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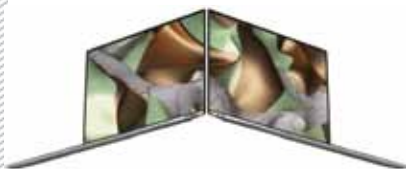
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Heading for trillions of IoTs

What exactly is the Internet of Things (IoT)? There is still a lot of confusion about this term. To understand that, it is better to understand the other concepts first. The Internet is the global connection of computers and networks. The Internet of People (IoP) is people using devices like desktops, laptops, tabs and smartphones to connect to the Internet and use it.

One way to define an IoT device is something that is connected to the Internet, but does not need human operation and intervention to collect and transmit data. For example if you had an IoT device at a traffic signal, it could collect information related to traffic, pedestrians, pollution, climate etc and transmit it to a command centre where all this precious data would be collected and analyzed.

That's not to say that you can't interact with an IoT device. The best example is a smart home assistant like Alexa. You can ask it for whatever you want and it will reply. But it may collect data around the house, trigger operations based on motion sensors and give you alerts 24X7 without you directly getting involved.

What about your smartphone? When you are using it, it is part of the IoP. But when you are not using it, it is still connected to the Internet, looking for updates on its own and transmitting data related to things like usage and location. It could then be called a mobile IoT device.

The applications for IoT are endless and they can be used in each and every industry you can think of. They can be embedded with sensors, placed in any appliance, device or industrial process that you want. It's like a data worker quietly collecting data 365X24X7 and it can be programmed to do active tasks too.

The number of IoTs crossed the number of people ages ago. With the way the Covid Era has pushed no touch technologies and the need for continuous data, we will touch hundreds of billions of IoT devices in this decade itself.

Right now we have billions of devices connected to millions of data centers. If that sounds like a lot, then think of one day having trillions of IoTs embedded in that system. The data revolution got so huge that it became a data explosion. Right now we are looking at a series of exponentially increasing data explosions.

Humans are going to become totally unable to handle this data and it is inevitable that they will be on auto pilot soon, namely Artificial Intelligence, Machine Learning and Deep Learning. Even the best data analytic tools will not be enough. It will be AI which will drive them in a supersized cloud world.

Sunil Rajguru

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*Think of a
supersized cloud*
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ooking at an A to Z of IoTs...

A for Agriculture: This is an important component of AgriTech and something which India desperately needs. IoTs can be embedded in pumps and tractors, then linked to the farmer's mobile, provided he has the right apps. This can be done nationally right away. From the government's point of view, they can collect data about soil content, temperature, rainfall and wind speed in real time for all the geographical zones in the country. A is also for AIoT: Artificial Intelligence + IoT.

B for Building automation: It's not only the digital aspect of a Smart Home. IoT devices can control the electric-electronic and even mechanical part of the buildings for complete integration and control. The Smart Home usually refers to the inside part of it, the interaction between humans and gadgets-devices. Smart Building management looks into occupant behaviour, energy management and the environment

around it.

C for Carnegie Mellon & Coca-Cola: The World Wide Web came in the 1990s, but the Internet has been around for much longer than that. It all began in 1982 at Carnegie Mellon University. A Coca-Cola vending machine was connected to the Internet and gave the following data: 1. An inventory report. 2. Whether the drinks were cold or not. You could say that the IoT was born here, though it would actually take off in the next century. Microsoft did jump into this in the 1990s.

D for Data: This is what it is all about. Already we have billions of devices connected with



millions of data centres. After a few decades the Earth could be teeming with trillions of IoT devices. What will we do with all that data. What will be its quality? The data crunching and analytics required will be great indeed. In data that would be the era of Artificial Intelligence and Machine Learning.

E for elderly care: If the aged are surrounded by IoT devices, they can be monitored 24x7 and problems can be alerted on a real-time basis. There are innovations like cochlear implants being integrated with the IoT network. E is for Enterprise IoT and as the name suggests, it is in the business domain. E is also for early warning systems for earthquakes and tsunamis, which could be big in the future.

F for Four point O: They will be an integral part of Industry 4.0, called the Industrial Internet of Things (IIoTs). Operational Technology can monitor entire industrial systems and look at the performance of both machines and people. IoT devices embedded throughout the manufacturing process are helpful for management, optimization and predictive maintenance. The use of IIoTs in heavy industry is called the Internet of Heavier Things.



G for Google Nest...: Also for Amazon Alexa or Echo Ring. Then there's Apple Homepod or Homekit and Samsung's SmartThingsHub. The Smart Home is the house of the future, especially as a result of post-Covid changes. The Smart Home will be an intricate network of appliances powered by IoT devices. All the top tech companies are totally into smart speakers and virtual assistants or one IoT device to rule them all! Almost every component of a Smart Home can have IoT devices.

H for Healthcare: Also called IoHT or IoMT or MIoT where H & M stand for "healthcare" and "medical" respectively. So that's why it's called simply Smart Healthcare. This will be useful for remote health monitoring with trigger alerts in case something goes wrong. That way you can be under a sort of health watch 24x7. Smart Beds in hospitals are another innovation that is slowly gaining ground. A network of sensors in the hospital can also keep tabs on both patients and hospital-lab equipment.

I for IPv6: One day we may have trillions of IoTs. The capacity for IPv4 was an inadequate 4.3 billion, but when it comes to IPv6, it's more than 340 undecillion, or 340 trillion trilliontrillion. Now we're talking! IPv6 and IoT are a perfect fit.

J for Juicero: What if you embed an IoT device into a juicer and make it a Wi-Fi device? Sounds good? Well the idea seemed so good that Juicero got a whopping \$120 million funding way back in 2014. This was one of the biggest disasters of Silicon Valley. But since then IoT devices are getting big in fridges, dishwashers, ovens and other kitchen appliances.

K for Kevin Ashton: Kevin was behind the global standard for RFIDs and some other sensors. He was into supply chain management for that. But his biggest contribution is phrasing



the term IoT. He wanted to popularize Internet For Things (IFT?), but acronyms and popular terms have a life of their own and IoT it was.

L for Lighting, heating and cooling: IoT devices can be embedded in every factory, home and establishment to take care of these things. Based on motion sensors and temperature, they can be automatically switched on or off. This is also part of an energy management system.



M for Military: The Internet of Military Things (IoMT) is being fine tuned for warfare. With physical data being collected on the field and it being crunched in the cloud, this will make way for the soldiers and generals to concentrate on other things. That's why it's also called Internet of Battlefield Things (IoBT). IoTs could be placed on ground vehicles, drones, human armour, weapons etc. M is also for Mobile IoT.

N for NB-IoT: Tomorrow we may have 5G all over India which will revolutionize the usage of IoTs. But before that we had NB-IoT, or Narrowband IoT, which was developed by the 3rd Generation Partnership Project or 3GPP.

O for Ocean of Things: The US Defense Advanced Research Projects Agency (DARPA)'s OoT consists of thousands of IoT enabled floats all over the oceans to monitor all kinds of vessels and also collect data related to temperature. Boats also use IoTs to monitor sea activity and they can also be monitored when they are lying idle.

P for Privacy: With first the computer and then the smartphone, privacy already seems to have been thrown out of the window. But IoT devices will be almost everywhere and even in places you can't think of. What will happen to privacy at that time?

Q for QR Codes and NFC tags: They are already part of the packaging and distribution system. They can be integrated with IoT systems and



there's a term for this kind of Smart Packaging too: Internet of Packaging. This will be great for digital tracking.

R for Remote monitoring: Ideal for keeping track of remote operations related to offshore oil drills, railway tracks, wind farms etc. Without human presence Real-Time Data Analytics can be shared with the command centre. Useful for knowing if everything is running smoothly and help can be sent immediately after something breaks down.

S for Security: How safe are all of us and our homes and offices if they are swarming with IoT devices open to data thieves and hackers? In fact they are a very part of our security systems. S is also for the embedded sensors by which data is captured and sent. S is also for Songdo (South Korea) and Santander (Spain), where large-scale Smart City experiments are happening. There's also the Sino-Singapore Guangzhou Knowledge City.

T for Transportation: IoTs are great for keeping



track of all kinds of vehicles. The IoT device can interact with tolls, smart traffic systems, other connected vehicles (that really helps with autonomous vehicles) and is great for fleet and logistics management. Terms that could gain popularity in the future. V2V: Vehicle-to-Vehicle communication. V2P: Vehicle-to-Pedestrian communication. All 3 together are called V2X or Vehicle-to-Everything communication, which will lead to the Brave New World of autonomous vehicles.

U is for Utilities: A city's water, electricity, sewage and traffic can become a Smart Grid and it becomes quite easy for utilities to monitor, bill and manage their systems. The environment outside the city can be monitored similarly, including forests and wildlife. U is for "Use and Throw", IoT devices are really small and cheap. They can be made part of really low-cost sensors that can be "use and throw" ones. They can be embedded in plastic and fabric. Some are already calling this the Internet of Disposable Things.

V for Voice control: First the input was via the keyboard and then the mouse. With the advent of the smartphone, it was the touchscreen. But if you have a Smart Home full of IoT appliances, you can interact with all of them with just voice commands, it's not just Alexa. It would be a boon for the aged who usually struggle handling high-tech devices.

W for Wearables: This is a huge industry. They are worn both for pleasure and fitness. They can track information on a real-time basis and transmit it to the family, doctor or hospital, as required. They can monitor heart rate, perspiration, temperature, sleep patterns and glucose (for diabetes patients). Connected with your car, the AC level could automatically be set based on these indicators. You can seamlessly monitor your fitness levels at all times. Insurance agencies also prefer it if you wear IoT devices.

X for Xerox & other printers: If everything can be embedded to an IoT device, why not a printer. Businesses can use these smart devices to gauge operational efficiency at all times. As mentioned above, remote monitoring is also an application in Smart Printing.

Y for Yottabytes: 1000 terabytes is 1 petabyte. 1000 petabytes is 1 exabyte. 1000 exabytes is 1 zettabyte. Right now the world is dealing with zettabytes. Now 1000 zettabytes is 1 yottabyte. One day when we have trillions of IoTs, we will be dealing with yottabytes of data on a regular basis.

Z for Zigbee, Bluetooth & Modbus: The IoT network may not directly connect to the cloud via the Internet. There may be other tiers involved. For example the IIoT network uses protocols like Zigbee, Bluetooth, Modbus or proprietary network which connect to the Edge.





WILL IOMT BE ABLE TO SALVAGE INDIAN HEALTHCARE?

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IoMT can drive more tangible reforms and sustainable development in Indian healthcare, by fueling a series of data-driven innovations in healthcare focusing on better healthcare outcomes

Digital technologies have become foundational to healthcare delivery today. In its global strategy on Digital Health 2020-2025 to promote healthy lives and wellbeing for all the World Health Organization (WHO) has launched and acknowledged advanced digital and communication technologies as a key enabler of the Digital Health vision.

Taking a cue from the possibilities unleashed by the Internet of Things (IoT) and connected devices in various industries of late, the healthcare industry has also shown a growing interest in exploring the ways IoT could transform healthcare outcomes and most importantly, making it cost-effective.

IoT has the potential to transform the speed and accuracy of diagnosis and treatments, monitor and manage the patients' health and care delivery in real time, which, in turn, can boost healthcare providers' operational productivity, and improve cost-efficiency and profitability to a considerable extent too. Significant advances in computing and processing power, software, wireless technology and miniaturisation have

expanded the possibilities further and created the Internet of Medical Things (IoMT).

Today, the Internet of Medical Things (IoMT) is efficiently bridging the gap between the physical and the digital worlds by bringing together people (doctors, patients, nurses, caregivers), data (patient and healthcare performance data), processes (care delivery and patient support) and enablers (connected medical devices, cloud and mobile applications). (See Figure 1)

IoT-based health devices have enabled healthcare providers to collect and analyze more patient data than ever before- fueling a series of innovations in healthcare focusing on better healthcare outcomes. A lot of thrust has been on the preventive and personalized healthcare solutions as well which can also alleviate the burden on our healthcare systems by reducing unnecessary visits to hospitals, or even reducing the hospital stay with timely intervention and treatment.

IoMT Application areas

Patient interactions with the healthcare system involve the use of medical equipment and devices to a great extent. MedTech companies manufacture more than 500,000 different types of medical devices, including wearable external medical devices (skin patches, insulin pumps and blood glucose monitors), implanted medical devices (pacemakers and implantable cardioverter defibrillator devices) and stationary medical devices (home monitoring devices, connected imaging devices and scanning machines). The technologies

“IoMT, especially wearable technology will play a crucial role in decreasing operational expenses for doctors and provide real-time patient health tracking.”

—Anupam Kulkarni, Co-Founder & CEO, iauro Systems



used in these devices also extend far beyond those of pharmaceutical science to include materials science, bioengineering, engineering, electronics, software, information and communication technology, nuclear, aerospace, plastics technology, surface technology, and many more.

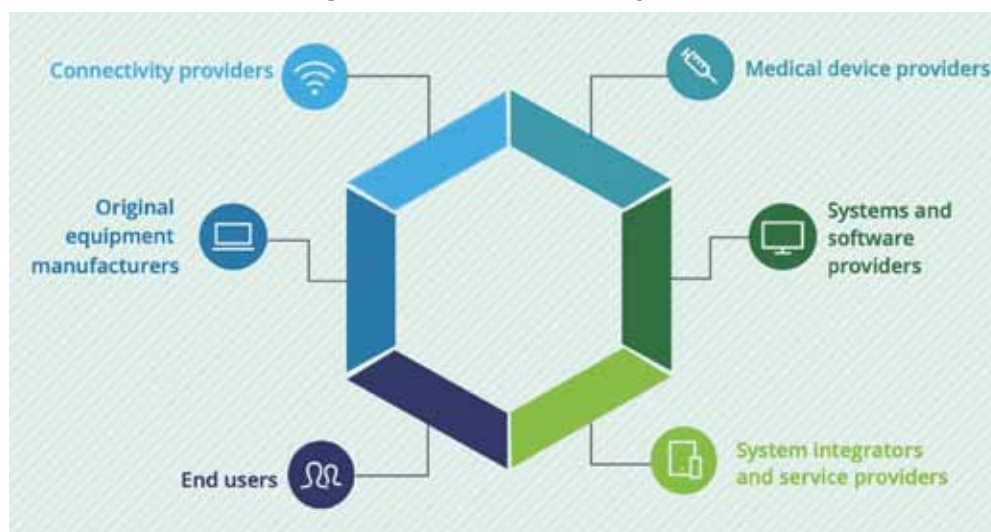
IoMT comprises medical devices, wearables, and applications that can connect to healthcare information technology systems to close the feedback loop between patients and medical practitioners and provide real-time monitoring. One of the prominent and simple uses of IoMT so far are wearables such as Smartwatches with functionalities like blood-oxygen level measurement, blood pressure and heart rate monitoring, etc. Remote monitoring of patients using smart devices such as BP Monitors, asthma monitors, etc. are also few popular uses of IoMT. Some of the common use cases being used at the

institution level are Smart scheduling, patient and staff trace /track, fall detection, etc. (See Figure 2)

Frost & Sullivan has identified five key application areas, where IoMT is making its mark predominantly.

On Body: Covers consumer health wearables and medical and clinical-grade wearables such as smart health devices, peripherals,

Figure 1: The IoMT Ecosystem



(Data & Image Source: MarketsandMarkets & Deloitte)



and implants.

In Home: covers personal emergency response systems (PERS), remote patient monitoring (RPM) and telehealth virtual visits such as digital/virtual assistants, activity monitors, and home medical devices.

Community: covers Mobility services, Emergency response intelligence, Health Kiosks, and Point-of-care devices such as automated kiosks at community centers to improve access to informational services, pharmaceutical products, and telemedicine services, etc.

In Clinic: covers Point-of-care devices and care-coordination technologies as well as administrative support tools. Point-of-care devices here differ from those in the community segment. Instead of the care provider physically using a device, the provider can be located remotely while a device is used by qualified staff.

In Hospital: covers IoT-enabled devices and smart solutions for tracking patient/personnel flow, for better assets, inventory and hospital environment management and resource utilization.

