevance and fade into oblivion. The Esports industry constantly faces new challenges and new competitors but nevertheless, it is also accorded with new opportunities. One such striking opportunity will take shape with respect to the infrastructure that gaming is built around. And the highly anticipated next big thing is 5G.

The technological advancements that 5G brings along with it will lead the next wave on mobile innovation, specifically in mobile gaming. It is expected to rectify many of the problems and issues currently being faced by the mobile gaming industry. 5G is undoubtedly one of the most talked-about trends with regard to the future of gaming. Not only will the unprecedented technology enable players to engage faster due to better connectivity, but the low latency will provide instantaneous gameplay on a global scale.

### **Reduced Latency and Stable Connections**

When it comes to Esports, any gamer would agree that it's not just the speed of their connection but also the stability and latency that matter equally. This can mean a world of difference in the context of gaming technologies like VR, which provide a realistic and exhilarating gaming experience as compared to a sub-par one.

The reduced latency is what makes 5G truly revolutionary. The excellent stability and low latency are enabled by the usage of short-range frequencies and advancements in both hardware and software. The latency in 5G is expected to be below 5 ms, which will be a 10-fold improvement to that of 4G, making latency almost non-existent virtually. For Esports, this improvement would mean multiplayer mobile gaming, augmented reality (AR) and virtual reality (VR), and interactive streaming.

The high-speed download and uploads unleash the ability for large mobile games to be installed

**5G will lead the next wave of mobile innovation. It is expected to rectify many of the problems and issues currently being faced by the industry**

almost instantly. 5G is the ultimate dream come true for gamers who love multiplayer experiences as the technology's strength to handle simultaneous connections means even bigger multiplayer experiences. When combined with Esports, this can translate into mobile gaming support scale that's never been witnessed before.

### **Immersive Experiences**

With the introduction of 5G, AR and VR will go mainstream. The major benefit to these industries would be more secure and stable connectivity. Currently, VR and AR apps are interrupted by poor network performance, which in turn massively affects the gameplay. In this scenario, 5G would be a game-changer as it will allow networks to operate with as well as process multiple devices at the same time. As a result, the internet connection and the gaming experience would not suffer.

AR and VR experiences are resource-heavy which, thanks to 5G, will be downloaded faster and the technology involved would offer advertisers myriad ways to design immersive, interactive experiences. AR, VR, and 360-degree video can be leveraged to help drive monetization and engagement in the foreseeable future.

### **Rise of Esports Streaming**

5G is arriving at a time when a simultaneous rise is occurring in game streaming services. Live streaming of Esports matches will be facilitated by the new technology and should see a marked improvement in its definition. For AR gimmicks, 5G infrastructure available in huge stadiums will lead to new interesting opportunities. Even more riveting would be the combination of mainstream media expressing interest in Esports and the opportunity, 5G presents for creating a more dynamic and interactive stream. The improved data-flow services would mean that mobile gamers of the future will enjoy console and PC-quality games irrespective of the device they use.

### **Summing It Up**

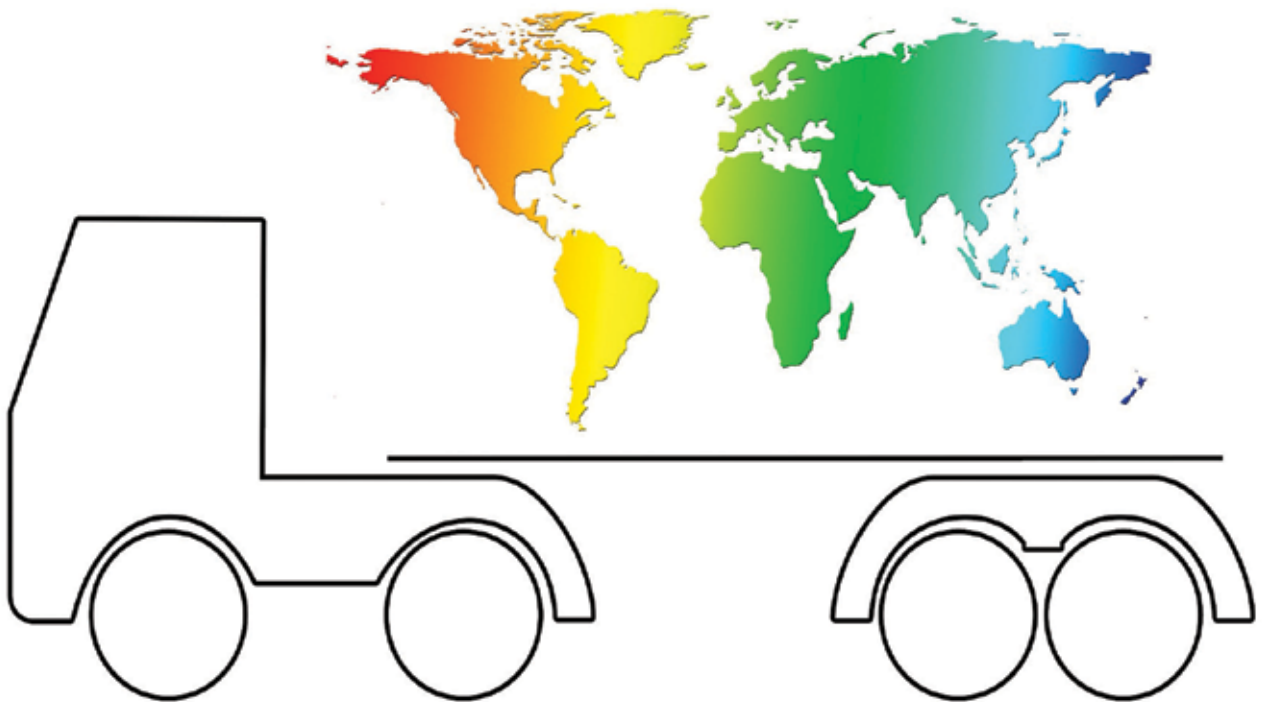
The gaming industry is a pioneer for new technologies and the introduction of 5G will be a harbinger of incredible opportunities for mobile game developers and advertisers. Superior-quality mobile games and more captivating experiences will be delivered, that weren't previously possible, for tomorrow's gamers.

The Author is Founder & CEO,  
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# TECH ENHANCES NETWORK AGILITY & SUPPLY CHAIN RESILIENCE

AI is one of the biggest trends in shaping the future of retail. It helps predict customer demand, manages supplier backorders, and optimizes inventory stock levels, says Balu Chaturvedula, VP-Technology, Core Services Supply Chain Tech, Walmart Global Tech India

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**We will have to take a relook at the way the supply chains (global, national and local) operate after the COVID-19 crisis. What changes do you see happening?**

As we all know, times have been unprecedented. Our vision is to help customers save money so that they can live better, and supply chain plays an important role. The initial stages of the lockdown saw retailers dealing with a significant demand for

essential products. The ability to manage demand has never been this important. Implementing multi-scenario planning and real-time operations can help companies to manage the dynamic demand and predict the future requirements.

Technology can benefit companies with improved network agility, enhanced supply chain resilience, reduction in inventory carrying cost, and improved product traceability. The improvement initiative

allows companies to provide better insights and broadcast real-time inventory information using a structured protocol.

**Will Big Data, Artificial Intelligence and Machine Learning play a greater role from now onwards in both the supply chains and retail industry? How? What is the role of data scientists in all of this?**

Today businesses are leveraging Big Data, AI and ML to transform their supply chain operations. AI is one of the biggest trends in shaping the future of retail. It helps predict customer demand, manages supplier backorders, and optimizes inventory stock levels. Incorporating AI into the retail world can synchronize digital and physical shopping streams and empower flexibility in logistics networks. AI is also enabling retailers to embrace deep learning to streamline processes, automate customer experiences and enable intelligent product searches.

Data science is now a part of our everyday operations and business planning. Walmart Global Tech India has a robust team of data scientists who are helping Walmart merchandisers figure out assortment planning, price and space planning and proactively driving a lot of 'what-if' scenarios. We have all the data and insights. But to put it into practice we need the human intervention of our data scientists.

**The Internet of Things is set to take off with one estimate putting the very upper limit at 500 billion IoT devices by 2030. How will this affect the supply chain, warehouse and shopping experience?**

IoT allows retailers to provide a curated purchase experience, informed service engagements and drive efficiency to transform the retail industry. It is accelerating the development of the entire retail supply chain and helps bridge the online-offline experience gap to ensure seamless omnichannel shopping journey for customers. By leveraging IoT, retailers today can gain insights on customers (purchasing journey, interests, wish lists, preferences, purchases etc.) to deliver more personalized content and offers. IoT enhances the shopping experience by offering fresh produce/frozen food stored under optimum conditions, ensuring item availability and by managing the ambience within the store. It also makes power management efficient and reduces our carbon footprint.

By collecting real-time data from smart devices and sensors installed across Walmart facilities, IoT enables monitoring, reactive and predictive



**BALU CHATURVEDULA, VP-Technology, Core Services Supply Chain Tech, Walmart Global Tech India**

maintenance capabilities. Not only does this make store operations more efficient, but also cuts food spoilage and optimizes resources.

Warehouses with IoT enabled devices and storage can manage items efficiently. Supply chain supported by AI and IoT can accelerate the entire value chain and facilitate a faster service cycle. These processes will enable efficiency in supply chain and warehouse management.

**What about the use of emerging technologies like blockchain?**

Before block chain technology, supply chain lacked transparency and connectivity. Today, it can provide a single source of information about any products. Blockchain enables a customer and seller to directly transact with each other without passing through any form of transaction or third-party medium. The data can be used to form an analysis of consumer activity, including efficient shipment tracking, etc. This allows the retail management, store employees, and warehouse workers to track the shipped item and know where it is at any given time.

Walmart utilized blockchain to bring unparalleled transparency to the food supply chain with 'Hyperledger Fabric'. This system allowed better traceability and helped business to act faster and



protect the livelihoods of farmers by only discarding produce from the affected farms in case of a food-borne disease.

We recently ran two projects to test the system. One project was about tracing mangoes sold in Walmart's US stores and the other aimed to trace pork sold in its China stores. For pork in China, it allowed uploading certificates of authenticity to the blockchain, bringing more trust to a system where it used to be a serious issue. And for mangoes in the US, the time needed to trace their source went from 7 days to just 2.2 seconds!

Walmart can now trace the origin of over 25 products from five different suppliers using a system powered by Hyperledger Fabric. We now plan to roll out the system to more products and categories in the near future.

### **What specific things has Walmart Global Tech done during the COVID-19 crisis?**

Our priority has always been to help people save money and live better. During the COVID-19 crisis, it's even more important for customers to have a safe, seamless experience. We had to take care of those who are at risk within our teams and communities, as well as abide by local guidelines.

We started working on how to make time slots in online grocery more user-friendly and widely

available. We changed our processes immediately with the massive spike in demand as we saw customers booking slots as far as seven days ahead, which left no slots for immediate purchases. So, we reduced delivery sign-up options from seven days to two days to help ensure we could handle the demand. As we increased our capacity, we were able to expand our time slots back to seven days which helped us to provide an easy, contactless way to order and pick up groceries.

At WGTI we enabled 'At-Risk slots' for customers who are part of vulnerable communities or are caring for someone who is. The crisis accelerated our Express Delivery services, which was aimed to provide grocery orders to the customers in less than two hours.

Most of our orders were shipped from Fulfillment Centers (FCs) or from a few stores. With the spike in online orders we had to act quickly to alleviate the demand. In less than one week we made critical decisions to create and launch the new process, which required rapid changes to our technology and business processes. We expanded our Ship-from-Store capability to thousands of stores across the country.

Working through this difficult time has helped us develop some path-breaking technologies to ensure seamless and safe customer service.

# WHAT IF APIS TURN INTO THE SHIP OF THESEUS?

The long-running Google-Oracle API battle has unraveled a delicate thread that can bring apart the entire cardigan of innovation and software evolution. Cardigan or Cloak?

Pratima H



**G**randfather's axe! If you replace first the head and then later the handle, is the axe still your grandfather's? That dilemma could not have been better illustrated anywhere else except the recent series of legal wrestling bouts between Google and Oracle. Oracle had sued Google over the use of an API in an Android platform— many years back. Google wanted to make the platform compatible and interoperable with Java, which is Oracle's baby. Oracle saw it as a case of copyright claim.

The question had to come up – if you keep adding new parts to an axe – not matter how well-made or unique it is – at some point does it stop or not stop being the original axe that it was?

The industry has been vehemently debating how the whole case can have ramifications that go far and wide. Let's recall that an API is very important tool for the ecosystem. It is sort of shorthand for condensing the code for developers and allowing quick access to services, libraries, and other functions. It is what allows programs to talk to each other. Of course, straight-off-the-bat concerns are about the lawsuit-decision's impact on freedom to developers to innovate without worrying about legal walls, its effect on competitive dynamics in the industry, and most importantly, its ability to dilute the progress of cloud models, because, hey, they hinge a lot on interoperability between various pieces.

## Cloud get Cloudy, Open less Open

When we asked James Grimmelmann, Professor of Digital Information Law, Cornell University, he averred how an Oracle-win will reduce competition in the cloud by reducing API standardization. “Services won’t be able to compete with established incumbents by offering identical APIs to their own services with their own implementations. This will raise barriers to entry.”

Shahin Khan, veteran analyst and industry-observer at OrionX argues API providers should make it clear and simple what their licenses allow. “This is especially important for cloud providers since they cater to a large variety of users and vendors.”

Another big aspect of this case trickles into the big green meadow of open source movement. As Prof. Grimmelmann, who studies how laws regulating software affect freedom, wealth, and power, points out, “It was interesting that open source figured into the oral argument. It shows how firmly established it is within the industry.”

Khan opines that proprietary and open source APIs are nothing new. “This case highlights the rigor that is needed, and should already be in place, when leveraging software of any kind. It has always been important to understand potential limitations or potential infectiousness of software licenses. Regardless of the verdict, the ultimate winner will be the open source community model, which is immune from this kind of unpredictability.”

### Where does the Ship Sail to Now?

The way this case and its aftermath are unfolding can be major turning-points for the industry. “One

## Abstract and inventive

The U.S. Supreme Court’s Alice decision paved the path for a stringent standard for patenting software-implemented inventions. Under Alice, if an invention is directed to an “abstract idea”—and many software-implemented inventions are—then patent-eligibility required the invention to contain an “inventive concept”. This concept should transcend mere computer implementation of code. Inventions that “use a computer merely as a tool” are often slotted as “abstract ideas” lacking an “inventive concept.”



**SHAHIN KHAN, Analyst, OrionX**

of the dangers of an Oracle win would be that copyright would become a concern for many other technologies. Data formats, protocols, and even programming languages might become litigation minefields, depending on how the Supreme Court rules.” As Prof. Grimmelmann weighs in.

On one hand, we can expect increasing aversion to using any APIs the free and open use of which is not certain, Khan augurs. “The market could split into the many who will open source their APIs to encourage use, the few who need to control the way their software interoperates, and the even fewer who can command for-fee licenses. On the other hand, developers will pay more serious attention to what APIs they use and how they must document, package, and distribute their own software.”

Would this chaos translate into a good storm that other alternatives needed all this time to explode? Khan opens up the doors of another possibility. “It is interesting to note that this type of complexity can drive software license management towards the so-called Smart Contracts that are gaining acceptance in the cryptocurrency and decentralized finance (DeFi) markets.”

Whether new markets gain or not, a collateral gain would happen for legal eagles for sure.

Only lawyers will benefit, if we go by the poignant conclusion that Mike Linksvayer, Head of Developer Policy, GitHub puts on the table here.

“Google v Oracle will shape developer opportunity and software innovation for years to come. If the court does not uphold the right of developers to





**JAMES GRIMMELMANN**, Professor- Digital information law, Cornell University

re-implement APIs, the ability of developers to transfer their skills, of startups to innovate without interference from incumbents, and of consumers to benefit from competition and innovation, will all be harmed. Software development is hugely valuable and would carry on, but with a wholly unnecessary burden of increased attention to licensing and fighting API copyright trolls. The reputation of the U.S. as a jurisdiction friendly to entrepreneurship and innovation will take a hit.”

On one hand innovation-builders want to monetize on their hard work, but in vintage-ways. On the other hand, the next set of relay-racers wants to carry the baton forward without re-inventing redundant wheels. Who is right? Where does the white fence of competition end and the fireside of collaboration or ecosystem-collaboration begin?

The strange part is that this case has opened so many cupboards with so many skeletons that we never knew existed in this age of IT where everything

**In 2019, the global M&A activity in the Software & Internet Services space touched US\$206 billion - this represented over 3,656 deals**

Source: IMAA Institute

## Copyright versus patent

- Copyright gives “authors” a limited exclusive right to “writings,” while patents give “inventors” a limited exclusive right to their “discoveries.” “Principle” has long been used as the patent counterpart of “ideas,” for which no patent can be obtained.
- “A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right”. Oracle’s attempt to lump these terms together as undifferentiated “ideas” would undo much of patent law.
- We agree with Oracle that, under Ninth Circuit law, an original work—even one that serves a function—is entitled to copyright protection as long as the author had multiple ways to express the underlying idea. Section 102(b) does not, as Google seems to suggest, automatically deny copyright protection to elements of a computer program that are functional.
- A computer language used to write a program is typically an uncopyrightable system or method of operation. A “certain result” of a computer program generally is not the same as the program itself, and therefore is not eligible for copyright protection as a literary work under § 102(a).
- The primary objective of copyright is not to reward the labor of authors, but “to promote the Progress of Science and useful Arts.” To this end, copyright assures authors the right to their original expression, but encourages others to build freely upon the ideas and information conveyed by a work.