Figure 2: 7 ways IoT impacting Healthcare



(Data & Image Source: Deloitte)

IoT market potential

Digital and communication technologies are going to transform the future of the healthcare sector in a way no one could not have imagined even a couple of years back. The share of connected medical devices as of now is less than 50% of the total medical devices, but with improved efficiencies backed by an increasing spend in the research and development, the share will grow significantly in the next few years. A study estimate by MarketsandMarkets pegged the global IoT market at around \$72.5

billion in 2020, and forecast the market to be \$188.2 billion by 2025, at a 21% CAGR. The demand for smart healthcare solutions is likely to shoot up further with an increasingly ageing population worldwide manifesting a higher prevalence of chronic diseases.

As per MarketsandMarkets estimates in 2017, the global IoT market is likely to rise to \$158.1 billion in 2022. (See Figure 3)

Figure 3: IoT Market Growth Forecast across Geographies



(Data & Image Source: MarketsandMarkets & Deloitte)

India embracing IoMT

By enabling last-mile digital health connectivity and facilitating efficient healthcare delivery, IoMT is generating an enormous volume of data streams and creating unprecedented opportunities for the HealthTech solution providers in India. The ongoing pandemic woes, for instance, have created opportunities for IoMT innovation in ambulatory, remote monitoring and patient care assistance. Public and private healthcare providers are harnessing the power of IoMT data to improve accuracy of diagnostics and impact of targeted treatments.

Hitachi, for instance, is working on multiple large Digital Health Pilots which will not only augment India's IoMT capabilities but also deliver care at remotest of the location. Hitachi has been working on a bunch of Digital Health initiatives across the globe that leverages Operational technology (OT)- Information Technology (IT) prowess to deliver solutions and products that improve care coordination/delivery.

Shishir Kumar, Director- Healthcare and Lifesciences, Hitachi Vantara India said, "IoMT has been a catalyst in delivering healthcare to those who require assistance in daily living through chronic disease and medicine management. In the current context, especially in the post pandemic normal, IoMT is also becoming an essential bridge to virtual care and remote monitoring of patients. With continued integration of IoMT with healthcare, India can innovate in both preventive, curative, and rehabilitative health-technologies, while bringing access to care even in the remotest parts of the country. In the future, as IoMT advances in India, and with mass awareness, 5G and policy interventions, I feel small clinics will coexist and collaborate with large hospitals and home care to deliver holistic healthcare. IoMT will also support virtual hospitals/clinics and wards where patients can be treated remotely, especially during the pandemic and time to follow."

Anupam Kulkarni, Co-Founder & CEO, iauru Systems said, "The healthcare industry is redefining itself with IoMT, moving the healthcare facilities from hospitals to home. Today it is possible to create a one-stop platform for medical consultants, doctors, students and patients to be connected on a single dashboard. This integrated dashboard can capture real-time data for tracking the patient's health in a holistic manner – storing of all relevant medical information of the patient's health reading

"As IoMT advances in India with 5G and policy interventions, small clinics will coexist and collaborate with large hospitals and home care to deliver holistic healthcare."

—Shishir Kumar, Director- Healthcare and Lifesciences, Hitachi Vantara India



through various medical and healthcare devices, i.e. CT-scan, MRIs, X-rays, etc.; creating alerts related to patient's medicine requirement patterns and routine health check-up notifications; benchmarking the patient's healthcare data with geographical norms and compliances; amongst others – all to ensure the best of the medical care are provided, in a timely manner."

"The innovations in the healthcare space will soon adopt the 3Ps model – offering Predictive, Preventive, and Personalized measures in the interest of both the patients as well as doctors and 5G and IoT will be a key enabler in all the key instances," said Kulkarni.

"5G wireless tech will enable medical facilities anytime, anywhere through tele-health, allowing patients to seek the best of medical support even from remote locations. This will not only increase accessibility but also help in reducing time and cost drastically; will lead to providing the required diagnosis on time and thus resulting in healthier lives. Additionally, there is also a scope for introducing wearable technology which will play a crucial role in decreasing operational expenses for doctors and provide real-time patient health tracking. This will lead to an increase in preventive measures reducing the risk of potential diseases," he explained.

However, to maximize the potential of IoMT, India needs to focus on three key areas- building digital health infrastructure, e-governance, and skilling/public awareness, advised Shishir Kumar, of Hitachi Vantara India. But most importantly, it requires more active collaboration and partnership between patients, healthcare providers and facilities, pharma, academia, MedTech manufacturers and HealthTech providers to drive more tangible reforms and sustainable development in healthcare with IoMT.



SENSOR DATA CAN HELP SAVE LIVES DURING NATURAL DISASTERS

Angira Agrawal



A steady stream of collected sensor information is allowing disaster management officials and first responders to become smart about how they address storms, floods, and fires at every point along the way - before, during, and after

C OVID isn't the only global catastrophe that has struck our world. In 2021, apart from the pandemic there were many lives lost owing to various natural calamities. In May 2021, Maharashtra and Gujarat witnessed widespread damages due to Cyclone Tauktae. The damage caused by the cyclone was over INR 10,000 crore for the state of Gujarat alone. Another cyclone - Yaas - whiplashed the eastern coasts of the country on May 26, with the Bengal Govt. claiming that at least 1 crore people have been affected by the calamity thus far. Last year, in May itself, the floods in Assam affected more than 50 lakh people, around 130 people lost their lives in the floods and more than 1.5 lakh people had to seek refuge in camps as residents in 5,474 villages suffered flooding. The flooding began just before harvest season and caused destruction to more than 267,203 hectares of crops and more than 45,000 domesticated animals were either forced to flee or were abandoned.

Organizations around the world are increasingly using data to proactively address disasters. As edge computing capabilities and types of commoditized sensors available today have exploded, a steady stream of collected sensor information is allowing disaster management officials and first responders to become smart about how they address storms, floods, and fires at every point along the way -- before, during, and after.

Modern technology recently helped control the spread of crop-threatening migratory pest desert locusts by using advanced

technologies, including drones, and ensured there was not much crop damage. The application of AI in combination with data sourced from sensors can unlock patterns that can help us warn communities early and save lives.

Most of us live in a world where crowds can act as 'sensors', thanks to our smartphones and social media platforms. The latency between an event occurring and communications to surrounding communities being made aware can often be a few seconds. However, this is a much different story for under and unconnected regions, which are often the worst hit by natural disasters. Many remote areas throughout Asia, for example, experience extreme flooding on a regular basis. The ability to check social media or receive awareness alerts from nearby or online communities or the government simply isn't an option.

The first priority for any Government, at the time of a natural disaster, is to prevent loss of life and property. This can be better achieved if agencies receive information prior to a tragic event – prevention is always better than cure. By design, early warning systems can be deployed across the length and breadth of land, and where applicable, in the deep sea. Most of these systems are automated, and that's where connected sensors come in.

Ultrasound sensors on bridges that detect river water levels far in advance of floods occurring give public safety officials a continuous view to evacuate villages well before the tragedy hits. Being able to access a constant flow of real-time data for awareness is a game-changer as the severity and frequency of natural disasters increase over time with our changing climate conditions.

One of the biggest challenges that these sensors face for continuous monitoring is having access to reliable, no-fail and affordable connectivity. In remote areas like mountain ranges, coastlines, out to sea, or rural farming communities, cell networks aren't available. Even when they are, power lines and mobile towers are usually first to be compromised in the event of disasters. Since power and connectivity infrastructure is often daisy-chained, an outage can affect distant parts of the network in urban areas and outside disaster-struck zones. This is especially critical during catastrophic events, just when mobile network connectivity is needed most. First responder teams also need to be able to communicate back to the disaster management command centres, and often struggle with lack of connectivity when mobile networks are down.



ANGIRA AGRAWAL, COO, Skylon

Effective disaster management requires a multi-modal connectivity approach to address the challenges associated with regions that are connectivity challenged, using space-based communication networks when needed. As the cost of satellite connectivity falls, it becomes possible to mobilize data from the furthest sensors. When this kind of reliable and far-reaching connectivity is combined with sensors on machines or structures, an automatic trigger can task a satellite to instantly image a particular area, and simultaneously dispatch first responder units, for example.

To help augment first responders, highly specialized drones and bots are also being deployed in exigent circumstances, especially where it is unsafe for humans to operate. The combination of sensors gathering data, cloud computing and AI to help make sense of that data, and autonomous robots to respond to emergencies has provided us a powerful, almost omniscient capability to learn about our environment and respond to threats proactively.

Before today, deploying these types of solutions to collect data was a complex, costly and challenging task. Disaster preparedness used to involve conducting budgetary tradeoff studies, forcing government officials to make difficult decisions regarding which areas to monitor and ultimately deploy resources, inevitably leaving large swaths of the population unprotected.

Now, with the ability to sense all corners of the world reliably and cost effectively, such decisions no longer have to be binary.

The author is COO, Skylon



KEY ADVANTAGES AND DISADVANTAGES OF SMART HOME AUTOMATION

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Smart devices can enhance your productivity and make life more convenient. The complex IoT and home/building automation technology is growing day by day but come with a few disadvantages as well

The smartphone was a major tech development that changed our lives. Another big innovation is the development of Smart Home, office, or building automation.

Though, the concept isn't new, the interest of consumers in automation technology is huge and growing. But as like every other technology, it also has some pros and cons. Let have a look at some major ones –

Advantages

Maximised security – Using smart security and surveillance devices, you can make your home or office secure enough for any external risks. There are tons of options, for example, motion detectors, surveillance cameras, automated door locks, and other tangible security measures.

You can set alerts for intruders, when you are out of home or office. In case, some guests have arrived

and you are on the way, you can open the door from anywhere in the world.

Centralised management

– Thanks to the connected systems that lets you operate every device and appliance from any corner of the world. You can manage all of your home devices from one place – your phone. The one simple interface can be used by your smartphone or laptop to manage all the connected devices.

It's not only about turning them on or off, you can help your elderly as well. You can monitor their health, manage room temperature and keep an eye on using the connected cam.

Energy Efficiency –

Automation brings more benefits to you. Using the centralised control, you can also monitor energy consumption. You can check your AC or any other appliance running, and if you forgot to turn them off, then can do that right away.

When you are out of home or office, you can set time slots to turn on and off the appliances. This allows you to have a piece of mind and avoid big expenses. Additionally, later on, the smart system will suggest you the best energy-efficient settings based on your schedules and requirements.

Disadvantages

Compatibility or complexity – Though most of the home automation devices work with smart hubs, yet adding a new device in the architecture is a complex procedure. Not all devices are compatible with one hub or automation system; also you might require different apps to set up different devices.

Cost – Though, the prices of home automation systems and devices have gone down in past few years, yet it's not affordable for everyone. The purchase cost is one, and then you need to pay for setup and installation as well. Hopefully as the



adoption will increase then it will become more affordable.

Security and privacy – Whatever is connected can be hacked and its true with IoT enabled smart home as well. The internet gives you whole lot opportunities at the same time some of the hackers use the same to steal your data. On the other hand home device and platform manufacturers also collect data to offer better products or offer improved services.

Your network could be vulnerable; similarly Wi-Fi router and connected devices are also vulnerable. You should invest for security, else at both end you will be at risk.

Conclusion

When you decide to go for automation, choose your automation systems and devices carefully. Better to go for a more versatile system that supports maximum number of devices from different manufacturer. Have your budget in mind and then make your some investment to secure your network as well.



HOW TO BUILD A SMART HOME FROM SCRATCH

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You can convert your home, building or office into a smart premise all by yourself. All you need is smart connected devices to enable the remote monitoring and management of the relevant appliances and systems

Internet of things (IoT), the term was discussed as early as 1982, since then we have seen a huge development in the segment. Today we can control the entire home/building using Internet connected devices. The concept of a smart home/building has evolved due to the convergence of multiple technologies, real-time analytics, Machine Learning, commodity sensors, and embedded systems.

IoT is the foundation of a Smart Home or building in which multiple Internet-connected smart devices work in a group, managed by an application and controlled by a smartphone, tablet or laptop.

Smart Home technology, also often referred to as home automation or domotics, offers various benefits to the home or building owners and residents. This is currently being used for security, comfort, convenience and energy efficiency as it enables them to the appliances even when they are not around.

Smart Home/Building Technology

Every home or building is equipped some connected devices or another. They all just require a hub to communicate with each other and receive commands from one user. Not just computers and smartphone, you can connect your doorbells, CCTV, lights, doors, TV, refrigerator, washing machine and many other appliances, you name it.

Once connected, these devices can communicate; you can collect data or command them to complete a particular task. Home/building automation brings you the exact same capabilities for your home or building.

Smart Home/building implementation

Getting different smart IoT devices and connecting them to your home/office Wi-Fi network can enable you to control your lighting and other devices using numerous applications. All devices come with connectivity and smart features but interact with a different app, you need a unified system that enables you to control all the smart devices from a single window.

For instance, if you have a smart bulb that will work with their app, while a smart vacuum cleaner will use a different app. Imagine if you have equipped your home/building with smart devices, then to command them how many apps you are going to have in your smartphone/tablet/PC.

A smart home/building should not be a collection of disparate smart devices, but ones that work together to create a remotely controllable network. A smart hub is a right solution to connect all the smart devices and control them from a single window. The hardware device acts as a centralised controller and can sense, process data and communicate wirelessly.

The hub combines the capabilities of all the disparate apps into a single app. Examples of smart home hubs include Amazon Echo, Google Home, Samsung SmartThings, etc.

To create a smart home/building system from scratch, one can use Raspberry Pi or another prototyping board.

Role of AI and ML in Home/Building automation

Artificial intelligence (AI) and Machine learning (ML) are becoming increasingly popular in smart home systems. The devices and applications adapt to your environment and habits. For example, if you are using Google Home to control your smart devices at home, Google's virtual assistant would learn your preferences, habits and time slots etc. to personalise your home experience.

Smart home/building architecture

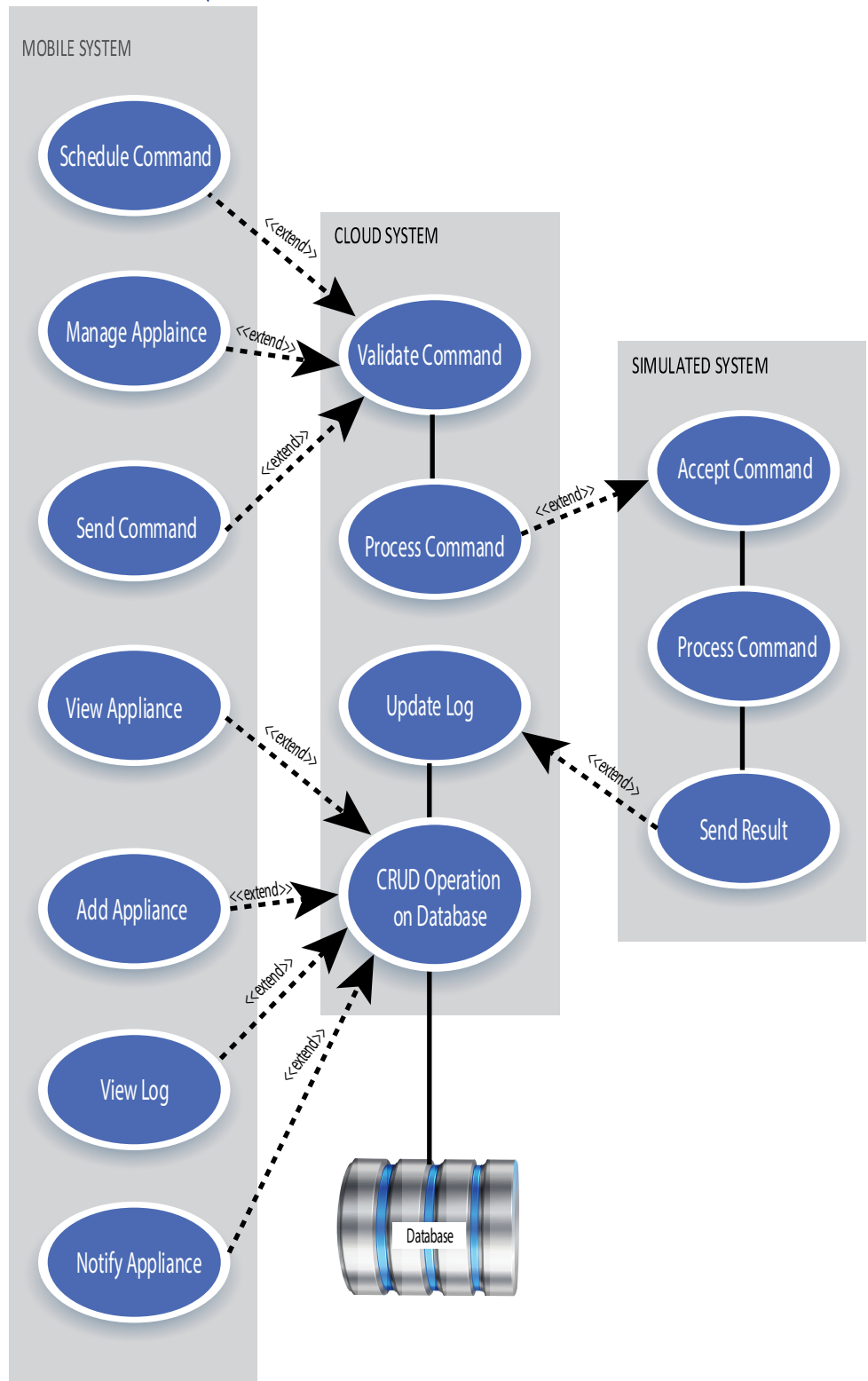
Having just smart devices doesn't mean you have built a Smart Home or building. Home/building automation shall benefit you to reduce energy consumption, ease your tasks and



automatically adjust the room temperature or turning the heat down if everyone has left home/office for the day.