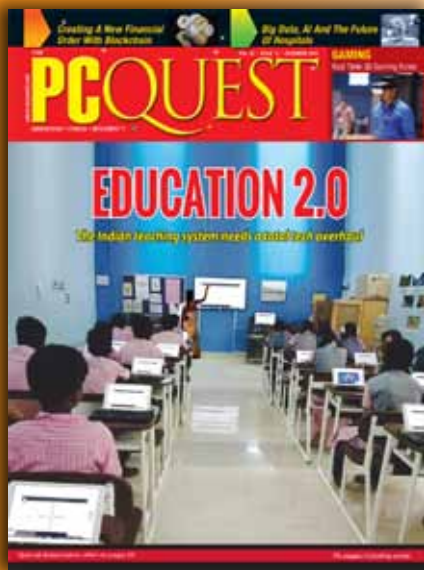
*Excerpts from Amicus Curiae by Electronic Frontier Foundation*

is going more and more elastic, modular, agile and fast. From swiftly booming A-A-S models to the rampant interest in micro-services to the many handshakes happening between the most arch-rivals – we had almost started believing that Penelope is done with her never-ending weaving now. And this time, the needle seems to have been thrown in a deep sea.

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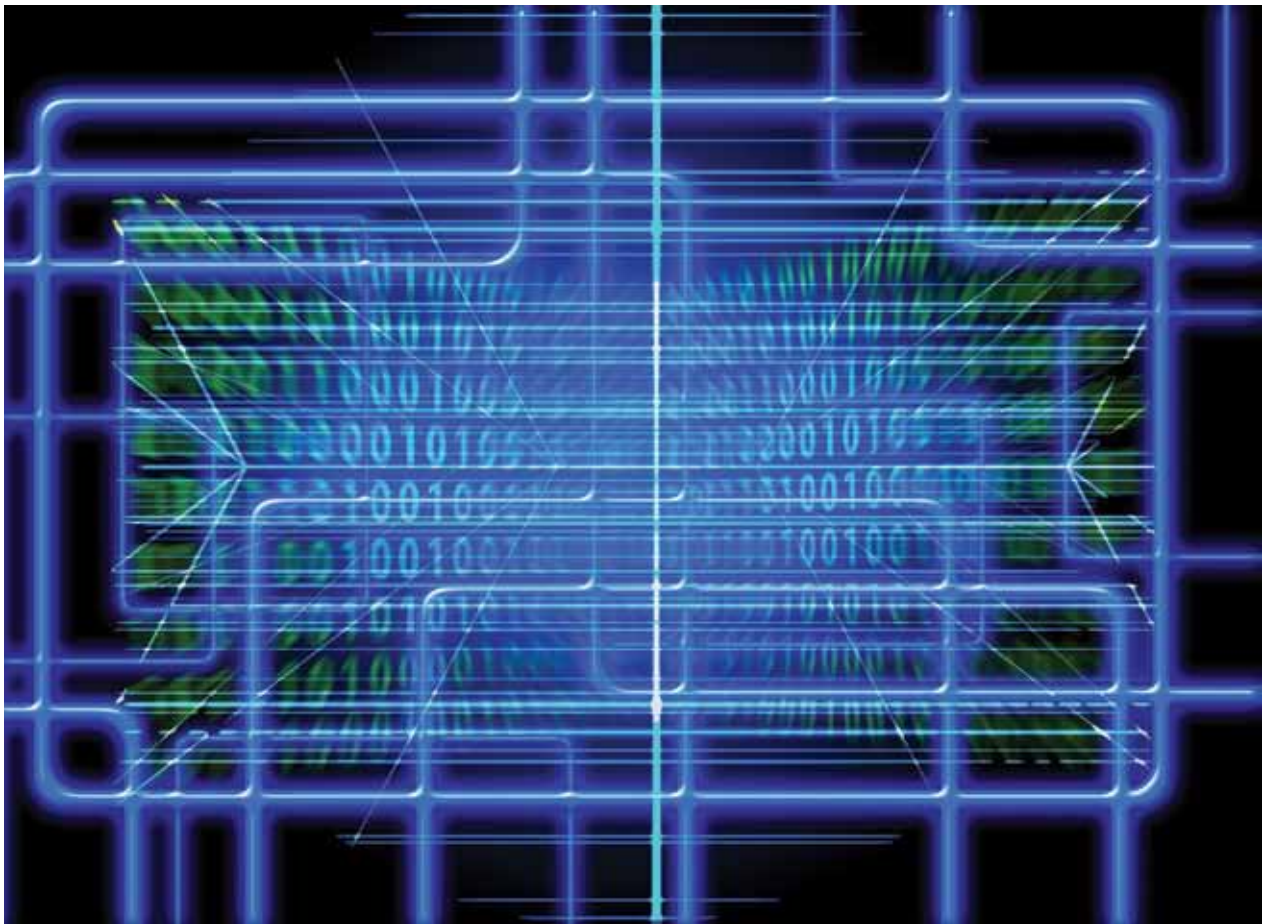
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# A CHIP OFF THE OLD BLOCK? NOT REALLY!

Its attempts at shaving energy costs, control hassles, security headaches and sharpening chip-level innovations are signs that this is more than a new version from IBM's POWER family. Exactly how, let's find out

Pratima H



**W**hen Dipankar Sarma, Distinguished Engineer, IBM Systems tells us about some Indian ingredients of this global offering, his excitement is understandable and reassuring. He illustrates how the lab in India is contributing to many global products through design, strong development

muscle, server side work, OS areas and the overall POWER platform. But he is also enthused about how the new versions are climbing higher levels for Indian enterprises, by shrinking power consumption and arresting information leakage at the chip-level itself (which is a big point for BFSI and healthcare industries).

As we lean forward and hold our lenses closer to the new version—the IBM POWER10 7 nanometer (nm) processor – the next generation in its CPU family; **Rahul Rao, Senior Technical Staff Member, Enterprise Server Development, IBM Systems** spells out why the excitement is well-earned and why there is more to chip-innovations than that who-is-smaller nanometer race of this peculiar Gulliver world of enterprise semiconductor journey.

**First of all, how well does this chip expand the distance between 7nm and 10nm sizes? Is the distinction a strong one?**

These are the minimum feature dimensions that we build and they have come a long way from the previous 14 nm generation. With 7nm there are a lot more transistors that we can pack on the same surface.

**What makes you proud of this version?**

It is the latest addition to our POWER processor roadmap – and it reflects a significant advance in design showing our intent to move faster in enabling the era of hybrid cloud for enterprises. What is also worth noting is that a lot of the innovation and technology work for the POWER10 processor was designed in India by the India team which will be used across the globe. This 7-nm chip is about the size of a postage stamp and accommodates 18 billion transistors, which is equivalent to ~2.4 transistors per living person on the planet.

**Are we still counting on Moore's Law?**

We do count on it but the law has different variants. Originally, it was about the decline in the cost of building a chip. Now it helps to look at it from a 'number of transistors' perspective. So that way – it's still alive.

**The energy that a chip guzzles, and the dexterity with which it pre-empts security loop-holes – these characteristics are the new talk-points of many chips? How well are you covering the areas of energy efficiency and security-at-the-chip-level?**

These are, indeed, two key points that enterprises look for. We want to optimize the power part well and help our users reduce electricity costs. This offering promises 2.5 times better energy efficiency for the same power envelope. As to security, many users face stringent requirements and that's why enterprises from BFSI etc. want to spruce up security at the root level. No matter what applications and infrastructure



**RAHUL RAO, Senior Technical Staff Member, Enterprise Server Development, IBM Systems**

get wrapped around the chip, we make sure there is less and less room for eavesdropping at the chip-level.

**You belong to a competitive space that is also working on a fire-all-cylinders energy. How do you embrace the impact that comes from what other players are doing or missing – specially in light of the recent directions of NVIDIA flexing a new Arm, Intel's delays on 7 nm, Apple's R&D progress etc.?**

There will always be new updates from other players. When we start on a project we look inside and at our customers. Our focus is - enterprise and inside. We look at what improvements we can usher in. It is not worthwhile to keep comparing oneself to others. The challenges you allude to are part of this industry. Our focus is on what better we can offer over our previous generation. We are advancing well on 7nm technology and are on a fast track to the way to deliver these capabilities strongly to enterprise customers.

**Has the gap between design and manufacturing phases of a chip been bridged with new generations coming in? Is India playing a bigger role here than what it did before?**

IBM had in-house resources before and we have

now been working with Samsung for many years. It is a good collaboration. The distance between innovation and actual manufacturing is not a big roadblock. We have built several innovations and have a good ecosystem-strength. We also use our own internal tools to get our own sauce on the top of the pasta. India has also played a vital part in various parts of design, in circuit layouts, in how blocks can talk to each other, chip functionality, performance, tools and automation for quality of design with excellent engineering capabilities. There is more work on innovation that is going to happen on the software side of the chip and cloud capabilities in particular.

### How much of a change would the Make-in-India wave stir up?

It will not drastically create new roadmaps but we will continue to work the way we have which also entails collaborations with universities, institutes (like IIT-Madras) and the local ecosystem on new initiatives. This chip, for example, shows that the IBM India lab played a significant role. The physical design of the chip was done out of India. The India team built an energy efficiency capability into the chip. The testing and validating parts of the tool were executed in India.

### Is AI a big new direction for the kind of workloads you want to address?

We wanted to be strong for AI-level workloads on the chip. We have brought in model inference on the chip. For this, we have significantly boosted the code on the chip. It can run in turbo-mode with AI-level horsepower when needed. It can take care of denser operations and supports industry-level standards for AI. Applications do not need to do the modeling-level heavy-lifting. They can run AI easily and efficiently. In the long run, we are looking at more AI-centric applications.

### Can you tell us how significant is the Memory Inception Technology to the new versions?

This is a distinction part between what the chips can do and what the systems can do. From a technology point-of-view, the chip has interfaces and expressways to talk to neighbouring chips. This can help to tap the memory of other chips or share it. We are still working on some details and constraints.

### Any super-computing possibilities for these chips?

The predecessor of 10 is 9 that has been ranked

## When size matters!



This 7-nanometer chip is about the size of a postage stamp and accommodates 18 billion transistors, which is equivalent to ~2.4 transistors per living person on the planet.

IBM India Lab contribution to the chip:

- The physical design of the chip was done out of India
- The India team built an energy efficiency capability into the chip
- Testing and validating of the tool was executed in India
- A lot of the innovation and technology work for the POWER10 processor was designed in India by the India team. This will be used across the globe.

at no.1 or 2 in many lists and was a building base for the Supercomputer 'Summit'. A system is as strong as the foundation. And Power 9 has proved very solid on supercomputing applications. It has also been part of projects for fighting Covid, with extreme memory and compute capabilities. These innovations help humanity on a day-to-day and practical level.

# HOW TECHNOLOGY IS POWERING SEAMLESS SHOPPING THIS FESTIVE SEASON

A significant change in consumers attitudes and shopping behaviour has been noticed during the COVID-19 crisis. To adapt to the new reality, smart retailers have been embracing new technologies to deliver a seamless shopping experience to the consumers

Venkat Sriramagiri



**F**estive season this year around the globe will certainly be very different with the New Normal created by Covid-19. Undoubtedly, we will witness a significantly higher portion of e-commerce transactions compared to the previous years. Retailers, e-commerce companies, shoppers, financial institutes are leveraging new technologies like Artificial Intelligence (AI), Internet of Things (IoT), Augmented Reality (AR), Data Analytics and Insights among others to effectively provide unique shopping experience to consumers and gain market share.

The innovation in AI technologies has simplified the use of machine learning and it is becoming a valuable tool for improving the decision-making processes, as the outcome is more accurate and faster as compared to manual efforts. Here are some good use cases of new technologies that companies are adopting in order to enhance your shopping experience.

## Intelligent Recommendations

AI helps in analysing customer data based on past purchases, products viewed, and customer demographics and provides irresistible offers

to customers. This makes the customer journey personalized and creates a unique experience which is beyond just buying a product. Based on scoring models, AI helps in identifying products meeting customer interests and sends timely reminders to help customers to complete the purchasing process smoothly.

## Efficient customer support

Using AI, companies are providing anytime support to address customer queries using various tools like chatbots and voice assistants. Chatbots powered by AI are rapidly becoming an integral part of customer relationship management, cross-selling and marketing plans. These chatbots can leverage customer data to make the interaction mode contextual and personal to the customers. Self-servicing capability coupled with NLP (Natural Language Processing) help customers manage their needs more efficiently without any human interactions.

## Bundled offers

Based on historical data, AI helps to understand consumer behaviour and identify cross-selling

opportunities to offer bundled products that enhance product value. This can be made contextual based on customer demographics so that customers can get the best suited bundle based on their profile.

### **Anytime, anywhere shopping**

IoT and AI help create an environment where shopping can be done anytime, anywhere. For consumers this means that their TV, smartwatch, phone etc., will be able to initiate digital interaction both online and on-location, and some will even be able to complete purchase transactions as well. For merchants, this means that they can connect to customers anywhere, be it through digital advertisements or on a vending machine, making it easier to initiate impulse purchases and a more seamless shopping experience.

### **Elevating Digital Experience**

AR has significantly improved in recent years enabling consumers to visually experience how a product fits their needs. Customers can engage with a variety of brands and products through digital experience to personalize the product they like as per their interests. Consumers can then also share it with their close friends and decide to purchase it based on their feedback. This adds a new level of personalization to the shopping experience. For example, automotive retailers can provide customers opportunities to customize or configure products making their shopping experience very unique.

### **Data analytics and insights**

Volumes of data captured in various systems today that helps in creating a 360 degree view of consumers and their behaviours. Advanced data analytics tools help in analysing the data efficiently in real time and help in driving meaningful business decisions. It includes launching appropriate marketing campaigns, investment strategies and so on.

### **Faster checkouts and smooth payments**

Financial institutes, retailers, payment processors with support from Government and regulators are creating hassle-free last-mile payment solutions. Variety of payment options like BQR, UPI, Wallet payments, Netbanking have been added to the traditional credit/debit payment options. Companies provide secure solutions to store required details and enable faster checkouts. Companies are investing further to analyse customer behaviours causing transaction dropouts (where customers decide to drop



**VENKAT SRIRAMAGIRI, Chief Operating Officer, Worldline India**

out at the time of checkout) and create frictionless payment experience for customers.

### **Fraud Management services**

Most financial institutes are using AI to prevent fraud before it takes place. This directly helps in reducing chargebacks and reduces false positives, thus earning customer confidence. With fraudsters continuously finding new ways to do fraudulent transactions, a traditional rule-based system may fail to identify such transactions. This is further complicated by the advent of a number of new payment channels, which increases the fraud risk further. Since building additional rules and new patterns every time is cumbersome and costly, AI is considered to be the best alternative technology for adding value propositions. First, it has the ability to interpret data and gain insights through supervised machine learning and also gain new knowledge through unsupervised learning. Second, increased automation and improved accuracy through AI leads to fewer manual checks and saves time.

### **Advanced dispute management services**

With technology advancements and regulatory controls from RBI, the dispute management process is undergoing significant transformation. Failed transactions (where goods/services not received) get auto processed across various parties and consumers get refunds in a timely manner. Online dispute resolution mechanism helps in getting complete transparency on the status of the issues reported. AI-based contract review with recommended resolutions based on historical data improves the timeliness and accuracy of dispute resolutions.

The author is Chief Operating Officer,  
Worldline India



# 5 TECH TRENDS RESHAPING THE APPAREL INDUSTRY

With cutting-edge technologies at their disposal apparel manufacturing and retailing have been undergoing a massive shift

Saswata Banerjee



**T**he fashion industry faces problems in its operations. Currently, they have issues like unsold inventory, unstructured logistics, high prices, low production, and poor quality control, to name a few. But with the advent of cutting-edge technology that can solve some of these issues, we see a definite improvement in the efficiency and profitability of this evergreen industry.

The technologies available have made the problems faced by the apparel manufacturing and retailers more manageable.

Firstly, fashion retailers with AI at their disposal can track customers' online journeys and make tempting recommendations that increase sales. Secondly, apparel brands have a new market segment so cater to. Demand for smart wearables will only grow in the years ahead. Smart wearables and IoT-powered apparels are aspirational, and demand for them opens

up a new market segment for manufacturers. Thirdly, apparel brands also have access to real-time logistics which automate entire supply chains making them more efficient. Fourthly they have access to virtual reality tools that make shopping for clothes even more fun. Consumers can virtually try on apparel before buying. This saves time and makes better buying decisions more likely. Finally using blockchain, apparel manufacturers can prevent counterfeiting. With details about a shipment verified by blockchain at every stage, manufacturers can make sure that genuine apparel reaches buyers.

Technology is being adeptly used to improve customer experiences, customer lifetime value, and to make processes more efficient and gain greater control over supply chains.

**Artificial Intelligence** - In the era of ML and AI, predictive forecasting plays a significant role

in increasing the efficiency of retail processes and operations. AI can help track customer journeys within the website or app or through purchase history by showing products customers are likely to buy, thereby increasing conversion rates and improving user experience. Machine learning helps retailers implement predictive inventory stock-up and tracking, helps users buy the right apparel using a wardrobe planning tool, creates looks based on a history of browsing or purchases, and draws fashion analysis from social media and other variables to suggest a more personalized look for users. Finery uses the purchase history to create an online wardrobe which the customer can use to match looks with other new products. Hook tracks trend patterns and customer behavior to give these as feedback to other customers to choose better and what is being liked currently by shoppers.

**Smart wearable and IoT** - Adding a trendy wearable gadget, or fashion apparel with embedded gadgets is now commonplace. Intelligent devices or IoT no longer serve as a convenience but are mainstream fashion statements. Whether it is a smartwatch with white straps, or a smart tee with movable graphics, or more serious IoT implementations like intelligent clothing, built-in sensors in top-wear to correct postures, socks that count steps and help people stay fit, or jackets with temperature adjustment features, IoT is slowly becoming an essential part of style and fashion, especially among the youth. Smart clothing with embedded IoT is becoming aspirational. NadiX yoga pants have inbuilt sensors which provide feedback on posture by vibrating. Loomia is creating soft, flexible circuits that are embedded into textiles for heating, lighting, and sensing apps.