To get the best out of home/office automation you need the right architecture in place. Check the diagram below, it shows that a user can view, manage, and schedule a command to connected appliances.

The mobile system notifies the user of an event that needs attention. It has a messaging service to notify other systems for changes, command and data. The cloud system which links the database directly consists of all the remote business logic, where operations such as create, read, update, and delete can be implemented.



Smart home/building architecture

Major Home Automation Challenges

We have already mentioned that adding multiple smart devices won't create a smart environment, you need a centralised control or hub that can communicate with each other. With the large universe of devices and technologies, their true power is realized if they can share information and instructions with each other.

There is no standard defined for home/building automation smart devices and appliances. This leads to challenge the usability; it takes time to set up a device.

Internet Availability – We are waiting to experience the superfast 5G connectivity, but even today, Internet connectivity and its reliability are still unpredictable. When you plan for home or building automation you require a reliable Internet connection, in some case, it's simply insufficient when it comes to propelling these smart devices.

When the country is fighting with the Covid-19 pandemic and most of the employees are working from home and students are busy with online classes, a recent report highlights the actual situation of Indian Internet infra.

The report titled "COVID-19: A wake-up call for telecom service providers" is based on a survey conducted by QS I Guage, which rates colleges and universities in India with complete operational control held by London-based QS. The report pointed out connectivity and signal issues as the most prevailing problems faced by students while attending online classes.

"The survey pointed out that the infrastructure in terms of technology in India has not achieved a state of quality to ensure sound delivery of online classes to students across the country," the report said.

Cost of smart IoT enabled devices/systems – Price is a major challenge for Indians consumers as the market is budget sensitive. Whether it's a smart bulb or speaker, the price is the primary disadvantage. This can be solved when the concept of home/building automation become more popular.

Also, currently, there are only a few players and global players are under impression that the Indian market is not ready for advanced products. Automation adoption is also restricted due to the lack of a skilled workforce.

The Difference between smart devices vs. smart systems

A whole lot of smart products are in the

market. But don't be confused between devices and systems. Essentially, a smart system is what can take your command and interact with you. The command centers like Amazon Alexa and Google Assistant lets you connect devices like Philips hue smart bulb and Amazon Echo etc.

Now, let's delve into our list of the best smart home devices and systems of 2021.

Smart home systems

Amazon Alexa

Amazon Alexa is one of the most popular and comprehensive smart home ecosystems. Alexa is not only a smart speaker that tells you about the weather and other updates. This smart system lets you connect plenty of other smart devices including thermostats and TVs.

You can control your TV, lights and many other gadgets using Alexa. You can speak to apps like Spotify, set alarm/reminder and do shopping as well without scrolling the Amazon app.

Amazon's ecosystem is one of the most prevalent in the industry; almost every smart product can be integrated seamlessly with Alexa. Moreover, Alexa can control your doors, garage, and adjust your home's temperature.

Google Assistant

Google Assistant is a strong contender to Amazon Alexa. Though, the third-party integration is not that wide as Alexa. But, all thanks to Google's major ownership of the search engine



space, it often answers questions and complete commands that Alexa can't. It has higher accuracy compared to Alexa.

Google Assistant can also integrate with a wide range of smart products and popular apps including Spotify and Uber.



Wink Hub

Maybe most of you haven't heard of Wink Hub but it's a perfect hub to create a fully integrated smart home/building. You can sync all the devices of your kitchen and other appliances with it.



The next-gen Wink Hub 2 allows you to connect different smart products from various brands and merge them seamlessly with one another. It supports smart home protocols including Bluetooth LE, Z-Wave, Lutron ClearConnect, Wi-Fi, and more.

The Wink Hub app lets you command your smart gadgets using your smartphone on the go.

Samsung SmartThings Hub

Like Amazon Alexa and Google Assistant, Samsung also doesn't require an introduction. Samsung's SmartThings Hub supports a wide variety of smart devices from different brands that include smart thermostats, Wi-Fi router, lightbulbs, and security devices.

As you know, Samsung has its own smart-device offerings; you can connect all of those devices. The SmartThings Hub lets you set up compatible smart devices to do various actions like turning on or off, give voice commands to the SmartThings wall hub or app, additionally, you can also integrate Amazon Alexa or Google Assistant into the system.



Smart Home Devices

Best Speakers – Amazon Echo and Google Home



Amazon Echo comes with integrated Alexa capabilities to play your favourite music, make phone calls or send messages, answer questions, and set alarms/reminders, etc. You can also connect it with other smart products in your home. It has advanced voice control that lets you control your smart TV, bulb, place orders and more.

Powered by Google Assistant, this smart speaker lets you play your favourite music, latest news bulletins, and many more. This smart personal assistant makes doing your everyday tasks easier including view the calendar, play music, and control home entertainment.

You can use your voice to get updates about the weather, news, sports and more. With the power of Google Search, Maps and more, built right in, Google Home is always ready for your questions.

Best Lights – Philips Hue and Syska Smart

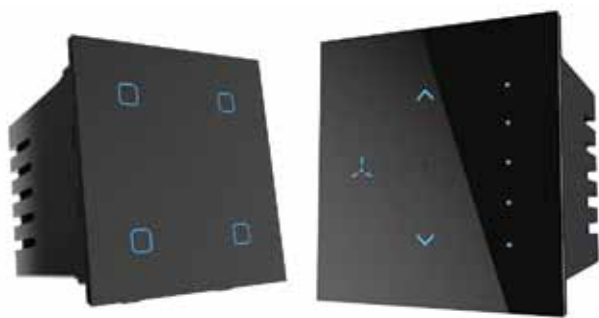
With Philips Hue bulbs you can control both the intensity of light and the colour. So as per your mood, you can change your room lighting theme. Also, you can sync it with your music to have fun at home.

The Syska smart LED bulb supports up to 16 million colours



and works with Android phones running Android 4.3 and above and iPhones running iOS 6 and above. You can change colour and schedule light themes based on the time and your mood, it will automatically get powered on.

Switch



HomeMate Wi-Fi Smart Fan Regulator Touch Switch is a perfect solution to automate your fan control. This doesn't require any hub and can be connected to Alexa and Google Home directly.

Using HomeMate Wi-Fi Smart 4 Gang Touch Switch you can manage lights or other appliances.



To automate your AC and other heavy appliances you can rely on Wipro 16A Wi-Fi Smart Plug and Zebronic ZEB-SP110. These smart plugs are compatible with Google Assistant & Alexa.

Security



Security is prominent for everyone. You can secure your home with a smart Tinxy Device Door Lock. The smart lock is a WiFi lock door system, you can open or lock your door from anywhere. This WiFi lock is compatible with Androids and iPhones.

Vacuum Cleaners



iRobot Roomba robot vacuum cleaner is smart. Connect the Roomba with your Wi-Fi and let it map your home/office, then using the app you can schedule the cleaning time. It will go corner by corner and take every dirt out.

Smart TV

With a smart TV, you can connect your

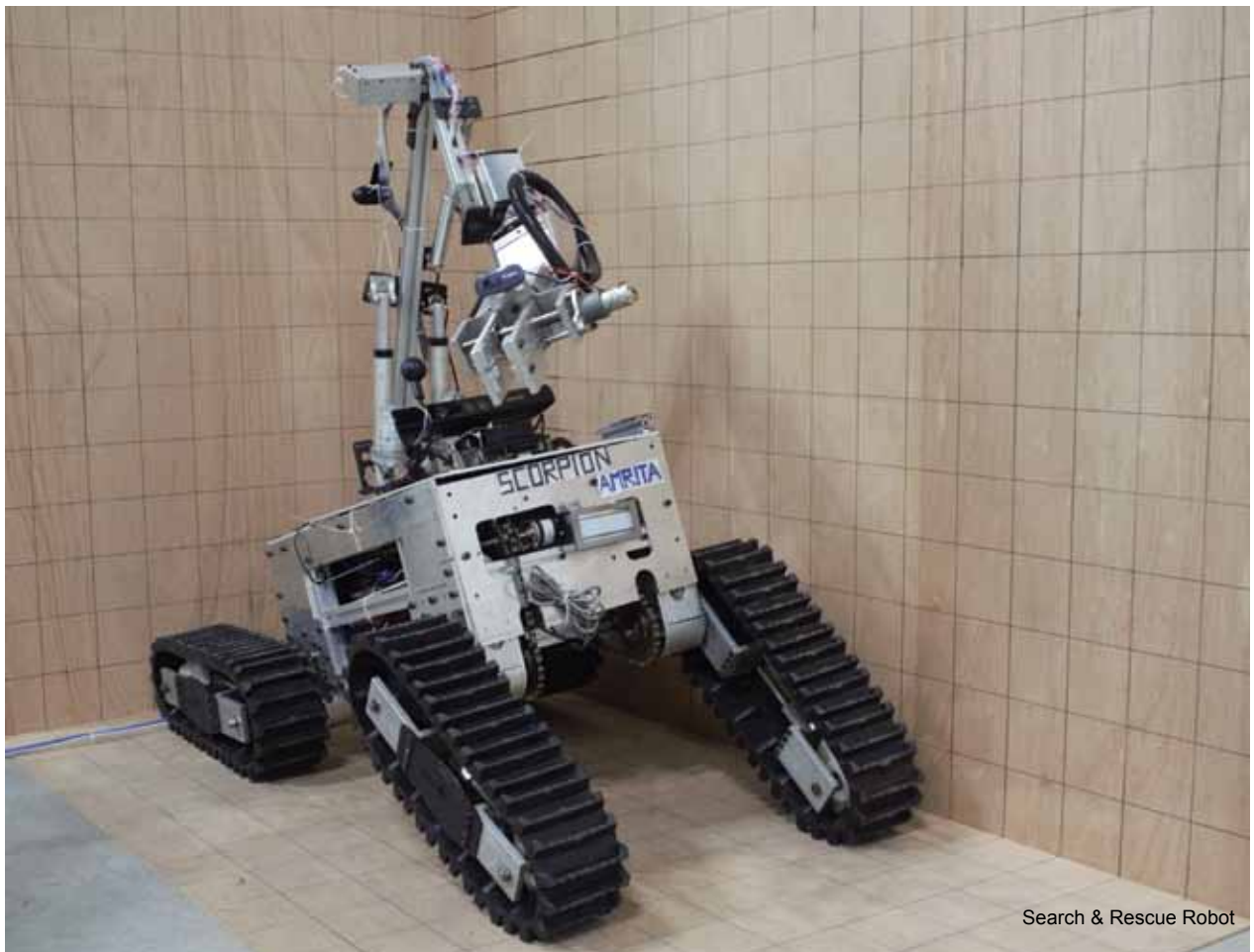


streaming services including Amazon Prime, Netflix, Zee5 and many others. Smart TVs also offer voice control capabilities enabling you to ask the TV to search for a movie or show.

FROM COCONUTS TO HEARTS – ROBOTICS, THE INDIA WAY

Humans want to create themselves in the robot. The gap of emotions is shrinking but not in a complete sense. Even Machine Learning depends on how much a robot has learnt

Pratima H



Search & Rescue Robot

Robots that care – if that sounds like a paradox, that's exactly what **Dr. Rajesh Kannan Megalingam** is after. As an electronics engineer leading research on humanitarian technologies with special emphasis on Robotics at HuT (Humanitarian Technology) Labs and Assistant Professor at ECE Department at Amrita Vishwa Vidyapeetham, he has been applying his passion and expertise in robotics for many years now. In this lab, Dr. Megalingam and his team have been busy bridging the distance between the brain and the heart. Let's peel the husk here and find out more about human-centric robots.

Tell us something about the inception of the lab. When did it all begin and how far have you come?

The lab was established to work on projects related to humanity and social causes, The first project was an 'Unmanned Coconut Harvester'. It helped in areas where there was no one to climb the coconut trees and was made to help in harvesting. That's where we conceived the first robots from our lab. Today we are doing a diverse range of work that covers the broad theme of humanity. We worked on the first self-driving car in India. We worked on research & rescue robots, on service robots, on wearable devices for stroke-patients and some projects with the institutes in the USA. We have worked on assistive robots that can stay at home with elders, bring water and food to them, read books to them and chat with them.

Has this need expanded with the effect of the pandemic?

Yes, we are significantly developing robots to help people in many applications where contactless and humanless scenarios still need work to be done – like UV sanitisers, public surveillance robots, police systems for public messaging, remote diagnostics, Annapurna robots (to share meals and essentials with Covid patients), robots to take patients from waiting areas to wards and robot to attend to patients while they are waiting in the hospital. This helps to avoid infection and contamination for both patients and their care-givers.

Has the adoption-interest been encouraging?

It is happening at its own pace. The UV Disinfectant robot or the wheel-chair assistant had to be tested properly for approval. But during the pandemic we could not always transport these robots amidst all the lockdowns and overburdened hospital



DR. RAJESH KANNAN MEGALINGAM

scenarios. But whatever we could showcase and demonstrate – that has received good feedback.

How can adoption of human-centric robots be accelerated?

Unless we make it available to the industry and until we make the prototype-to-product part smooth – it will stay tough. We keep looking for various opportunities and are talking to start-ups. I hope we can find more people to take these ideas at scale and propel them to production.

Any thoughts on the role of RaaS(Robotics-as-a-Service) in making robotics more mainstream?

In the future, robots will need a lot of memory – and this would be specially so for service robots. If today a care-giver robot conks off, the next robot to take its place will not start from scratch. It has to start with the memory of all that the previous robot observed about its human user. Cloud can be a boon in such cases.

Where does India stand today in comparison to other countries here?

In the last five years, there has been a lot of positive change. However, there is still a long way to go. This is because we need to get better in advanced robotics, in fabrication of components, in sophistication of ingredients and sometimes in the cost and data parts too. Japan and the USA are still at the forefront here.

How plausible, technically-feasible and important is the concept of human-centric robots?

It varies in its significance and approach. A



A Robot-Human Interaction

wearable device can cost as low as Rs.300 as a prototype but it can change into thousands of bucks when it reaches a product stage. In some robots we need advanced navigation and AI. In a toilet-cleaning



Amaran the Unmanned Robotic Coconut Tree Climber and Harvester

robot, the structure and technical part is complex. Some 15 years back, the use of sensors may have been prohibitive at a financial level but today IoT is accessible and affordable. So it will depend on the kind of robot and its context. To make anything simple—now that is a big challenge.

How proximate can robots be to humans? Like what Elon Musk's Neuralink is endeavouring – do you reckon it as the right direction?

What's to be asked is this – how much can technology actually resemble a human brain, ever? Because we humans, ourselves, use just ten per cent of its capacity. There are so many nuances and emotional variables in an average human conversation. Can you put emotions in a chip? That said, everything has a beginning somewhere. I do not want to belittle any experiments but I would say the gap is formidable.

Are emotions a stumbling block for human-centric robots?

Humans want to create themselves in the robot. The gap of emotions is shrinking but not in a complete sense. Even Machine Learning depends on how much a robot has learnt. At an emotional level, a robot – so far-can smile, can identify and change moods. We have a lot of algorithms today. Yet, this gap is still a considerable one.



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BRACE FOR THESE 5 FRAUD RISKS IN THE NEW NORMAL

COVID-19 has triggered massive business disruptions, and made them adapt to a new remote work culture, which amplified the risks of corporate frauds further. Organizations must brace themselves for this changing risk landscape

Hersh Shah & Arpinder Singh



A lot has been said in the past one year about the business consequences of the COVID-19 pandemic. Key among these consequences was an exponential increase in the risk of corporate fraud, a phenomenon that is expected to persist beyond 2021. According to EY's Global Integrity Report, 98% of respondents surveyed in India stated that the disruption caused by COVID-19 poses a critical risk to ethical business conduct and more than one third of these believed that unethical behaviour will increase further due to the crisis.

With remote working predicted to become a standard practice for a lot of industries going forward, incidents of cyber and other corporate fraud are likely to increase if adequate steps are not taken proactively to identify vulnerabilities and implement mitigating measures.

Here are the top 5 fraud risks that are most likely to impact organisations in the new normal:

Cybercrime, phishing and digital frauds

The pandemic exposed several weaknesses in organizations' existing cybersecurity structures and augmented the risk of cyber-attacks such as malware, phishing, ransomware and data theft. EY's Global Integrity Report noted that 36% of respondents in India considered cyber and ransomware attacks as the most significant threat for businesses. Another EY report, How COVID-19 is impacting future investment in security and privacy, revealed that 69% of the global respondents experienced an increase in phishing attacks, while 54% and 49% said they experienced a rise in malware and ransomware attacks respectively during the COVID-19 crisis period.

Remote working conditions have amplified these vulnerabilities. The last several months saw many employees working in an unsecure or semi-secure environment (often using shared or open WiFi networks, among others), making it a pressing requirement to enhance safety and security at workstations.

Companies can explore a two-pronged approach to address these challenges. The first would be in-depth screening when onboarding new employees through a robust and well-established verification or background check process. With the use of technology rising in every sphere of business, companies can now authenticate aspects such as a face match for identity verification, self-address validation (including geotagging for location), education, criminal and employment background



ARPINDER SINGH, Partner and Head - India and Emerging Markets, Forensic & Integrity Services, EY

checks. The second would be establishing secure remote work capabilities that includes improved safety in communication and collaboration mechanisms, and a holistic data security structure and cyber response plan. Organisations should also work closely with their employees to educate them on risk awareness, data privacy, cybercrime, and how to work with data in a secure manner.

Cyber protection can play a vital role in building integrity in an organisation. Data audits and cyber protection infrastructure are critical in safeguarding the security. Data protection can be strengthened with businesses educating employees on ways to prevent data breaches, compliance with applicable privacy regulations, and instituting an incident response plan in case of a breach.

Supply chain fraud

The pandemic saw existing supply chains breaking down in the face of the country-wide restrictions, businesses forced to move to new supply

chain vendors and at times, even unauthorised channels being used to meet demand. This increased companies' risk factor by exposing them to unknown vendors who may not be as reliable, efficient, ethical or cost-effective.

To address supply chain disruptions, businesses must avoid single-source suppliers by selecting a minimum number of suppliers as viable alternatives. It is imperative that every new supplier must be thoroughly vetted through robust due diligence, with mapping tools used to rate sub-suppliers. This entire process must be undertaken in a risk-aware manner where new suppliers and vendors are evaluated and analysed in terms of their reliability, integrity and resilience.

Digitisation will be an important contributor to building resilience in the supply chain and reducing fraud. For example, organisations can manage inventory, and plan production and operations more efficiently, through predictive analytics, to foresee and forestall potential supply chain disruptions.

Counterfeiting

The gap left by the disruption of supply chains and pressing consumer demand has, unfortunately, spurred incidences of counterfeiting. This problem was most acutely felt by the medical community, when existing supplies fell short of the high demand for COVID-related supplies. According to Interpol, authorities from 90 countries participated in a coordinated action to seize more than 34,000 units of such supplies last year. With the ongoing pandemic, counterfeiting is expected to rise further, impacting market share and affecting brand perception and loyalty. This issue can potentially cross over to every sector, including the media and entertainment industry, where instances of fake or pirated software are pervasive.

Combating counterfeiting can be difficult. However, businesses should carry out a brand protection audit, including an assessment of supply and distribution channels. Other measures that can help protect the brand include registering IP rights and increasing engagement with regulatory authorities to keep tabs on the surveillance channels. This should be undertaken in conjunction with educating consumers about product identification.

Digitalisation is key to mitigate the menace of counterfeiting. For example, implementing blockchain in the pharmaceutical sector can provide assurance on the integrity of the chain of custody, ensuring that products such as vaccines and



HERSH SHAH, CEO, IRM India Affiliate

formulations reach the end consumer untainted.

Contractual disputes

COVID-19 seems to have unleashed a flood of contractual disputes. With regular operations being disrupted by the pandemic, many businesses were unable to meet the obligations to their customers, vendors and partners. Many companies grappled with challenges around production and supply delays, inability to service debts or compensation, and refusal of promised employment. In this scenario, the "force majeure" clause became an important consideration to minimize non-compliance risks for organizations. The clause provides temporary relief to parties to a contract from performing their obligations in circumstances where performance of service becomes impossible as a result of an event, which is not in the control of either of the parties involved.

Individual misconduct

The risk of unethical conduct and compliance violations was aggravated during the pandemic as a result of severe and widespread disruptions in

operations, supply chains and workforce. This could potentially undo years of efforts taken in building an ethical organization and may expose them to legal, reputation and financial risks in the future. To avoid such steps, organisations must build trust among the workforce, have a zero-tolerance policy to discourage unethical behaviour and establish data protection as a preventive measure.

A major risk observed is employees resorting to unethical behaviour to avoid a potential job loss or pay cut. EY's Global Integrity Report stated that 69% of respondents from India revealed that managers in their organization would sacrifice integrity for short term financial gain. Educating employees about the consequences of such actions on themselves, their colleagues and the organization at large will be critical to mitigate individual misconduct. At an organisational level, businesses should concentrate on encouraging ethical conduct among all employees across levels, strengthen internal controls and governance frameworks, safeguard data and protect whistle-blowers by assuring safety from any form of reprisal.

How can Enterprise Risk Management (ERM) help?

A capable ERM framework is the need of the hour to prepare organizations for a changing risk landscape. ERM is designed to identify, analyse, mitigate and monitor varied emerging risks in

Why do organizations need ERM?

A capable ERM framework is the need of the hour to prepare organizations for a changing risk landscape. ERM is designed to identify, analyse, mitigate and monitor varied emerging risks in an organisation.

an organisation. One of the key tasks of an ERM professional is to identify the emergence of potential frauds in a rapidly evolving economy and deal with them in a strategic manner. This can help maintain a minimal impact on the organization's vision, objectives and operations; implementation across the board and governance through continuous monitoring.

ERM can become an essential tool in an uncertain economy and an evolving business environment where businesses are facing threats at multiple levels. It can help businesses to avoid risks like lapses in integrity, as well as prepare and monitor cybercrimes, counterfeiting, supply chain, and other risks.

Hersh Shah is CEO, IRM India Affiliate and Arpinder Singh is Partner and Head - India and Emerging Markets, Forensic & Integrity Services, EY



BEAT PASSWORD FATIGUE WITH MOBILE IDENTITY SOLUTIONS

Mobile identity Solution reduces password fatigue and phishing by providing a stronger authentication layer to protect transactions made on a mobile phone

Milind Pathak



A vast majority of consumers are connected to the internet at any time, from anywhere, and it is primarily your mobile device that is responsible for this ubiquitous connectivity. Since mobile phones have become an indispensable part of our daily lives, organizations are constantly making fundamental changes to the user experience and preferences. What used to be a predictable conversation and behavior has now been replaced by many instantaneous fragmented interactions.

Having said that, it is not as easy to maintain a consistent user identity on a mobile device given the list of devices we use, like computers, tabs, and laptops, as well as the elements of mobile phone ownership like the network carrier, SIM card or the device for that matter, are regularly in flux.

We all know that mobile devices are direct pathways to the type of personal information that fraudsters want to get their hands on. It contains a wide range of information including personal credentials, such as encryption keys or biometric data, which make smartphones a gold mine for identity thieves!

DID YOU KNOW?

Mobile Devices - hackers' Favorite Platform to Target!
86% of enterprise executives say that mobile threats are growing faster than any other and 67% of enterprise execs are less confident about the security of their mobile devices compared to other IT assets.

Password Fatigue Alert!

Password Fatigue is a real thing. It refers to a certain type of exhaustion and inability to remember

the details, caused by maintaining multiple usernames and passwords, and while your brain is tired and you are snoozing, the hackers are gearing up for a phishing attack! Scary, isn't it?

A number of customers fall victim to password fatigue, as it deliberately forces users to choose the same password for different accounts which are easy to remember, thus compromising the security of the protected information.

DID YOU KNOW?

Global Cybercrime Damages Predicted To Reach \$6 Trillion Annually By 2021

How a Mobile Phone Can be Used as a Unique Piece of Identification

The rise in identity fraud cases and phishing attacks in recent times have created a perfect storm and are forcing businesses to incorporate newer and safer technologies to authenticate mobile identities and eventually improve the user experience without compromising on information security. Organizations too can better manage identity and allow their users to seamlessly access various applications – hosted on cloud or in-premise to in-house, remote or mobile users. Certified Mobile Based Access Solutions limit the scope of IT network borders that could be exploited by cyber threats. Certification allows for setting-up an easy and consistent enrollment/instant form-filling process that brings various platforms and operating systems under one umbrella.

Mobile Identity helps users to overcome password fatigue and its vulnerability. Additionally, from an end-user perspective, it allows them to self-authenticate with a simple tap of a button. This new service enables real-time identification, along with, personal data verification and is secure and backed by carrier-grade telecom networks. It is a kind of a digital credential issued to a user that is securely stored on their mobile devices.

Why do organizations need MIDaaS?

MIDaaS provides a stronger authentication layer to protect online transactions for user-facing applications and websites or a mobile device and has the potential to remove the need to remember the password.



MILIND PATHAK, Chief Business Officer, Route Mobile

How MIDaaS will Remove the Need to Remember Passwords

Mobile Identity is one of the critical solutions for brands to make their businesses future-proof by improving their mobile strategy. An enterprise can choose to add this as an additional authentication tool which is simple yet secured. With Mobile Identity and authentication, the fear of data breaches might be a passé.

MIDaaS is a verification service that consists of several real-time identification and authorization services that help improve the user experience and provide a stronger authentication layer to protect online transactions for user-facing applications and websites or a mobile device.

In short, MIDaaS sets new standards for enterprises and allows them to shift to web authentication for devices rather than online services and has the potential to remove the need to remember the password.

With MIDaaS, organizations can give an additional layer of security to its customers and make them feel secure about doing business.

It also helps to have a secured and closed-loop trusted framework for safer transactions and may aid many more opportunities to unfold. It also allows enterprises to potentially increase up to 30% registrations and reuse rates, minimize transaction abandonment, deliver better and consistent user engagement across devices. Basically, a simple API integration can help reduce complexity and cost for the enterprise.

The article is authored by Chief Business Officer, Route Mobile

IT'S TIME TO CONSIDER SAAS DATA WAREHOUSE OPTIONS

Digital transformation and cloud adoption have enabled organisations to execute critical workloads, including data engineering, data warehousing, data lakes, data science, data sharing, and data applications

Ashok Pandey
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Every day, we create roughly 2.5 quintillion bytes of data, platforms like Snowflake supports data analysis at almost any scale, with the ability to process data from structured and semi-structured sources. As a result, users can compute with any business data or workload, using standard SQL instead of complex programming languages.

We spoke to **Vimal Venkatram, Country Manager, Snowflake** to understand how Snowflake's platform allows customers to get the most out of their data.

How do Data analytics help banking and other financial services?

Banking, financial services, and insurance (BFSI) are some of the sectors most heavily invested in data management related technologies. Today, financial institutions are compelled to deploy analytics and data-driven capabilities to increase growth and profitability, lower costs, improve efficiencies, drive digital transformation, and support risk and regulatory compliance priorities.

With data analytics, BFSIs can improve customer targeting, risk assessment strategies, as well as provide customised solutions to current customers.

Personalised experience: Personalisation has come to be expected in every bank-customer relationship. With access to a massive volume of consumer data, banks and financial institutions have the opportunity to deliver a specialised experience to customers.

For a personalisation strategy to be successful, it is fundamental to have full visibility into customer interactions in real-time. With the help of cloud platforms, businesses can house all types of data such as clickstream, transactional, and third-party data in one secure place.

Ensuring governance while driving modernisation: The payment system in financial institutions and banks keeps on upgrading to ensure that customers get fast, seamless shopping and checkout experiences. Modernisation is a never-ending process. Banks need to understand who has access to critical, sensitive data and where such data was used or downloaded.

Data Security: The Data Cloud enables financial institutions to index all of their cybersecurity, anti-fraud, and machine- and customer-generated data. It offers automatic and infinite scalability, per-second compute pricing, and low storage costs. This enables companies to affordably store petabytes of data which they can analyse with advanced analytics, detection rules, and enhanced visualisations to



VIMAL VENKATRAM, Country Manager, Snowflake

prepare for future threats. With this, financial institutions will have higher data security, cost-effective investigations, and earlier detection. These benefits translate to higher consumer confidence and loyalty, as well as lower costs for fraud and cybersecurity mitigation.

How are you managing large sets?

Snowflake's platform enables organisations to easily unify, integrate, analyse, and share their data within the Data Cloud. Customers use Snowflake's platform to execute critical workloads, including data engineering, data warehousing, data lakes, data science, data sharing, and data applications.

Because Snowflake is also ACID compliant, routine data updates and deletions are easy to perform, which in turn simplifies the analytics pipeline. With flexibility, performance, and ease of use, customers will be able to derive more meaningful data insights. We work with leading data management, data integration, and Business Intelligence (BI) partners so our customers can synthesise and analyse their data more easily and interactively.

The platform scales instantly and near-infinately.

It enables any organisation to operate across different public clouds and regions as a single cloud while satisfying industry and regional data privacy requirements. It is a single, near-zero maintenance platform, delivered as a service. Snowflake's platform also architecturally scales compute separate from storage to deliver a truly elastic, performant, flexible, and affordable solution.

How do you see the Indian banking and finance sector adopting cloud services?

According to a NASSCOM report, organisations within the financial sector have been reaping the benefits of migrating to the cloud. The transformation from traditional to smart banking was the first step towards the adoption of the Data Cloud with enhanced performance and flexibility.

The Backbase-IDC FinTech& Digital Banking 2025 report also states that 70 per cent of the tier-I and tier-II banks in India will regularly access third-party data and insights as they strengthen their efforts around offering personalised customer strategies.

As per an August 2020 Reserve Bank of India report, a total of 8,707 frauds were detected during 2019-20 involving an amount of Rs. 1,85,644 crore. To mitigate this, financial institutions must consider moving to a secure platform to ensure smooth and efficient scanning of crucial data inputs and accurate analysis.

What kind of data security measures do you follow?