**Rapid Data Analysis** - Fashion Industry might not be in dire need of Big Data processing. Still, Rapid data analysis from various functional divisions is becoming necessary to take fashion retail to the next level of efficiency and profitability. Real-time processing of data from logistics, production, marketing, order management and supply chain is required to eliminate human error, plan inventory, create time-bound pricing models, ensure superior customer experience concerning delivery, and retain customers through the right interference and assisted buying capabilities. Styched and Techpacker automate the entire production line, which allows every stakeholder to know about changes happening almost real-time so that 50% time is saved compared to previous solutions.

**Virtual Reality** - Fitting and sizing issues are quite common in fashion e-commerce. To battle, the uncertainty among customers, Try and Buy has been launched by quite a few brands, even though the



**SASWATA BANERJEE, CTO, Styched Systems**

model has its shortcomings. Brands quickly moved from Try and Buy to a more premium paid feature. The next step that will allow users to be more confident about what they buy will employ virtual reality - more specifically, the introduction of technologies like Immersive Experience, Virtually try before you buy (either on a replica model or on your actual photo or through video embedding). While the technology is currently quite expensive to develop and sustain, it is slowly becoming easier to implement plug-in based approaches or pay to use based methods through third-party developers. Virtusize enables retailers to illustrate the size online so that customers can find an accurate fit for their chosen products. Obsess is another popular platform which retailers can use to create 3D 360 shopping experience on their online properties.

**Blockchain** - Blockchain enables users to trace apparel through the source and manufacturing process until delivery. Every time a product goes through production to logistics to delivery, its details are captured in the blockchain. This can help prevent counterfeiting of original goods or selling of replicas because they would be missing the physical-digital link found on the bulk of the authentic products. Also, as any attempt to misuse, misplace, undersell or divert goods can be tracked immediately and fraud can be prevented. Provenance traces the journey of raw materials in the supply chain up to the production of finished products using Blockchain Technology.

With all these technologies, apparel manufacturing and retailing are undergoing a massive shift. The industry is stepping into the 21st century by making the shopping experience more enjoyable and productive. Businesses that use these technologies have a good chance of pleasing their customers and retaining them.

The author is CTO, Styched

# KEY FACTORS TO CONSIDER WHILE CHOOSING A LAPTOP

Hardware is important, but security and durability should be considered while making your decision

Ashok Pandey  
ashokpa@cybermedia.co.in



**W**hether you are a gamer, business user, home user or graphics/animation developer, the market is filled with a gazillion laptops for different purposes. Each variety has been manufactured for their intended audience and should therefore not be mixed up as it will lead to frustration.

A business laptop has been built keeping specific needs of the users in mind, the modern workforce, which is increasingly becoming mobile. This business users look for a laptop that is portable, powerful, and secure. Similarly, gamers and home users can buy a laptop as per their preferences and needs.

But, you shouldn't for instance, buy a gaming laptop if you're a business user, just because the laptop has the latest and greatest specs. You should avoid a graphics workstation class laptop if you just need to do routine office work.

All major laptop vendors have a category for students/home/gamer/business laptops, so how do you choose the perfect one for you? You can't risk the performance of your laptop, as it would impact productivity.

The home user should look for an economical

option, and the gamer or graphic designer should look for a device that is capable of handling the demanding compute power. There are factors to consider while choosing a laptop:

Processor (CPU) – Surely, you will look at the specs, and CPU (central processing unit or processor) is one of the most important aspects. It's both the brain and engine of your laptop. Many people spend money to buy top-of-the-line processors even when they don't really need them.



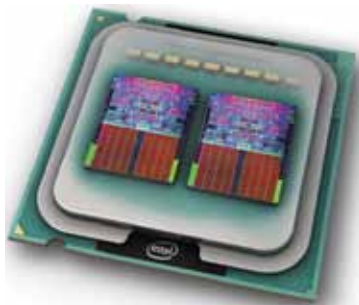
Intel and AMD are two major names who manufacture CPUs. They have a wide range of

processors, each of which is intended for a specific purpose. Intel's latest Core "i" series is now in its 10th generation, and has three main processors—the Core i3, i5, and i7. While AMD has its Ryzen series of CPUs (Ryzen 3, 5, 7 and 9). Before we move ahead and talk about CPUs, it's important to understand the clock speed, cores and threads.

**Clock Speed:** A processor having a clock speed of 2.4Ghz executes 2.4 billion cycles per second. Depending on the instructions, a single clock may complete multiple instructions or one instruction handled over multiple clock cycles. But this can't be compared with different CPU architecture, since each CPU design handles the instructions differently. So you can compare within the same CPU brand and generation.

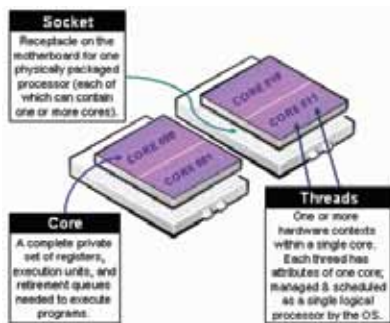
A CPU with higher clock speed from a previous-gen might perform better than the latest CPU with lower clock speed. So, choose a clock speed accordingly.

**Cores:** In simple words you can say, one core is a processor. Old age CPUs come with only one core that can perform one task at a time. While the modern CPUs come 2 to 18 cores, each of which can work on a different task. Meaning, if you would do multitasking then prefer to have a higher number of cores.



**Threads:** Thread is a virtual version of a processor core designed to increase performance. Again, higher is better. Threads improve throughput, computational speed-up and manage the tasks.

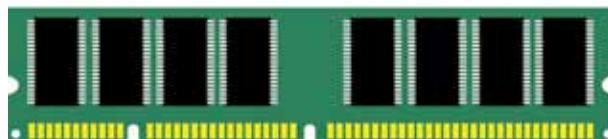
Intel Core i9 and AMD Ryzen 9 series of processors are made for high-end computing performance. The 10th Gen i9-10850K CPU pairs well with every high-end graphics card and cooling system. This CPU has 10-cores, and 20-threads, along with Intel UHD Graphics 630. Mobile workstation class laptops or even laptops for highly



demanding business users, as well as programmers will find i9 and Ryzen 9 a suitable option.

The Core i3 and Ryzen 3, being the lowest in the series, is also meant for routine productivity work and is therefore found in entry-level or budget laptops. The Core i5 and Ryzen 5 are for mid-range PCs, and can handle more compute intensive tasks with more multi-tasking. The Core i7 and Ryzen 7 are the highest end CPU meant for highly compute intensive tasks.

**Memory** – You can't compromise on memory, else even if you have a laptop with the latest CPU, you won't get satisfactory performance. Nowadays, most business laptops come with 8 GB RAM, which



is highly recommended. 4 GB will also work, but then you should ensure that other specs like storage (covered later), is better. For hardcore processing, programming, or graphics intensive work, it's better to go with 16 GB RAM at least.

**Storage** –Today, business laptops come with either SSDs, HDDs, or a combo of both. SSDs are more expensive, and therefore you'll find them in lesser capacity, like 256 GB or 512 GB. HDD, which is slower and therefore cheaper, is available in higher capacity. 1 TB HDDs are common in laptops these days.



As compared to HDDs, the SSDs allow faster booting time and overall performance, because they don't have any mechanical or moving parts. They also consume lesser power, which translates into better battery life. They're also more shock-resistant. If your work doesn't require a lot of storage, then going with a laptop with an SSD is good enough. Otherwise, it's better to go with HDD for higher storage.

If you need both high storage and zippy performance, then you'll also find hybrid laptops. These have both SSD and HDD. The OS and applications are loaded onto the SSD for smooth performance, while you can save your data on the HDD.

**Battery life** –Nowadays, the trend is toward internal Lithium Polymer batteries, as they provide

longer battery life. Battery capacity is calculated on the basis of Watt-Hours, or Wh, instead of the number of cells. Higher Wh translates into longer backup. Another thing to look for is rapid charging support. This feature is not only available in



smartphones, but it's also there in laptops. So, do look for rapid charging support when buying a laptop.

Portability – No one wants to have a laptop that weighs 2 Kgs or higher, especially if you do a lot of traveling. In the thin and light category, you'll now find laptops that weigh less than 1 kg, and yet give you all the specs you really need in your device.

One thing to keep in mind is that the weight largely depends on screen and battery size. Larger screen size would come with a large battery, which will increase the overall body size and weight of the machine. An ideal choice would be 9 to 14 inch of screen size and weighing around 900 grams to 1.5 kg.

## Security and Recovery

Your data is very precious to you and a small malware attack can completely devastate your notebook. So, look for laptops that offer essential security features to protect your data from malware attacks.

## Durability

Many users are constantly on the move, so a durable laptop should be your preferred choice. Laptop manufacturers have begun producing laptops with some MIL grads specs, making them more rugged. So, you'll find that many business laptops these days come with metal bodies instead of plastic ones. These make the device more rugged and durable.