Snowflake is committed to the security of our customers and their data. Security was baked into Snowflake's platform from the very beginning. Snowflake provides industry-leading features that ensure the highest levels of security for your account and users, as well as all the data you store in Snowflake. Some of the common security features

that we provide in all Snowflake editions are:

- End-to-End Encryption means users' communications are always encrypted and integrated with cloud provider private networking.
- Fully Encrypted Storage which ensures that stored/saved data is always in encrypted form while handled by the Snowflake drivers and systems.
- We have a built-in Strong Multi-Factor Authentication system that ensures that the data is safely integrated with the user's federated SSO and a user-friendly interface.
- At Snowflake, we track every login, transaction, and data transfer. We also send a comprehensive report on all activities to the user's security tools.
- With our strong data security system and Role-Based Access Control feature, the user can control the data access as per their designation/role in the organisation.
- In case of accidental loss of data or any other unprecedented situation, Snowflake provides options to ensure that the data can be recovered.

Additionally, Snowflake maintains consumer privacy compliance with built-in security that supports SOC 1 and 2, Type 2, and PCI DSS requirements.

The Pandemic has increased cloud adoption, what are your views on that?

Since organisations have become more data-driven in their decision-making, cloud technology has emerged as a front runner for the optimal harnessing of insights from data. According to IDC's Worldwide Semiannual Public Cloud Services Tracker, India's Public Cloud Services (PCS) market, including infrastructure-as-a-service (IaaS), platform-as-a-service (PaaS) solutions, and software-as-a-service (SaaS) attained \$1.6 billion for the first half of 2020. A recent IDC report revealed that the India PCS Market is likely to reach \$7.4 billion by 2024, with a projected growth rate at a Compound Annual Growth Rate (CAGR) of 22.2 per cent for 2020-24.

Organisations in India have realised the benefits of moving to the cloud, with some making full use of their data with the ability to make data-driven decisions. With the cloud, organisations can use their data for new customer acquisition, retain existing customer bases, and achieve greater profitability.

BFSIs are most heavily invested in data management related technologies to increase growth and profitability, lower costs, improve efficiencies, drive digital transformation, and support risk and regulatory compliance priorities

35 Years of Technology



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PC World was launched in July 1987, which after 5 years was named PCQuest. Reminiscing the journey with its readers & the industry, PCQuest is coming up with Collector's edition.

Visionaries, Industry leaders & influencers coming together to write about the nostalgic view and expert's insights of 35 Years of IT landscape in India.

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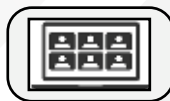
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**To be a part of this wonderful journey of
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TOP 5 CLOUD TRENDS WE CAN LOOK FORWARD TO IN 2021

More traditional business with existing Data Center deployments setting budgets to adopt Cloud for growing requirements, modernizing existing applications and purchasing ready to deploy Cloud services

Jesintha Louis



The World of Cloud Computing is poised to break the forecasted growth and vast adoption shall imperatively drive new trends of modernization and optimization on the Cloud. Since the outbreak of pandemic – COVID, Cloud industry has seen new trends setting in with increase focused towards security to support work from home and counting on modern Cloud offerings that allow businesses to build Cloud native applications

by leveraging current Data Center Investments and manage them centrally from a single pane on Cloud.

We will cover the TOP 5 Cloud Trends:

VDIs on Cloud (Desktop as a services)

Traditional businesses have made large investments on purchasing Desktops or even Laptops for their people. However, the current situation has got them to re-think the investments in user devices

as the IT teams are posed with unexpected challenges of having to setup the devices from their home, ship it to the user's house, handling system crashes and replacing them are all the new challenges of today that IT is dreading to address.

Fully managed desktop offering from Cloud providers is marking the way to the future of desktops. IT teams are able to deploy and provide VDI's on cloud in minutes the users are able to connect to their work machines on Cloud with a simple HTML browser. With built in security, redundancy and scale. VDI's on Cloud is trending and leading the way to modern workplace setup allowing users to work from anywhere, any device.

Increased Focus on Security

Security is anticipated to trend all along 2021 as more businesses take off on their digital journey and the impact of one security breach is such that it can threaten the existence of an organizations. Click to deploy security monitoring and assessment tools on Cloud are gaining traction especially given that some of the Cloud offerings not only help in keeping the Cloud Environments secure but also come with the ability to extend to applications & deployments virtually anywhere. Availability of robust security softwares on Cloud on a PAYG model has made securing the digital assets more affordable to a business of any size.

Application Modernization with Microservices

Businesses today thrive on speed, Microservices based architecture helps in facilitating faster development & release. Cloud native container orchestrators deliver the scale & agility that today's market demands. Cloud providers notch up the game by offering modern tools for Devops and platforms to quickly develop and deliver Java and Steeltoe .NET Core apps using fully managed Spring Cloud components, including service discovery, configuration management and distributed tracing.

Hybrid Cloud Deployments

While most traditional businesses look to Cloud for scale, Hybrid Cloud deployments will stay in fashion this year. Hybrid is the best foot forward towards starting Cloud journey for businesses that have existing Data center investments. There is no point in adopting Cloud just because everyone else is, but Cloud providers are accelerating release & advancements of tools that allow businesses to



JESINTHA LOUIS, Director – Partner Success & Cloud Solutions Specialist, G7 CR Technologies India Pvt Ltd

build Cloud native applications on Cloud and ship applications to any Kubernetes distributions in any location. In fact you can centrally manage your on-prem deployments from a single pane with some of new service offerings from the Cloud providers. We can expect more businesses adopting these technologies to leverage their existing investments on Data center and also build modern application & deployments

Cognitive Services

Ready to consume Cognitive services are turning out to be the showstopper and a key Cloud trend driving more Cloud adoption. Be it integration of modern B2C authentication for applications or using face recognition API for authentication or Vision API's for advance image recognition or even Video analytics that is helping tons of businesses to address today's challenges of social distancing, face mask detection etc. These services will definitely boost Cloud adoption and make Cloud Industry most trending.

The author is Director – Partner Success & Cloud Solutions Specialist, G7 CR Technologies India Pvt Ltd

ONLINE GAMING EMERGES AS THE NEW SUNRISE SECTOR AMIDST COVID CRISIS

Indian gamers are not possessed by one game or genre, there is widespread interest. As the gaming universe continues to grow, social gaming is fueling growth in the creator economy

Kartikeya Rao



A friend of mine met the famous actor Govinda at an airport many years ago. The star was wearing his sunglasses inside the terminal. In the vein of being bold and playful, my friend went up to Govinda and asked why he was wearing sunglasses where there was no sun to be seen. Pat came to his reply, "... because my future is very bright!" Personally, I'm very impressed that Govinda knew about ZZ Top's famous song but to extend the analogy, gaming is wearing the afore-referenced sunglasses and it ain't coming off anytime soon!

The pandemic lockdown has been a major, positive catalyst for the gaming sector in India. According to the latest FICCI-EY report on media & entertainment, online gaming grew 18% to hit Rs. 77 billion in 2020 and gamers grew from 300 million in 2019 to 360 million in 2020 and forecasts that this segment will grow to Rs. 155 billion by 2023. With digital adoption galloping upwards overnight, phones/ tablets and laptops being the destinations for social interactions and need to engage and entertain oneself being the need of the hour, gaming is where it's at!

The beauty with gaming in India is that the most popular games are across different genres so there is widespread interest. Big esports titles like CS: GO and Call of Duty, casual games based on sports like FIFA and 8-ball pool, a slew of hyper-casual titles, games of skill like poker and chess, and traditional games like ludo. There is something for everyone, clearly!

The creator economy ensures that there is something for everyone. However, niche players and creators can earn off it and hence it isn't a hobby or pastime anymore. There are platforms which encourage players to play casually or with an entry ticket and win prizes, to stream or create content, and form cohorts to play new gameplay formats, essentially, empowered to consume the game how they want to.

Take chess, for example Former world champion in blitz chess and world number 2, Hikaru Nakamura, was regularly streaming on Twitch but his following went crazy during the pandemic and he ended up signing up with one of the world's largest esports teams.

Popular chess players, Alexandra and Andrea Botez from Texas, USA started streaming on Twitch in 2016. They project their earnings US\$500,000 this year! Closer home, International Master, Tania Sachdeva has got a steady, growing following. The Netflix show, The Queen's Gambit, was an unexpected hit and boosted engagement and following for chess.

In India, online gaming is largely played on mobile



KARTIKEYA RAO, CEO, WowChess

phones. Thanks to Jio and well-priced and specced handsets, anyone can play PUBG (before it was banned), word games, skill-based games with money anytime, anywhere and with anyone! And most gaming companies have an app-first approach to address this large market.

As this industry continues to develop, there are some clear hot pockets of activity. Fantasy sport has become a huge crowd-puller and despite the fact that sporting events had got canceled in 2020, it still grew at 24% as per the FICCI-EY report. Esports is another rapidly growing part of gaming. This same report mentions that esports saw a 90% growth in the number of people playing esports and a 100% growth in followers.

As more players, games, sponsors, creators, and viewers get involved in gaming, it is necessary that we have a national regulatory body to address legalities and policy around online gaming. It is a vast, complex, and dynamic space that requires all stakeholders to have a voice as opposed to dealing with matters at a state level. This will ensure inclusion and innovation while fulfilling the potential that online gaming clearly has. No time to remove those sunglasses for a long time!

The author is CEO, WowChess

THE TECTONIC SHIFT IN THE TECHNOLOGY REVOLUTIONIZING ESPORTS

The ongoing pandemic situation has propelled the penetration of esports to more and more people. Innovative use of emerging and immersive technologies are transforming the gaming experience not only for the players, but for the viewers too

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The current stats show we have 365 million Indian gamers across mobile, PC, and console which is projected to reach 440 million by 2022 according to industry estimates. This growth in the number of gamers will fuel the esports industry in a whole new way. Esports is still at a nascent stage in India and we are expecting positive growth in upcoming years.

Esports has seen decent growth over a few years, and we have also seen Indian gamers set their footprints on the global esports scene. The current pandemic has helped in shifting the focus of esports to online. The overall growth of the esports industry has been phenomenal in 2020. During the Pandemic, esports got much-needed exposure and it seems that it is slowly heading towards the mainstream.

We spoke to **Lokesh Suji, Director, Esports Federation of India** to understand the Indian gaming industry and its future.

Rise of esports

In India, over the course of 2020 with Covid-19 lockdown in place, we saw a boom in digital entertainments and esports is one of them. The ongoing COVID situation has propelled the penetration of esports to more and more people. The esports industry witnessed the highest spike in player participation, watch time & viewership in the year 2020 and it's moving onwards & upwards.

1. Esports is a sport recognized by the International Olympic Committee (IOC) and Olympic Council of Asia (OCA), it was a demonstration event in

the last Asian Games'18 and we got a Bronze medal. It has been included as a medal event in the upcoming Asian Games'22. First and foremost thing for esports to grow in India is to have a correct understanding of this subject by all stakeholders including Government, Media, VCs, brands etc. Playing fantasy, teen Patti, poker, gambling, betting, online gaming etc is "not esports", it's "igaming". Competing with each other for casual or hyper-casual games online/offline is not esports. Similarly playing multiplayer video games online/offline is not esports, example if you are playing ludo online/offline with your friends, it's "not" esports.

Playing video games is not esports; there are only select genres of video games that fall under the category of esports. These genres are

- a. Real-time Strategy (RTS): Clash Royale etc.
- b. Fighting: Tekken7
- c. First-person Shooter (FPS): Counter Strike, Call of Duty etc.
- d. Multiplayer Online Battle Arena (MOBA): League of Legends, Arena of Valor, DOTA2 etc.
- e. Sports: FIFA, PES, Asphalt etc.

Esports is device agnostic (PC/Mobile/Console/AR/VR/MR). Esports can be online and offline both.

And of course, the recognition of esports by the Sports ministry; this will also help in building the confidence of the parents (as our esports athletes are largely from 14-20 years & their parents are not very supportive). Esports is a new Industry, just like sports you can look at becoming a pro esports athlete, a live streamer, caster, analyst, coach, Esports Arena, Academies, Team owner, Technologies for esports, event operator and so on. Opportunities are immense and now you can win medals for the country; it's a blank slate as of now, its needs to be developed in a structured way so that we can make India the next powerhouse of esports.

Future trends in the gaming ecosystem

Post-COVID, we've seen a tectonic shift in the way technology is being used to revolutionize esports in India both for the players as well as the audience. Some of the key trends & technologies that will drive the Indian esports industry in 2021 are:

Data Analytics - The increasing use of AI-backed data analytics to support developers/players/organizers alike, to research reported game patterns and to provide new insights into gaming strategies for professional gamers to better their gaming experience and to enhance their viewing experience for the audience.



LOKESH SUJI, Director, Esports Federation of India

Artificial Intelligence (AI) - Artificial Intelligence is the backbone of the esports industry, providing players with technologically advanced training tools focused on machine learning that will further improve their skills and gaming strategies. In the near future, natural language processing (NLP) instruments will gain momentum. The player-audience social experience will also be increasingly personalised by AI.

Virtual Reality (VR) - A fresh demand for VR esports is emerging with the introduction of untethered VR headsets and new games. It should feel immersive, so players feel more linked to the game.

Streaming / Content Creation - Streaming is where anyone can record or show their game by broadcasting it live over the internet through streaming platforms. Streamers can add custom graphics to their stream, communicate through a chat room with viewers, try to inform the viewers and entertain them. It enables fans to get closer to the action and to make some extra money for pro gamers and entertainers. Facebook and YouTube will lead the show in India. Streamers have been able to monetize their content and rake up good monies; streaming today is a viable career option.

ROADBLOCKS IN THE WAY OF DIGITAL TRANSFORMATION

Digital transformation offers huge opportunities for businesses, but CxOs find difficulties as digital transformation is far from a simple process

Gaurav Aggrawal



We are living through the golden age of digitisation as we know it. Digital transformation is a norm for enterprises today and many have already begun their digital transformation journey. Most enterprises are met with roadblocks in their pursuit, which often spells for expensive setbacks and almost no return on the investment of their resources.

Recently, an Everest Group research found that 73% companies failed to see any addition to their business value from their digital transformation efforts. The number of enterprises that saw a positive result is just 22%.

Another study by KPMG noted that 67% CEOs agree with the statement that Agility is the new currency of business – “If we’re too slow, we will be bankrupt.” In their research of manufacturers’ adoption of digital technologies, 33% CEOs were found struggling to keep pace with the need to digitally transform their business to compete with their contemporaries.

Let’s evaluate nine top reasons for ‘Digital Transformation Failure’:

1. Resistance to change from the workforce

Shaking up the status quo can be met with a lot of resistance, thanks to homeostasis. Digital transformation can be a disruptive change for your workforce, and it is important to tackle resistance for a smooth transition. One of the critical components of digital transformation is the transformation of people aspects (including mindset, inclusion, skills rotation, and job security) and overall HR practices transformation. This calls for regular conversations with your team to keep them informed about the process. Additionally, you can develop a clear language and common format to discuss strategies to involve them in the transition.

2. Lack of executive sponsor

When you have a digitally-savvy board backing your efforts, you can increase your revenue growth by more than 35% with a higher ROA and associated higher market cap growth (MIT Sloan). An IDG study showed that 46% of IT directors indicated a lack of executive buy-in to be a leading barrier to transformation.

3. Insufficient knowledge of Digital Transformation Levers and benefits at CXO and CXO-1 level

All the chairs and the lead directors must be digitally-savvy. According to MIT CISR, to ensure



GAURAV AGGRAWAL, Global Lead - Everything on Azure Solution Strategy & GTM, Avanade

this, leadership needs to discuss: Are we well-versed with the threats and opportunities that a digital transformation can bring about in our company over the next five to ten years? Do our directors possess a working understanding of the digital issues and are at least three directors out of the team digitally savvy? Do we have a plan to educate the board and increase the overall digital savviness over the next few years? While weighing the risks of a project under consideration versus the risk of not doing something new, are we striking the right balance?

4. Lack of Maturity for Modern Processes

Most organisations have not institutionalized modern processes, such as enterprise agile development, iterative deployment, Everything as Code, and DevOps/DevSecOps. This is the reason why so many organisations are unable to increase the velocity of their digital transformation.

5. Too many big projects

It is important to be ambitious while planning your digital transformation – you mustn’t lose sight of your long-term goals and only focus on the short-term goal. But what is more important is to not indulge in a lot of big projects that can be difficult for your workforce to undertake.

Digital transformation is a gradual process marked

with constant evolution. A big bang approach to Digital Transformation fails as the ecosystem has too many moving parameters. Consider Digital Transformation as a Relay race of 4*100 meters instead of a single sprint of 100 metres. Keep the critical spots that need to be serviced in mind and focus on those.

6. Regulatory compliances

Enterprises, with a global presence, can face the compulsion to comply with a bunch of different regulations in different parts of the world. This challenge may seem a lot of hassle, but it is a very crucial step when it comes to successful digital transformations.

The regulations imposed on disruptive innovations are from a design and an architecture perspective. The evolution of conventional regulations depends on the level of disruption. In terms of design, regulations should focus on answering whether the innovation presents any harm or not, instead of focusing on whether it complies with all the regulations or not. In terms of architecture, regulatory agility is of utmost importance as opposed to a multi-stakeholder jurisdictional approach.

7. Too many small scale POC without any planning for scale or business outcomes

Enterprises should indeed start small – they should look for quick wins that come with manageable projects with proven use cases, with multiple projects running simultaneously, there is a risk of being stuck in prolonged “pilot purgatory”.

But here’s the tricky bit. When you invest in too many small-scale proofs-of-concept (POC) without establishing a proper framework or plan, you run the risk of pilot failures/delays. This can affect the deployment speed of your digital transformation.

8. Lack of organisation change management

For an enterprise to be successful with Digital Transformation, they need to ensure they address Organisation change Management. For example, when it comes to application development, it is important for the application leaders to understand

the complexities in the culture and structure of the organisation. The cultural and structural compositions of these organisations are the main barriers to digital innovation. These can prove to be a foundation for all your strategies and help application leaders who struggle with how to make changes.

9. Confusion between Digital Optimization vs Transformation

What is Digital Optimization? To improve existing operations and business models, enterprises adopt digital technology, and this process is called Digital Optimization. In most instances, organisations are confused between Digital Optimization (commonly referred to as Digitization) and Digital Transformation – initiatives that are aligned to the Customer Journey and new business models.

The use of digital technologies, like Artificial Intelligence, Machine Learning, Robotics, Cloud, 3D Printing, Augmented Reality, and Virtual Reality, are quickly becoming the norm in most enterprises. But if these technologies are used to reduce costs, increase margin, or make the processes agile,

the business is not transformed in the true sense. Instead, you just optimized the business. Yes, this adds some value, but, such Digital Optimisation does not help the business to jump ahead significantly.

Leaders need to realise that digital transformation isn’t a switch that can be flipped on instantly. It is critical to prepare your team for the impending transitions while making sure that a part of your workforce is digitally-savvy and possesses the knowledge necessary to undertake this project. Focus on the bigger picture while paying attention to the smallest of the details for the perfect execution. Delegate the responsibility of the transition by establishing a CDO office. Keep in mind the various hierarchical structures of the organization and delegate roles accordingly.

The key to solving those issues lies in the tiny details of the project. Analyze the mistakes while keeping agility in mind – Fail Fast, Learn Fast, Deliver Fast.

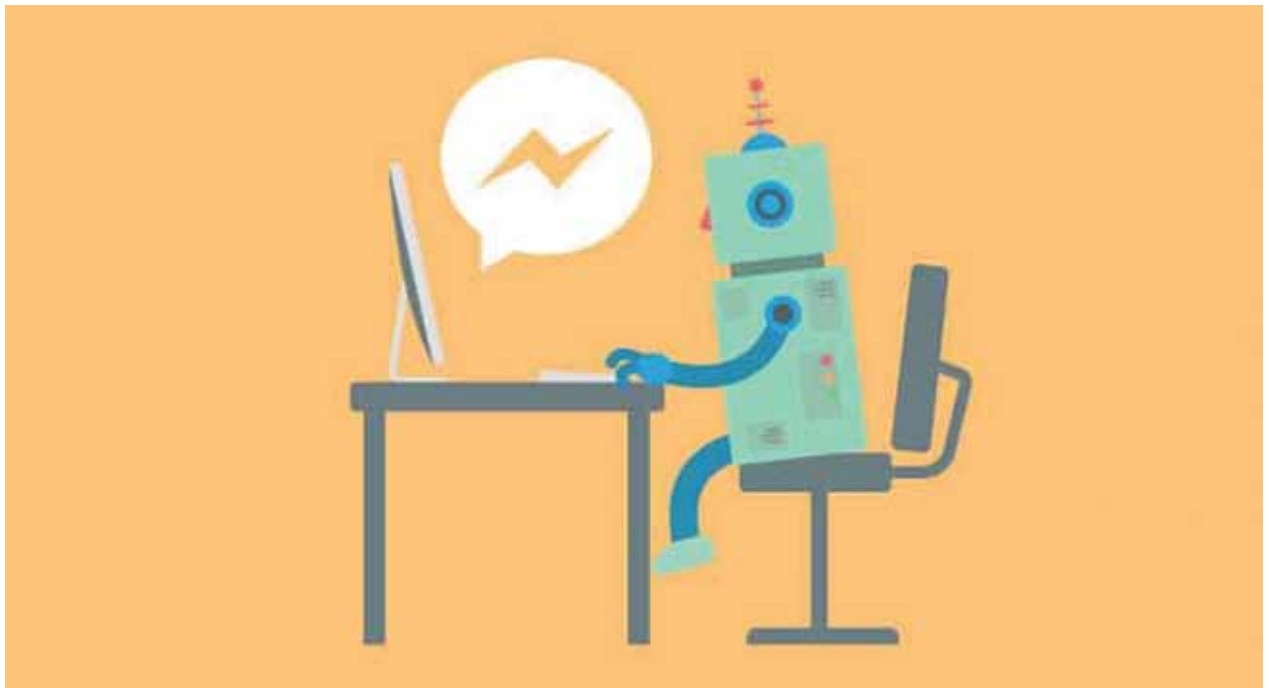
The author is Global Lead - Everything on Azure Solution Strategy & GTM, Avanade

Digital transformation is a gradual process marked with constant evolution. A big bang approach to Digital transformation fails as the ecosystem has too many moving parameters. Try not to indulge in a lot of big projects that can be difficult for your workforce to undertake

HOW SUPERBOT IS SHAPING THE FUTURE OF VIDEO COMMUNICATION

SuperBot enables contextual communication, ensuring effective and efficient communication over video conferencing. It improves human interaction with better responses and allows for real-time resolution of queries

Gaurav Tripathi



Video conferencing has long been heralded as a highly sustainable, cost, and time-efficient way alternative to face-to-face business meetings. However, video communication came under the spotlight only in early 2020. This was induced by the COVID-19 pandemic that subjected the entire world's workforce to a mass, unprecedented remote working experience.

Since then, there has been no looking back for the video communication industry that has witnessed explosive growth. Having become the new business travel and the new workspace, video communication is indisputably the cornerstone for remote working thanks to one key element – new-age technology.

Technology has not only changed the way

businesses operate but has also penetrated far into our daily lives. Video communication, driven by Data Analytics, AI, Automation, ML, and NLP, has seen a large-scale shift over the past year. It is now no longer limited to high-profile boardroom meetings for presentation purposes. That said, we cannot ignore the fact that it is still humans who utilize technology, and we are the driving force behind it. This is where the concept of a SuperBot comes in.

The SuperBot idea

No matter where we go or what we do, we, as humans, are emotional beings and it is the emotion that connects us with things as well as fellow human beings. Fundamentally, humans engage well

when we know that there is another person who cares. This is the idea behind Superbot. Now, the question is, how is a SuperBot connected to video communication and its future?

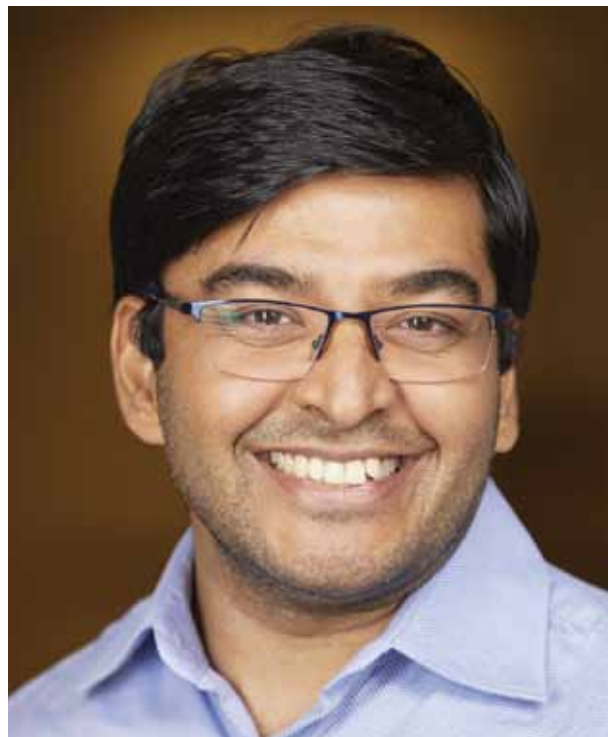
SuperBots in video communication

When it comes to communication, talking freely with the other person is an integral aspect that determines the efficacy of communication and how your message has been delivered. Also, communication will turn out to be ineffective if the context is unclear. SuperBot enables contextual communication wherein it allows users – be it clients, employees, or prospects, to talk freely while establishing the context (for example, customer service, sales, marketing, etc.) in the conversation to ensure effective and efficient communication over video conferencing.

Besides this, since the world has witnessed a mass shift towards remote work and video communication is vital, it is necessary to improve real-time responses to customer queries and feedback. SuperBot enables just this. It improves human interaction with better responses and allows for real-time resolution of queries. SuperBot is also designed to enable human-centricity. While this sounds contradictory, there is a larger picture behind it. Instead of creating just a bot, video communication platforms have designed a system where actual humans can interact in real-time. It replicates the feel of being on call with a human being rather than a bot; nothing really beats seeing a human face on the other screen, especially during trying times.

Now, imagine an angry customer on one end of the line and the automatic chatbot replies along the lines of “Thank you for being a loyal customer, we are currently offering 20% off on a plan”? SuperBot avoids committing these blunders and addresses the right emotion and questions since brands need to understand the customers’ place before answering a query or responding to feedback.

Furthermore, one of the most crucial aspects of any business is sales. With real-time video communication enabled by SuperBot, brands can better understand prospect needs and assist accordingly. This goes a long way in contributing to sales since even though someone may not use your service or purchase your product, they are highly likely to remember your assistance and recommend your brand to someone else. Not just sales but SuperBot also plays a pivotal role in improving customer engagement and satisfaction since people



GAURAV TRIPATHI, founder and CEO of Superpro.ai

often tend to stay loyal to a brand not just because of the product/service it offers but also because the brand truly pays attention to customer service and prioritizes the customers.

Yet another important way in which SuperBot facilitates hassle-free video communication is that it is just present on the brand’s website or apps – there is no need to schedule or invite it onto a meeting or fill in a lengthy form and wait for a response – it’s instantaneous. This makes it less time-consuming and more cost-efficient. Additionally, brands will also have control over the interface, flexibility of tweaking the experience, and access to a treasure trove of data gathered from conversations that will help them enhance customer experience.

Final word

The COVID-19 pandemic has almost completely changed the way humans and businesses function on a day-to-day basis, and while some of these may revert to how it was in the pre-pandemic times, video communication is here to stay. While technology has transformed the face of video communication, it will also unquestionably play an instrumental role in shaping its future.

The author is founder and CEO of Superpro.ai

WHY IS APPLE SO VALUABLE?

While there are a handful of companies that have touched a market capitalization of \$1 trillion, Apple was the first to touch \$2 trillion. So what is it about Apple that makes it so valuable?

Sunil Rajguru
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The iPhone continues to be the biggest brand ambassador. Owning it is the ultimate status symbol whether you are a commoner or a millionaire. It was released by Steve Jobs in 2007 and after all this time its charm remains undiminished. It's worth has been equated to a human kidney in running jokes and memes.

Here's an interesting observation. In terms of market share, the Mac never beat Windows and was usually way behind. That's both in the laptop era and the desktop era. In terms of global market share, the Android beats the iPhone OS. The MP3 player era, which Apple totally dominated, is gone. Interestingly Amazon makes more money than Apple but is still valued at about half its amount. What gives?

The reasons for that are many...

The sheer ubiquitousness of Apple:

Quick. Name a company that has successfully sold desktop, laptop and mobile hardware and software. You don't have to think too much because it is Apple all the way. Whether it's the actual desktop, computer or mobile, or the chip or the Operating System, Apple is an all-rounder which can do everything. There are many which are a No. 1 in one or two things. That itself gets a bucket load of money. Apple is something like a No. 2 in each and every thing and that it seems translates into two bucket loads of money and loads of power too.

It's always been the trendsetter:

The mouse. Graphic user interface. The connected printer, which led to the desktop revolution. It's been Apple all the way. But that was the last century. This one is no different. The MP3 player was a game changer. iTunes was a revolution and took the Napster fallout head on. The iPhone touchscreen became a standard for the entire industry. It's amazing how it's been one innovation after another. The market recognizes this and so do the consumers.

The Apple Ecosystem:

Another thing that keeps Apple going is tremendous brand loyalty. That a good chunk of Apple consumers are at the high-end of the earning

pile makes that a force multiplier. Those with a Mac wanted a Macbook and they were the first to go in for an iPhone. When the Apple Watch came, the Apple Ecosystem was fully formed. This troika has become very popular with loyal Apple customers. Tomorrow if the Apple Car takes off, then the ecosystem will be widened. You can control your home with Siri/ HomeKit. Going forward it could also become a big feature of Smart Homes.

Rise of services:

The future is services. While Apple is a master of both hardware and software, it has been getting big in services also. In the last quarter it made close to \$16 billion in services. That includes services like iTunes, AppleCare, Apple Pay, digital content and Apple's online entertainment library. Apple is a player in the troika of desktops, laptops and smartphones. Apple also rules the troika of hardware, software and services. In Indian lingo, that's two hat-tricks!

Appetite for a fight:

Apple is the only player that can take on the other tech giants. While Facebook's entire business rests on harvesting data, Apple is looking to change that. There is a privacy change with iOS 14 update where an App Tracking Transparency has been introduced. This gives Apple customers control over all the apps that are being tracked by third parties. Facebook is worried and even put out a front page ad criticizing this move.

Imagine if Apple decided to get into everything tomorrow and removed the entire Google-Facebook ecosystem from iPhones. Default settings are very important. What if tomorrow Apple Maps, Apple Messenger, Apple Social Network... all took off. Apple has the ability to be a super app and you could spend your life in the Apple ecosystem. Right now we have the Silicon Valley ecosystem and the China ecosystem. Tomorrow Apple could be the third and maybe even Make in India could take off for a fourth. This is the only way the Google-Facebook monopoly can be challenged.

Apple came with a bang in the 1980s. It had some setbacks in the 1990s. It came back bigger in the 2000s. It really consolidated in the 2010s. It is booming in the Covid Era and looks to dominate the 2020s too.



THE AGE OF THE TRILLIONAIRE

Once millionaires were rare. Now the US has 18K+ of them. According to the Forbes 2021 list, there are a whopping 2755 global billionaires in 2021, up 660 from Covid Year 2020. Now it's all about trillions. We've trillion dollar economies, trillion dollar industries and much much more.

Sunil Rajguru
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Q1: How many global tech billionaires does it take to make \$1 trillion?

A: 11.

According to the Forbes 2021 list, Amazon's Jeff Bezos is worth \$177 billion, Tesla-SpaceX's Elon Musk—\$151b, Microsoft's Bill Gates—\$124b, Facebook's Mark Zuckerberg—\$97b, Oracle's Larry Ellison—\$93b, Google's Larry Page—\$91.5b & Sergey Brin—\$89b, Microsoft's Steve Ballmer—\$68.7b, Alibaba's Jack Ma—\$48.4b, Michael Dell—\$45.1b and TikTok's Zhang Yiming—\$35.6b. Add them all and you cross a cool trillion.

Note: A person who has a 100 billion is called a centibillionaire.