## OS – Mac vs Windows

We'll not get into a Windows vs Mac debate as they both have plenty of differences and target audience.



Both have their pros and cons; Windows based machines are less expensive as compared to Mac. You get a wider number of specs choice to choose from. Plus, it has support for a wider applications portfolio. While Mac supports less, so you need to install additional apps to run Architecture programs.

The most noticeable difference is their interface macOS is simple and streamlined while Windows is a bit complex and feature-rich, with more customization options. When you compare Mac with Windows side-by-side, Mac would be the winner. But if you want an OS with more flexibility and customisation the Windows is right for you.

## Top Laptops under 30k

### ASUS VivoBook 15 X540NA-GQ285T

**Price:** ₹24,990

**Processor:** Intel Celeron N3350 Processor, 1.1 GHz with Intel HD Graphics 500

**Memory:** 4 GB

**Storage:** 1TB SATA

**Display:** 15.6-inch LED-backlit LCD HD Anti-Glare Screen

**Operating System:** Windows 10 Home

**Battery:** 33WHrs, 3-Cell Li-ion battery



### Lenovo V145

**Price:** ₹28,000

**Processor:** AMD APU Dual Core A6 with AMD Radeon R4 Graphics

**Memory:** 4 GB

**Storage:** 500 GB

**Display:** 15.6-inch HD LED-backlit

**Operating System:** Windows 10 Home

**Battery:** 45WHrs, 2-Cell



## Acer One 14 Z2-485

**Price:** ₹26,990

**Processor:**

Intel Pentium Gold 4415u with Intel HD Graphics 610 Graphics

**Memory:** 4 GB

**Storage:** 1 TB

**Display:** 14-inch HD LED-backlit

**Operating System:** Windows 10 Home

**Battery:** 4-Cell



## ASUS VivoBook 14 X409JA-EK372T

**Price:** ₹40,940

**Processor:**

10th Gen Intel Core i3-1005G1 processor with Intel UHD Graphics

**Memory:** 8 GB

**Storage:** 1 TB HDD + 128 GB SSD

**Display:** 14-inch FHD LED-backlit

**Operating System:** Windows 10 Home

**Battery:** 32 Watt Hours 2-Cell



## HP Notebook 250 G7 2A9A5PA

**Price:** ₹29,350

**Processor:**

Intel Celeron N4020 processor with Intel UHD Graphics

**Memory:** 4 GB

**Storage:** 1 TB

**Display:** 15.6-inch HD LED-backlit

**Operating System:** Windows 10 Home

**Battery:** 4.9 Watt Hours 2-Cell



## Mi Notebook 14 XMA1901

**Price:** ₹43,999

**Processor:**

10th Gen Intel Core i5-10210U processor with Intel UHD Graphics

**Memory:** 8 GB

**Storage:** 256 GB SSD

**Display:** 14-inch FHD LED-backlit

**Operating System:** Windows 10 Home

**Battery:** 4-Cell



## Top laptops between 30 to 50k

### Acer Aspire 3 A315-56

**Price:** ₹33,990

**Processor:**

Intel Core i3-1005G1 processor with Intel UHD Graphics

**Memory:** 4 GB

**Storage:** 1 TB

**Display:** 15.6-inch FHD LED-backlit

**Operating System:** Windows 10 Home

**Battery:** 36.7 Watt Hours 2-Cell



### HP 15s eq0024au

**Price:** ₹49,219

**Processor:**

AMD Ryzen 5 3500U processor, 2.1 GHz base processor with AMD Radeon Vega 8 Graphics

**Memory:** 8 GB

**Storage:** 512 GB SSD

**Display:** 15.6-inch FHD LED-backlit

**Operating System:** Windows 10 Home

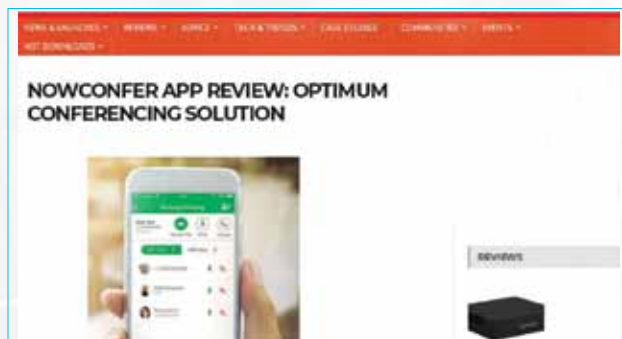
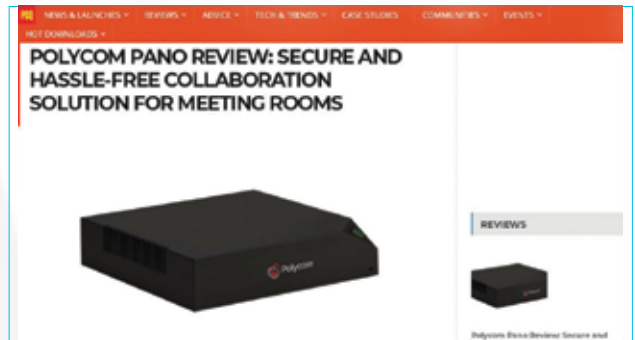
**Battery:** 41 Watt Hours 3-Cell



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## DISINFECTION SYSTEM

# PHILIPS UV-C DISINFECTION SYSTEM

— Ashok Pandey  
ashokpa@cybermedia.co.in

The year 2020 began with lots of joy, but then COVID-19 came and we all locked ourselves behind the doors. Its been months, but we still fear to go out and taking extra care whenever we have to go out. This pandemic taught us many things, we are sanitizing our hands again and again. Though personal hygiene was in out nature, but not this much. As now we are sainting almost everything including vegetables and phones.

Recently, Signify launched the Philips UV-C Disinfection system. This system looks like a microwave. This uses the UV-C radiation technology, which has been validated to effectively inactivate SARS-CoV-2, the virus that causes COVID-19. The system is easy to use, low maintenance and portable, which disinfects frequently touched objects and personal items.



## Features

UV-C Disinfection System comes with two light sources in enclosed space. Depending on the type of object, it takes approximately two to eight minutes for disinfection. It also depends on the object the size of the object.

Philips UV-C Disinfection System comes in three variants of 10 litres, 15 litres and 30 litres capacity, priced at 7,990, 9,990, and 11,990, respectively.

Inside the system, there is a grill, whatever object you want to disinfect, you keep that on the top of it. Then according to the size and type, you can select the time and click on the start button. It comes with a LED display that shows the timer.

Using the Philips UV-C Disinfection System, you can disinfect personal, electrical items, packaged food products, milk packets, fruits and vegetables, etc.

## Effective disinfectant

To disinfect the item/object, just put that inside on the grill, close the glass front door, and choose the timer depending on type and size. Then click on start and the system's inside light will switch on for that particular time period to disinfect the object. Once the disinfection is completed, it will notify you with a beep sound. Thus, you can complete other tasks rather than waiting in-front of the system.

If you are disinfecting key rings or any other small item, it would take two minutes only. While disinfecting products like mobile phones, bottles, wallets, power bank, etc. you can set 3 minutes timer. Other items which are large in size including laptop, iPad, tablet, books, etc. you can choose 5 minutes time to disinfect. For even larger size item, set the timer for eight minutes.

While disinfecting small items, better to put as many products

Price: Starts at ₹7,990

Overall: **10/10**

## SCORE

PRICE: **10/10**

PERFORMANCE: **10/10**

FEATURES: **10/10**

**KEY SPECS:** Screen LED display, Consumption/Power -15 to 30W, Efficiency Kill 99.99% of germs in the recommended time, Disinfection time 2mins to 8mins depending on the size and number of objects, Auto cut off of UV if door opened while the unit is functioning, Special glass door blocks and contains all UVC radiation within the chamber and allows only visible light to pass through it

**PROS:** Disinfect all types of the object including, electrical and fruits & vegetables, easy to operate

**CONS:** None

you can at a time, this will save your time as well as power consumption. Just keep in mind to increase the timer for more than 5 or 8 minutes if you are disinfecting more than three products at a time.

According to the literature, the minimum 611 Micro Joules/cm<sup>2</sup> @ 254 nm irradiance required to treat the coronavirus. The Department of Materials Engineering, Indian Institute of Science, Bangalore, has found that the Philips UV-C Disinfection System's output is >2100 Micro Joules/cm<sup>2</sup>, meaning it won't leave even a single virus alive on your object.

**Bottomline:** Coronavirus has changed the world, and we all are looking for some sort of solution to disinfect objects and vegetables, etc. Philips UV-C Disinfection System is a perfect solution to kill those viruses from various objects.



# BEST 8 MP CCTV SURVEILLANCE CAMERAS IN INDIA

PCQ Bureau



**T**he Madras High Court recently directed the Tamil Nadu government to ensure that Closed Circuit Television (CCTV) cameras should be installed at all check-points at district and state borders to check the transport of illegally mined minerals. A few years back, Delhi Chief Minister Arvind Kejriwal had also declared that hundreds of CCTV cameras would be installed across the national capital in bid to minimize incidents of crime.