Q2: How many Silicon Valley companies does it take to earn \$1 trillion in revenue?

A: 7.

Looking at the Fortune 500 2020 rankings, the earnings are as follows: Amazon \$280.5b, Apple \$260.2b, Alphabet \$161.9b, Microsoft \$125.8b, IBM \$77.1b, Intel \$72b & Facebook \$70.7b. How rich is the valley! There are many other global giants in the list too: Samsung \$198b, Mitsubishi \$136b, Siemens \$98b, JD.com \$83.5b, Hitachi \$80.6b, Sony \$76b & Alibaba \$73.1b.

Q3: How many companies does it take to achieve a total market capitalization of \$1 trillion?

A: 1.

The following tech companies have achieved a valuation of \$1 trillion each: Apple, Amazon, Microsoft and Alphabet. Apple in fact has achieved a marcap of \$2 trillion. Facebook came close: \$838.7b. In fact one wonders who came up with FAANG (Facebook Apple Amazon Netflix Google). If you notice then Netflix is in none of the above lists, but Microsoft is everywhere. It should in fact be FAAMG.



Q4: How many cryptocurrencies does it take to achieve a valuation of \$1 trillion?

A: 1.

It's amazing that the cryptocurrencies weren't even in circulation in 2007. Now all the Bitcoins in the world crossed \$1 trillion recently. Bitcoin is already better than many of the smaller currencies and like a separate country in its own right. Ethereum is touching \$400b and even Dogecoin could touch \$100b.

Q5: How many bytes is a trillion?

A: 1 terabyte (TB), or one household.

We all deal with TBs. You may have a drive that big, or cloud storage capacity on those lines. A trillion terabytes is one yottabyte (YB).

Q6: So what comes after trillion?

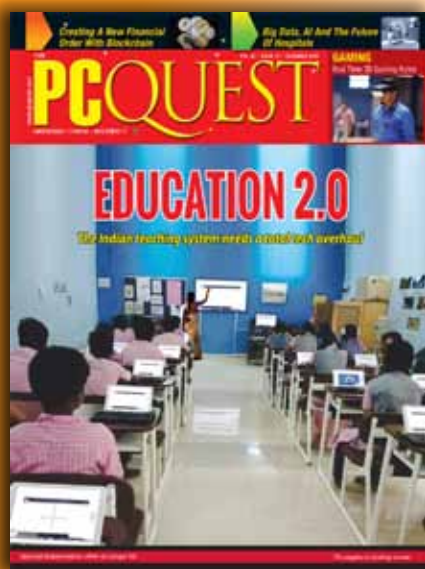
A: Quadrillion.

A 1000 trillion is a quadrillion. We could be dealing with that in a few decades, who knows? A 1000 quadrillion is a quintillion. Then sextillion, septillion, octillion and so on. A trillion is 10 raised to the power 6. That way the first choice for Google's name was Googol which is 10 raised to the power of 100. So they got that right and really thought big!

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CX IS A CORE DIFFERENTIATOR

KT Prasad, MD and RVP, India and SAARC at Zendesk, talks about how interactions in the CRM space have become more conversational, the shift to it becoming customer-centric (as against business-centric) and the role of CX in Digital Transformation, something that has been expedited in the Covid Era

PCQ Bureau



Explained Prasad, “We strongly believe in providing a beautifully simple CRM solution to customers where we help them to focus on a conversation with the customer rather than figuring out the technology.” He added, “The journey of conversation can start from a bot, can involve a phone, can involve social messaging... Businesses should have an ability to orchestrate how they want a conversation with a customer to happen and drop in all the technology that they want to enable that conversation. Zendesk makes it simple to drive that messaging conversation. We think having this conversation in pockets will not help.”

Prasad said that most businesses think that CX is a core differentiator and India is at the forefront of it: “Businesses are more focused about the journey of a customer. You have to really map the customer journey so you can start giving them the experience that they need. Explaining the changes that are taking place in the Covid Era, he added, “Our loyalties have changed to those companies who are providing experience and who bother about us and the experience journey that we go through.”

Click to check out the complete interview...

 https://www.youtube.com/watch?v=eS6u2XdWG_c

CUSTOMERS WILL ENGAGE MORE & MORE DIGITALLY

Deepak Pargaonkar, Vice President, Solution Engineering at Salesforce, talks about the latest tech trends, how low code is helping businesses, changes in the Indian IT services sector and how Salesforce and its customers have adapted in the New Normal

PCQ Bureau



Deepak explained the simple and long-term Salesforce principle of Success from Anywhere, "You can sell from anywhere, you can service from anywhere and you can engage from anywhere." He added, "Employees will work from home, customers will engage more and more digitally, businesses will work on a lot of transformations whereby engagement, transactions, business processes, will also get digital... Entire businesses will start getting more and more data driven, more and more intelligence driven, more and more process oriented."

On technologies like cloud and low code in the Covid Era, Deepak said, "Many customers, many organizations who have succeeded in this era of pan-

demic hit economies as well as challenging circumstances are the ones who had an ability to be nimble. That ability to be nimble largely depended on their technologies. So technologies like cloud played an important role. The same way low code is also going to play an important role. Undoubtedly these things are going to shape the way in which the world is going to democratize technology."

Deepak also talked about product innovations like the Salesforce Vaccine Cloud solution that is serving many organizations and many governments during this Covid Era.

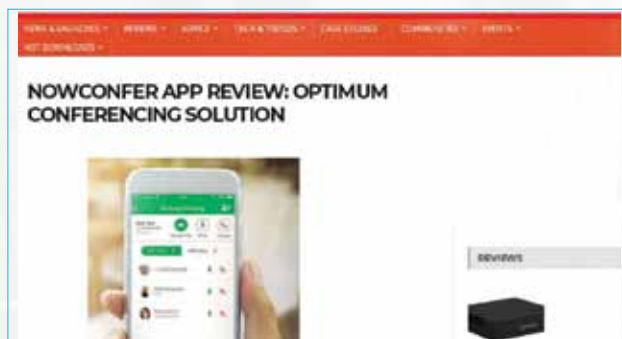
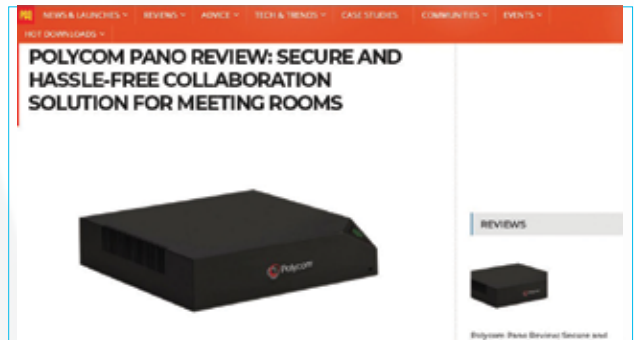
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LAPTOP

DELL XPS 15

— Ashok Pandey
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Dell is continuously upgrading its XPS line-up and the latest one boasts a fresh new design and a little more screen. The revamped InfinityEdge display has a very thin bezel offering an immersive experience. The next-gen XPS has got multiple smart tweaks to the keyboard, touchpad and chassis that make this workhorse more comfortable to use.

Built and design

The new laptop has a slim chassis with a smooth silver aluminium lid and sharp 0.71-inch edges. It has big keys, a much larger touchpad and slim front-firing speakers. The display has the major change, the new 4-sided Infinity Edge display, which doesn't have a thick bottom bezel. The webcam is embedded on the top bezel, yet Dell kept it incredibly thin.

The XPS 15 packs a total of three USB-C ports for charging and other connections. Dell included USB-C to USB-A v3.0 & HDMI v2.0 adapter to connect external displays and peripherals. Rest two USB-C are Thunderbolt 3 for extra-fast connectivity, plus a full-sized SD card reader as well as a headphone jack.

Display

The Dell XPS 15 has a truly 4-sided InfinityEdge 15.6-inch with 92.9% screen-to-body ratio touchscreen that enables you to work, play and enjoy whatever you love to without any distraction. The touchscreen has a UHD+ (3840 x 2400p) 500-Nit display, made of Corning Gorilla Glass 6, produces quite vivid colours. I enjoyed the screen a lot while watching movies, playing games and other rich contents.

With so much screen space, I was able to work comfortably for hours at a time. Toggling between apps, documents, videos, etc. was a breeze. It produces deep blacks making reading and editing amazingly comfortable. It is bright enough for work and play, even in outdoor conditions.

The touch screen is fluid and responsive, I had no issues while playing with the screen, scrolling through web pages or pinching to zoom into pictures and documents.

Speakers

XPS 15 got top firing stereo speakers which are one of the best equipped on any laptop. It is loud enough to fill your room. Whether you play music, video or game, the speaker was awesome with both low and high volumes. The base is also a highlight of the XPS 15, I played different genre music and it sounded bright and crisp.

Performance

Dell XPS 15 is equipped with a 10th Gen Intel Core i7 processor with 32 GB of RAM, NVIDIA GeForce GTX 1650 Ti 4GB GDDR6 graphics and a 1 TB SSD. The power-packed machine let me work on various apps simultaneously. As we all are working from home, we are dealing with day-to-day productivity apps like Ms-Office, Adobe Photoshop, Chrome, etc. We are also involved with video calling apps like Zoom and Google Meet, etc. the laptop handled them breezily.

While browsing the internet and working on daily productivity apps, I didn't notice any performance lag. It was super smooth to switch between the apps and work on the PC even for longer hours while using the PC for more than a month.

Packed with NVIDIA GeForce GTX 1650 Ti 4GB GDDR6 graphics,



Price: ₹2,22,490

SCORE

Overall: 9/10

PRICE: 8/10

PERFORMANCE: 9/10

FEATURES: 8/10

KEY SPECS: 10th Gen Intel Core i7 CPU; NVIDIA GeForce GTX 1650 Ti 4GB GDDR6 GPU; Windows 10 Home OS; 32 GB DDR4 RAM; 1 TB SSD; 15.6-inch UHD+ (3840 x 2400) InfinityEdge Touchscreen; Killer Wi-Fi 6 AX1650 (2x2) and Bluetooth 5.1

PROS: Sleek and premium design; Amazing display; Speakers; Keyboard and touchpad; Overall performance

CONS: Battery life could be better; Only USB Type-C ports

XPS 15 can deal with heavy applications such as Adobe Suite. We used Adobe Premiere to edit videos and it was snappy in handling the editing tasks and rendering the video. To test its capability, we opened two chrome browser with 10 tabs in each with applications like MS Word, Excel and Adobe Photoshop and Premiere. While operating the machine with all these applications running in the background, we didn't notice any performance lag.

Also, I run some games that consume a whole lot of power, games like Shadow of Mordor and Thief. Though it's not a gaming machine, yet these games can help us to understand real-world performance. The GPU handled both games brilliantly; there was no visible performance lag.

The laptop has a soft-touch coating, 9.7% larger keycaps and snappy 1.3mm travel which offer absolute delight to type on. The large touchpad is snappy, I was able to scroll through web pages and pinch to zoom with ease. As I mentioned earlier, video calls are so frequent nowadays, so I joined multiple calls on it. The speakers were loud and clear. Mic did a fabulous job and the webcam on the incredibly slim top bezel was good enough for everyday calls.

Battery life

Dell XPS 15 comes with a giant 6-Cell Battery, 86Whr battery that gives you juice to run for more than 8 hours with daily productivity. With some heavy usage, you can get over 5 to 6 hours of battery life. While using the Imtec Battery Mark it resulted in 2 hours 37 min, which I can expect when using 100 per cent CPU.

Bottomline: With an incredible bezel-less touchscreen, comfortable keys, large touchpad and loudspeakers, this slim machine has enough power for everyday multitasking as well as video editing and gaming. I was expecting a better battery life with an 86Whr battery, however overall it's a portable powerhouse perfect for professionals and content creators.

WIRELESS EARPHONES

MIVI COLLAR 2 WIRELESS EARPHONES

— Ashok Pandey
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Whether you are a music enthusiast or a working professional, a perfect wireless headphone can give you the freedom to enjoy the music and take calls. The pandemic has changed our personal and professional lives. Now most of us are working from home and students are taking their classes online. In all of these, technology has played the biggest role in connecting us.

Mivi Hyderabad-based company announced its next wireless headphone Collar 2. The new lightweight headphones have an ergonomic design for all-day use.

Built and features

The Collar 2 has an elegant design that looks cool. It has a circular design in which at the left end you can find a micro-USB port for charging. On the same side, you can see the power on/off button that can be used to pair the device with a smartphone, tablet and laptops. Along with the power button, volume controls are placed.

The neckband is made of two material. The collar is made of flexible rubberised plastic with a matte finish on the top. Both ends are made of plastic which looks cool but feels cheap. The buttons are also little hard to press, which isn't good.

Collar 2 has dynamic 10 mm drivers which can that offers 20 Hz to 20 KHz frequency response. The headphones are sweatproof so you can use them while jogging or gymming without any worry.

Performance

The wireless headphones have dynamic 10 mm drivers that produce a fairly balanced and rich sound. It handled the lows, mids and highs perfectly. While listening to heavy bass songs, the amount of bass it produces is really commendable. However, while playing high pitch songs on high volume, you can feel the distortion in the sound. Overall it delivers great sound and vocal at different volumes. I played songs of various genres in different file formats like FLAC,



Price: ₹1,399

Overall: **8/10****SCORE**PRICE: **8/10**PERFORMANCE: **8/10**FEATURES: **7 /10****KEY SPECS:**

20 Hz to 20 KHz Driver Frequency Response; Dynamic 10 mm Drivers; IPX7 rating; Bluetooth 5

PROS:

Battery life; Sound quality; Sweatproof; Easy fit; Price

CONS:

Feels plasticky; Hard control buttons

mp3, ALAC, and WAV. Therefore, we can say, collar 2 headphones produce detailed and crisp vocals.

While using them to take calls, collar 2 was good. As I mentioned earlier, the buttons are hard to press to answer calls or adjust the volume. Otherwise, the vocal clarity is perfect. Using collar 2, I was able to take call in a noisy room as well, my voice sounded clear to the person at the other end.

Headphones come with Bluetooth 5 that offers great connectivity. It was able to manage more than 7 meters without any obstacles. Also, Bluetooth 5 consumes less battery compared to the previous gen so you get longer battery life.

The collar 2 battery takes around 45 minutes to fully charge from 0 to 100 per cent. The fully charged Collar 2 can go beyond 4 hours 35 minutes, when on full volume. With moderate usage, the battery can last for 6 hours.

Bottomline: The Mivi Collar 2 wireless headphones deliver good sound at different volume. You can enjoy music and take calls for hours, thanks to ergonomic design and powerful battery. However, the built is not that good, it feels plasticky and control buttons are hard to press.



GAMING MOUSE

ZEBRONICS PHOBOS

Zebtronics is not a new name for PC peripherals, their product offering ranges from professional to gamers. Recently they added a new gaming mouse in the portfolio – Phobos. The mouse is targeted at gamers loaded with customisable RGB lighting, up to 4000 DPI and many other features.

Build and design

The gaming mouse Phobos sports an ergonomic design. The size will perfectly support larger and moderately sized hands. The gaming mouse looks fabulous with its RGB lighting strip that runs



across its entire base. At the front, it has an aggressive angular design that uses translucent plastic. The top has a coat of matte black paint, while the sides are textured plastic panels.

The wired mouse has a gold-plated USB connection and a 1.8-meter long braided cable. The length should be enough for most gamers. The mouse feels good and looks like a gaming mouse, but the overall construction is plasticky.

Features

Phobos comes with 8 buttons, 4000 DPI and lots of customisations for a personalized gaming experience. There are two dedicated buttons just below the scroll wheel. These buttons let you preset your DPI levels. Using the accompanying software, one can



— Ashok Pandey
ashokpa@cybermedia.co.in



Price: ₹1,799

Overall: **9/10**

SCORE

PRICE: **10/10**

PERFORMANCE: **9/10**

FEATURES: **9/10**

KEY SPECS:

4000 dpi Sensor resolution; USB Interface; 8 buttons; RGB

PROS:

Fully customisable; Price; Cable quality; Gold-plated USB

CONS:

Feels plasticky

change the specific DPI level. You can also choose a different colour for each DPI level.