The aforementioned facts simply manifest the utility and significance of surveillance cameras in the current times. Even at micro level, security of a household or an office space is of paramount importance and there's hardly any better tool than a CCTV camera to ensure the same. These cameras guard our premises during night hours and also when we are away for days, and all they need is a stable internet connection to do their job.

When picking a surveillance camera, it is very important that we check the specifications and

needless to say, a higher resolution ensures a better output. After a comprehensive research, we zeroed in on four 8 MP CCTV cameras that are the best in the segment and most effective for security purposes.

## 1. Secureye S-CCI3 Bullet Camera



From the house of Secureye, one of the leading security and surveillance solution providers, S-CCI3 Bullet Camera is among the first in the segment

with an 8 megapixel resolution, ensuring clearer images. Powered by advanced analytical algorithms, the camera is capable of smart detection of any movement or object. Infrared cut filter with auto switch lets the camera, which comes with 1/2.8" progressive scan CMOS sensor, function without any trouble in day as well as night hours.

The smart functions of the weather-proof cameras are designed to check line crossing, area intrusion, unattended object, missing object, region entrance, region exiting, fast-moving, detect loitering, detect people gathering and detect parking. The high-end surveillance camera is further capable of blurred detection, scene change detection, audio exception detection, and crossing line statistics. The cameras can be connected with iPhone, iPad as well as Android devices.

## 2. HIKVISION 8MP CCTV BULLET CAMERA



The HIKVISION 8MP Bullet Camera comes with advanced EXIR 2.0 infrared technology with a range of 30 metres. An IP67 certification makes it water and dust resistant, thereby functional in a wide range of climatic and weather conditions. The camera can operate between a temperature range of -40 °Fahrenheit to 140 °Fahrenheit.

It's equipped with an automated day/night mode and gives coloured as well as black and white output, as per the requirement. The bullet CCTV camera has an 8.29 megapixel progressive scan CMOS. There's also a mechanism to adjust brightness and sharpness.

## 3. CP-UNC-TB81ZL6-VMDS Camera

The 8 megapixel resolution full HD Infrared network bullet camera comes with PS CMOS image



sensor and is functional for a wide range of 60 metres. One outstanding attribute of the CCTV camera being offered by CP Plus is that it supports Starlight Function and provides dual-stream encoding mechanism.

The camera further offers a 16x zoom and 4k video streaming. It is compatible with iPhone, iPad as well as Android devices and gives the option to use an SD Card with a maximum size of 128 GB. Weighing less than 1 kg, they are light and easy to install.

## 4. Lorex LNB8005 Security Camera



The 8 megapixel resolution ultra HD CCTV camera comes with Infrared Night Vision to ensure that you never lose sight, even in the dark. The in-built IR Night Vision is functional up to a range of 40 metres in ambient lighting condition and up to 28 metres in complete darkness. It has a 4k ultra HD camera.

However, it is not wireless and hence installation can be a bit cumbersome. The camera weighs a little over 500 gram and its power source is corded electric. The manufactures assure that the camera provides maximum level of detail and clarity and an increased zoom capability. It provides 88 degree field of view and wrapped in a fully weatherproof metal housing.

## "71% INDIANS EXPECT COMPANIES TO ACCELERATE DIGITAL INITIATIVES"

Salesforce released the fourth edition of its State of the Connected Customer report which reveals that while a string of crises has affected all facets of life, including a fundamental shift in how customers connect with brands, factors like empathy, personalization, convenience, and digital transformation are the keys to customer relationships. As these same customers reevaluate the role of business in society, the notion of stakeholder capitalism is increasingly factored into purchase decisions. Key trends: Customer connections are essential amid crises; Understanding and convenience drive differentiation; The Digital Imperative hits its moment of truth; Customers demand that brands demonstrate their values.

Microsoft and NSDC collaborate to empower 1 lakh underserved young women across India with digital skills

With a vision to enhance skills for employability, Microsoft today announced a collaboration with the National Skill Development Corporation (NSDC) to skill more than 1 lakh underserved women in India over the next 10 months. This initiative is an extension of Microsoft's partnership with NSDC to provide digital skills to over 1 lakh youth in the country.

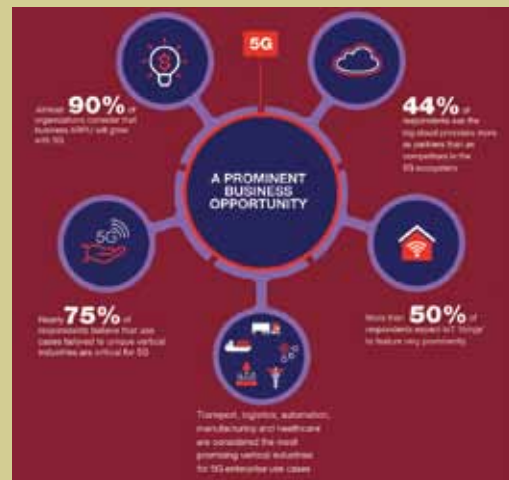


## APP-BASED SOLUTION FOR WOMEN SAFETY IN INDIA

Vodafone Idea Foundation, the CSR arm of Vodafone Idea Limited, in partnership with NASSCOM Foundation, Sayfty Trust, and UN Women announced the launch of 'MyAmbar' (meaning My Sky): A solution designed and developed especially for safety and empowerment of women in India. Developed under the 'Connecting for Good program', MyAmbar App aims to help women understand and stand against violence. MyAmbar app is available in both English and Hindi. It not only provides women with an easy access to important helpline numbers and service providers across the country but also helps them through a step-by-step risk assessment tool guiding them through various ways of dealing with their current status. Its extensive service directory also helps them reach out to legal and counselling services at a click of a button.



## OPTIMISM ON 5G, SECURITY IMPORTANT: FORTINET SURVEY



Fortinet announced that a commissioned survey conducted by TelecomTV in association with HardenStance and ETSI found broad-based optimism for 5G revenue opportunities among Telecom sector respondents, but only if the new 5G services were both more secure and better tailored to key enterprise use cases. Overall, almost 90% of respondents anticipate growth in Average Revenue Per User (ARPU) from their investments. This growth is expected to be split evenly between public and private 5G networks, but since at least half of all private networks are likely to be built and managed by the operators, such companies could potentially capture as much as 75% of the overall 5G business.

## HONEYWELL RELEASES NEXT GEN QUANTUM COMPUTER

Honeywell announced a breakthrough in the early era of quantum computing with the introduction of its next-generation quantum computer, the System Model H1. The H1 generation of computer features Honeywell's differentiated quantum charge-coupled device<sup>1</sup> (QCCD) trapped-ion technology and is strategically designed to be rapidly upgraded throughout its lifetime. The newest generation quantum computer from Honeywell initially offers 10 fully connected qubits, a proven quantum volume of 128 (the highest measured in the industry) and unique features such as mid-circuit measurement and qubit reuse.

## DIGITAL SKILLS FOR 1 LAKH YOUNG WOMEN VIA MICROSOFT-NSDC

With a vision to enhance skills for employability, Microsoft announced a collaboration with the National Skill Development Corporation (NSDC) to skill more than 1 lakh underserved women in India over the next 10 months. This initiative is an extension of Microsoft's partnership with NSDC to provide digital skills to over 1 lakh youth in the country. The partnership is focused on enhancing women's workforce participation by equipping underserved young women from rural communities with the skills required to thrive in a digital economy. As part of the collaboration, more than 70 hours of course content will be made available free of cost, covering topics such as digital literacy, enhancing employability, nano entrepreneurship and communication skills.

## APPDYNAMICS NEW SAAS OFFERING

AppDynamics, part of Cisco and the world's #1 APM solution and full-stack, business centric observability platform, today announced the availability of its Software-as-a-Service (SaaS) offering in Asia, enabling customers to access AppDynamics solutions via a local cloud location. Situated in India and built on the Amazon Web Services (AWS) Mumbai region, the offering is available to AppDynamics customers in India and throughout Asia. Enterprises can now accelerate their digital transformations through faster access to the latest AppDynamics innovations and industry-leading AIOps solutions. Furthermore, the availability of this new SaaS offering will resolve potential concerns around data sovereignty and data governance requirements for customers in India. This anticipates legislation, including the Personal Data Protection Bill 2019, which would require Indian organizations to retain critical application performance and business data within India.

## MOST INDIAN COMPANIES SAW OVER 25% JUMP IN WFH CYBER THREATS: CISCO

Cisco's Future of Secure Remote Work Report revealed many Indian organizations were unprepared to make the accelerated transition to a remote workforce at the outset of COVID-19. About two-thirds (65%) of organizations adopted cybersecurity measures during COVID-19 to support remote working. The study is based on a survey of over 3,000 IT decision-makers globally, including over 1,900 respondents across 13 Asia Pacific markets, including India. It highlights the cybersecurity challenges companies faced as they shifted the majority of their employees to a remote working arrangement in a really short period of time. Key highlights:

- 73% of Indian organizations have experienced a 25% or more jump in either cyber threats or alerts since the start of COVID-19.
- 65% of organizations adopted cybersecurity measures during COVID-19 to support remote working.
- Cybersecurity is the top priority for 84% of Indian organizations.

## BLUEI'S ECHO 3 WIRELESS NECKBAND



Bluei announced its newest Wireless Neckband 'ECHO3'. The flexi neckband is designed lightweight, shockproof and dust residence, folds easily, to be kept in the bag when not in use. Bluei ECHO 3 is a modern gadget that is popular among a wide audience. It combines features of a neckband for true HD sound with deep bass, a music transfer, and hands-free function via Bluetooth 5.0. Bluei offers voice activated dialing feature in ECHO 3 sports headset for their buyers. The most advanced bluetooth 5.0 provides a stable connection range up to 10 meters with customers' bluetooth devices and a 200 mAh rechargeable battery which gives 10 hrs playtime and devices takes less than one hour to charge the battery.

# UNLOCK YOUR DATA'S POTENTIAL

PCQuest organized a webinar titled Unlock your data's potential. The speakers were Manoj Kolekar, Senior Evangelist, Technology, HPE, and Shaikh Jalaluddin, Solution Architect, Pentagon Systems & Services Pvt Ltd. It was moderated by Sunil Rajguru, Editor, PC Quest and CIOL

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Opening the conference, Sunil Rajguru remarked that with every crisis comes opportunity! There is no point in waiting for it to be over. Anticipation is power, said Tony Robbins. World War 2 gave us the Colossus computer, CDMA, rocketry, jet planes, and atomic energy. It also led to the birth of NASA. Covid-19 has been strengthening WFH, collaboration and mobile workforce. It is happening right in front of our eyes. We are realizing that, maybe, you don't even need an office! There is more use of no-touch technologies, such as IoT, Industry 4.0, drones, and connected cars.

Data still remains the new oil. The data explosion continues. There are more data centers, cloud operations, devices, etc. The upper limit for IoT devices has been put at 500 billion by 2030. That is why storage will also be important. There is an unprecedented demand for storage of all types, such as hybrid clouds, AI, analytics, etc. All will play a key role. We have to ahead with technological acceleration.

Shaikh Jalaluddin, Solution Architect, Pentagon Systems & Services Pvt Ltd, said that Pentagon has top-level partnerships with global technology players. We have deep expertise across IT infrastructures and technologies to offer industry-leading solutions. The team has deep experience and skills of HPE storage products to deliver storage assessment, sizing, PoCs, migrations, replications, conducting PoCs and service support.

**Mission-critical storage:** Manoj Kolekar, Senior Evangelist - Technology, HPE talked about the HPE Primera, and raising the expectations of mission-critical storage. Mission-critical apps are transforming the industry, and require more agility. We had the traditional apps such as virtualization, databases, ERP, EMR, etc. Now, there are modern technologies such as containers, real-time analytics, IoT and AI. People are now demanding more systems that are autonomous. More collaborations and platforms are being used today.

Going forward, there will be a physical infrastructure,

where the physical presence might not be needed. Infrastructure now needs to be very intelligent, future-proof, and technology-agnostic. Intelligence will be more intelligent in future.

There is a forced trade-off between agility and resiliency. They are supposed to run 365x24x7. There is the high-end storage and the public cloud. We are now engineered to drive unique value in high-end storage. There are four pillars. There is global intelligence, powered with the most advanced AI for infrastructure. There is the all-active architecture, with multi-mode architecture for higher resiliency and limitless parallelization. There is the service-centric OS that eliminates risk and simplifies management. We also have timeless storage, a new ownership experience that keeps getting better.

HPE has now come out with the world's most intelligent storage for mission-critical apps, the HPE Primera. There are features such as on-demand experience, app-aware resiliency, and predictive acceleration. The HPE storage on-demand experience is mission-critical storage without any complexity. It is radically simple, with upto 93% reduction in time spent to deploy, manage, and scale. It is as-a-service and a consumption-based model having elastic consumption and cloud economics, with pay-as-you-go. It is timeless, with unique ownership experience in high-end storage for never-ending value.

The Primera platform is designed to eliminate risk and simplifying management with a service-centric OS. Being service centric means there is decoupled data services, is safer and self-upgradable, there are fewer node reboots required, and there is faster access to innovation. There is 100% delivery guarantee. We have moved from a monolithic architecture to a service-centric architecture.

The kernel needs to be rebooted in the monolithic architecture. In the service-centric architecture, once you boot the Primera storage system, every service runs within the Primera as a separate users' case. Now,

you can only patch those services needed. There is no need to reboot the Primera system. This architecture is a completely changed one. Primera delivers 100% availability guaranteed.

As an example, the Primera 670 has 4TB cache. These systems are very powerful in terms of the physical memory processors that they have. The Primera offers performance insights, topology insights, workload insights, and analytics infosights. This is not available anywhere else. Intelligence is the prime core of the Primera, and it is autonomous.

HPE Storage offers on-demand experience, with online, inline, non-disruptive upgrades with data in place. You can start small with efficient scaling, scale up and out, with simple refresh, and no disruptions. There is multi-node scale for performance and capacity. You get zero wasted investment with data in place upgrades. Upgrading is transparent to your apps and you. Everything that you do on the Primera is non disruptive.

Simplicity is the key! You can do automated setups with streamlined workflows. No separate tools are needed with built-in management. No tuning is required with all-active, always-on, data reduction and RAID6. There are perspective OS updates that are transparent to applications. It is API-driven for infrastructure as code. You can now get upto 93% reduction in the time spent to deploy, manage, and scale storage.

Primera is built for mixed workload environments. Nimble is a simple platform to manage. The Primera platform is best storage technology in the market. The NVMe-enabled architecture is JBOF enabled. There is the service-centric operating architecture, also with store more technologies, flash optimization and storage class memory (SCM), persistent technologies and multi-site replication. There is the mesh active-active architecture.

The memory pool consists of data integrity with T10-PI persistent checksum, zero detection and hash generation, tightly-coupled clustering, NVMe parallel processing, mixed workload and CPU offload, and fast RAID 10, 60. NVMe will now go on to become the de facto platform. It will change the way performance is delivered from that platform. The ASIC cluster is also very important.

There is the HPE adaptive data reduction and integrated data protection. There is zero defect, deduplication, compression and data packing. Primera has priority optimizations. QoS is enabled by throttling the VV-set of app green to 40,000 IOPS and 0.8ms response time. Resources for app red are freed up. Latency is very critical for apps. Primera array is designed to deliver 300ms.

There is HPE storage app-aware resiliency. The

platform understands the behavior of the apps that are running and makes the necessary adjustments automatically. At Primera, we are going beyond the storage, looking at the compute and apps, tell the problem areas and the ways to resolve them. This is very unique to Primera.

We also have autonomous features on the Primera, such as AI/analytics, which gives the performance insights. The platform looks at the apps from the end customer perspective. There are workload insights and planning, recommendation engine, automatic workload management, and workload traceability and app awareness. AI helps in resolving performance issues. It tells you where saturation is happening, and gives recommendations, via recommendation engine. Workload management simulates the various environments.

HPE Infosight is the AI for the data center. It is collecting and analyzing millions of sensors per second. It is all happening because of the global intelligence. The customer impact is predictive support automation, pre-emptive recommendations, proactive management, and continuous improvements. Cloud-based AI platform has the predictive analytics engine, along with global learning and recommendation engine. The cross-stack telemetry includes compute, network, and storage, such as VMware, Oracle, MS SQL Server, and Exchange.

The predictive support automation and proactive remediation are also done. We have huge telemetry. We can scan telemetry data for simple signatures. If there is a fresh problem, a simple identity is created within a few hours. We identify the root cause and do resolution. Signature is added to case automation toolset. Case automation via detailed signature is now in place. We can prevent in future.

We also have cross-talk analytics for VMware environments. These can be for noisy neighbours, host and memory analytics, etc. There are no more escalations. There is root cause analysis with full stack expertise. Finally, we look at the systems and call you, if necessary.

Technology refreshes can be painful. There is need to rebuy capacity, painful data migration, disruptive downtime, and escalating maintenance. HPE Primera gives you timeless storage. Storage ownership is transformed, and there is reduced storage TCO. You also get technology that is always current and infrastructure that is kept continuously modern. The all new HPE Primera all-flash arrays are eligible. There is technology refresh every three years at no additional cost with zero disruption.

HPE Primera is the next-gen autonomous storage. The recommendation engine can simulate your workflows. Machine learning and global intelligence is built in.

DATAQUEST

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

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

## Key Highlights

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

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- From Survival to Revival
- Proactive Business Recovery
  - Changing Customer Expectation in Crisis
- Cyber-Sanitize your business
- Proactive Sales Strategies for faster business recovery
- New IT Priorities 2020

- CXO of the Week
- CiOL Live Video Series
  - Start-Up Circle
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- Are There any Make in India IT Products for Us to Use?
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- Govt to Harness IT to Empower MSME Sector



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