One can customise the mouse as per his/her requirement. Using the software, users can assign different functions to the keys and enable Macro Editor features through the Windows software. On the left side, it has three programmable buttons. These buttons will come in handy while gaming, which can be programmed to do certain tasks via software.

The RGB lights come in 11 different modes that also can be customised. You can locate a dedicated button underneath the mouse that acts like an on/off button for all the lighting.

Performance

Whether you play games or work on day-to-day productivity applications, the mouse works flawlessly. I used the mouse for more than three weeks for both gaming and work. I tested the mouse on games like Fortnite, Thief, Middle-earth: Shadow of Mordor, etc. there was no jittering. The click response was quite satisfying, as expected, it didn't feel slow while gaming. Having a decent range of DPI and 8 customisable buttons, it worked perfectly for all games.

Bottomline: The affordable gaming mouse has an ergonomic design, 8 customisable buttons and cool RGB lighting. Though it feels plasticky yet the overall experience was good for its price.

SECURITY

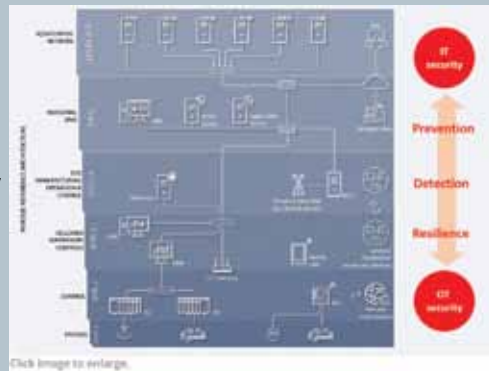
Fortinet's Next-Generation Firewall and 5G Connectivity for SASE

Powered by Fortinet's proprietary SPU ASICs, the FortiGate 7121F delivers the highest-performing security necessary for 5G networks and enterprise Zero Trust Access, while FortiExtender 511F-5G provides wireless WAN connectivity for SD-WAN and SASE solutions.

The new FortiGate 7121F consolidates networking and security through a security-driven networking approach to deliver full visibility, the highest scalability and advanced security to protect business-critical applications in the distributed and hybrid 5G ecosystem. Through the breadth of the Security Fabric, Fortinet provides end-to-end security for 5G private and public network ecosystems, while also providing flexible connectivity and threat intelligence capabilities.

The FortiGate 7121F offers some of the industry's highest performance numbers—including the highest Security Compute Rating compared to competing next-generation firewalls. The Security Compute Rating is a benchmark (performance multiplier) that compares FortiGate Network Firewall performance versus the industry average of competing products across various categories that fall within the same price band. Additionally, the FortiGate 7121F is two times faster than the industry average for threat protection and 19 times faster for SSL decryption to help enterprises remove blind spots.

The FortiExtender 511F-5G wireless WAN brings sub 6GHz 5G connectivity to power SD-WAN and SASE solutions. FortiExtender is simple to setup and plug into Fortinet's industry-leading Secure SD-WAN solution to provide flexible WAN connectivity for hybrid WAN to deliver better user experience. FortiExtender also enables thin edges with 5G connectivity to FortiSASE for cloud-delivered security and inspection, providing ultra-fast and safe wireless WAN connectivity for a diverse set of industries including retail, OT and healthcare.



Trend Micro's Next Generation ICS Endpoint Security Solution



OT-native endpoint security solution for smart factories, is developed by TXOne Networks as a part of total security solution. The TXOneStellarProtect is designed to secure all OT endpoints, regardless of environmental conditions, for any mission-critical ICS environment.

TXOneStellarProtect delivers uniquely ICS-native endpoint protection against both known and unknown malware via machine learning and ICS root of trust. To avoid redundant security scans and ensure minimal impact to performance, ICS root of trust collects over 1,000 ICS software certificates and licenses and verifies them in advance.

StellarProtect requires no internet connection to defend against malware-free attacks due to its least privilege-based policies. Operational interruption from malicious attacks or even mis-operation by personnel is prevented by its built-in ICS application behavior learning engine.

SMARTWATCH

Fire-Boltt Beast smartwatch



Fire-Boltt Beast is a new-age smartwatch with an 1.69-inch screen size powered with full HD display with brightness rating of 500 Nits. Priced at just Rs 3,999, Fire-Boltt Beast is the perfect pick for those particular about style as well as health matrix.

The wearable comes with SPO2 monitor to measure blood oxygen level and 24x7 heart rate & blood pressure trackers. Another USP of Fire-Boltt Beast is a Meditative Breathing feature, which is engineered to help a wearer indulge in breathing exercises for holistic wellbeing. Users will further be able to track their daily activities more diligently with the help of an Intelligent Sports and Fitness Tracking system, alongside multiple sports mode.

Furthermore, there is a monitor to track sleep quality, suggesting how long they enjoyed deep sleep and for how much time the sleep was light.

Beastis packed in a full metallic body and a robust battery that lasts up to 8 days.

Redmi smartwatch



Redmi smartwatch features a 1.4" inch high-resolution color display that provides sharp and clear visuals indoors, as well as under direct sunlight. It also sports an ambient light sensor that enhances the viewing experience by automatically adjusting the display brightness based on the lighting and environment conditions.

With 200+ watch faces and 4 changeable color straps, the watch simply blends in with any outfit and can be customized based on the look of the day. Weighing just 35g, Redmi Watch is super light, making it a comfortable companion for the wrist all day long.

Featuring an in-built GPS + GLONASS, the new Redmi smartwatch allows users to accurately track their trajectory, speed, distance, and calories burnt during workouts. It simultaneously also keeps a check on heart rate to provide a clear and detailed status for workout sessions. The smartwatch comes with 11 professional sports modes such as Cricket, walking, cycling, trekking, outdoor running, treadmill, pool swimming, freestyle, etc that automatically keep track of the activity in real-time.

In addition, it provides professional-level health monitoring with advanced health features, such as heart rate monitoring, sleep monitoring and guided breathing, etc., that keep a check on the health condition of the user.

With the advanced PPG sensors, the watch accurately detects heart rate 24 hours a day and notifies in case of irregular heart rate fluctuations above normal levels. It also saves the resting heart rate data for 30 days to help monitor long-term heart rate changes. On the other hand, the sleep monitoring feature analyzes sleep quality by recording deep sleep and light sleep duration of the user.

Additionally, the Redmi Watch also brings a host of other features straight to the wrist such as music control, idle alert, weather information, alarm, emoji support, app notifications, call silence/reject and much more. Users can control and set up all these features on the smartwatch via their phone through the Xiaomi Wear app (available on Google Play Store).

With a 230mAh battery, the smartwatch can last up to 10 days on a single charge. It comes with a POGO pin charger that charges 100% in less than 2 hours.

Redmi Smart Watch will be available for INR 3,999.

AUDIO

JBL Commercial CSUM10 USB Microphone

This new JBL Commercial CSUM10 USB mic delivers a pristine studio quality sound for voice-overs, podcasters, vloggers, gamers, vocalists, acoustic instrument users and for users of web conferencing. Listeners can simply plug the mic into their PC or Mac and start recording, without the hassle of installing drivers.

JBL Commercial CSUM10 is a stylish dual capsule condenser USB microphone with omnidirectional and cardioid polar patterns. With convenient features like microphone gain knob, mute button, listeners can smoothly control the audio and create professional-quality content. Its adjustable design helps position the microphone according to the user's need for optimum sound recording and streaming. For creators, the built-in headphone out helps to easily monitor voice real-time or even playback, and control levels with the Headphone Volume Control, to ensure the recording sounds as desired by the user. JBL CSUM10 USB microphone comes with a desktop stand with an option to mount on a boom stand or a standard mic stand.

JBL Commercial CSUM10 compact USB microphone is available at a special launch price of ₹ 5799.

Boult Audio AirBass FX1 TWS Earbuds

The AirBass FX1 is aimed specifically towards smartphone gamers and those who travel a lot. The new TWS earbuds offer lower latency for gaming and movies, deep bass and superior audio for music and calls and up to 24-hour long battery life for those continuously out on the road. The Boult Audio AirBass FX1 TWS earbuds are designed with lightweight materials to eliminate fatigue. Additionally, an IPX5 sweat, water and dust resistant enclosure ensures longevity, and additionally resists damage during sweaty workouts or if caught in mild showers. The uniquely-carved bud design together with the silicone tips help cut passive noises so users can enjoy uninterrupted music, movies or gaming, or ensure disturbance-free phone conversations.

The AirBass FX1 TWS feature Bluetooth v5.0 and houses a USB Type-C port allowing for faster charging. It uses Hall Switches helping it to instantaneously pair with the smartphone or tablet on opening the case's lid. The earbuds feature touch controls, making it easier to control calls, music, audio volume or voice assistants with just the touch of the fingertip.

The Boult Audio AirBass FX1 TWS earbuds will be available in Black, Blue and White colours for an exclusive price of Rs.1499 on Amazon.in with a 1-year standard industry warranty period.

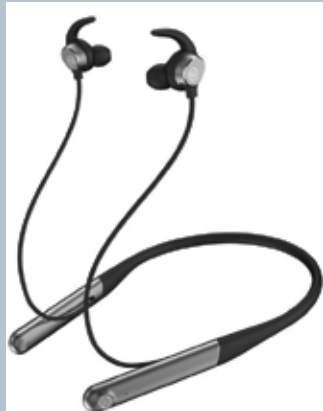
Soundcore Life Dot2 ANC with Hybrid Active noise cancellation

Soundcore Life Dot2 ANC features advanced active noise cancellation and non-stop up to 35 hr playtime. Life Dot2 ANC boasts pure sound via targeted active noise cancelling and multi-mode noise cancellation. The Hybrid active noise cancelling monitors and eliminates up to 90% of noise from the environment. The multi-mode noise cancellation, comes with specific modes that includes - transport, outdoor and indoor.

The Transport mode blocks out lower frequencies; indoor mode reduces mid-range sounds like voices in an office & transparency mode comes with two levels of ambient sound enhancement. The TWS features 6 beam-forming microphones and a noise cancelling algorithm that isolate vocals from background noise, ensuring superior clarity on calls. Its oversized 11mm dynamic drivers generates loud thumping sound and 50% more bass ensuring ear bouncing beats without sacrificing clarity and treble. The TWS comes with IPX4 rating, that makes it water resistant to splashes, spills and more.

Life Dot2 ANC from Soundcore available at the price of Rs. 3,499/-

India's first-ever touch controlled neckband - Noise Flair



Noise Flair, India's first touch-enabled Bluetooth neckband, is designed and built on the fundamental principles of innovation and user ease. The latest neckband is also equipped with smart magnetic controls as well as unique Environmental Noise Cancellation (ENC) by Qualcomm. The neckband is priced at INR 1799.

Noise Flair, 'the smartest neckband yet', has the touch-enabled feature on the left side of the neckband collar that is designed to play/pause music, charging tracks, answer, end and reject the calls and activate Siri and Google Assistance.

The all-new Noise Flair will come packed with an advanced dual-microphone system that will unlock a smooth and crystal-clear calling experience. Taking the audio and calling experience a few notches higher with its Swiftcaller™ technology.

It offers a 35-hour playtime and can last for 500 hours on standby time for uninterrupted usage. It comes with a Type-C USB cable and is equipped with an ultra-fast charging feature and can be charged for 8 hours within 8 minutes while

the total charging time is 40 minutes.

It is powered with IPX5 water resistance to guard the sweat and splashes of water. Flair is powered with v5.0 Bluetooth connectivity.

VingaJoy BT-5800 Heavy Bass Wireless Headphones



VingaJoy's all new Heavy Bass Wireless Headphones BT-5800 is priced at Rs. 2,999. The wireless headphones offers up to 40 hours of play and talk time. The is packed with Bluetooth v5.0 and also support hands-free calling, and an impressive bass with high stereo feature. The headphones have multiple pairing mode options, such as Wireless/TF/SD card/AUX function.

The headset has a built-in dual microphone which provides 360-degree surround sound support. VingaJoy BT-5800 is easy to carry and offers hand-free calling experience while performing sports activities or driving. The biggest benefit of this wireless headphones is that it has a lightweight structure and foldable design, making it a great companion while commuting. It also offers painless wearing for an easy comfortable long hour usage.

pTron Tangent Plus BT neckband



pTron Tangent Plus v2 is packed with extended playtime, high-quality audio, and design. Tangent Plus v2 is available at a consumer-friendly price of INR 999 only.

The wireless neckband fits easily within the everyday life of new-age India. It boasts a perfectly secure fit, a built-in HD mic for crystal clear calls, Bluetooth 5.0 Connectivity for the most stable connection, and optimum battery life. It is equipped with voice assistant and 10 mm dynamic drivers for an immersive stereo sound, accurate high frequencies, and mega bass. It comes with quick charging, only 10 minutes of charging allows 6 hours of playtime.

PROJECTOR

Optoma UHD33 240Hz 4K UHD Home Theatre Projector



Optoma UHD33 is India's first affordable 240Hz, 4K UHD home theatre projector. The projector delivers incredible details, vibrant colors and blur-free visuals, appealing to both home theatre and gaming enthusiasts.

UHD33 is a true blood 4K UHD projector. Incorporates 8-segment wheel to achieve vivid and stunning colour performance, also features colour calibration and adjusting technologies to present the truest and the most accurate hue scheme for authentic, and in-depth images for the finest movie watching and gaming experience.

The Optoma projector features 3,600 ANSI lumens of brightness and 1,000,000:1 contrast ratio, along with HDR10 and HLG (Hybrid-Log Gamma) compatibility. By leveraging its XPR technology & latest 4K UHD Texas Instruments DLP Chipset 7541, even in environments with high ambient light, it produces rich colours and visual effects.

An integrated Enhanced Gaming Mode, as well as an incredibly low input lag of 16.7ms to support next-gen consoles for 4K @60Hz immersive gaming, it ensures smooth and immersive gaming experiences. It has Ultra-low 4.2ms latency@1080P 240Hz for PC games giving Ultra-quick response times that are essential for gaming. UHD33 gives hardcore gamers an edge in visibility as frames transition happens instantly, providing crystal clear images during periods of rapid action. It is priced at Rs 1,99,000/-

Portronics BEEM 200 Plus- a Wi-Fi LED Projector



Portronics BEEM 200 Plus, the Wi-Fi LED projector comes with multiple connectivity options, with an in-built VGA Port, USB Port, HDMI, SD Card slot. It also allows device mirroring, from both Android and iOS devices directly to the projector.

The BEEM 200 Plus is compatible with Laptops, PCs, Phones, Tablets, Xbox, PS3/PS4, or USB Cables, and most importantly it has a Wi-Fi feature provides great wireless streaming and bingeing experience on OTT platforms, YouTube, and more.

The multimedia LED projector comes with a 30,000-hour Bulb life for endless hours of playing.

Portronics's wireless projector promises a bright, vivid, and HD video quality with 4W in-built speakers for fantastic sound and a theater-like experience. Its extra-large display ensures a premium viewing experience at home for complete entertainment with family and friends.

The 'BEEM 200 Plus' is available for just INR 19,999/- and currently at introductory discounted prices.

SMARTPHONE

Redmi Note 10 series and wearable portfolio



Redmi Note 10S comes with a quad camera setup that features a 64MP primary camera, 8MP Ultra-wide lens, 2MP Macro camera with 2x zoom capabilities and a 2MP depth sensor. With a 118° field of view, Redmi Note 10S allows users to capture group photographs and landscape shots with ease. The MIUI customisations on the camera app have been enhanced to suit new age social media creators, with features such as skyscaping, colour focus, pro colour and the all new pro time-lapse mode.

Like its siblings, Redmi Note 10S sports a 16.33 cm (6.43) Full HD+ Super AMOLED display. It comes with 1100 nits brightness and 360-degree Ambient Light Sensor that detects the ambient light more accurately to automatically adjust the brightness of the screen making for a comfortable viewing experience.

Redmi Note 10S is powered by a MediaTek Helios G95 chipset, ARM Cortex A55 and A76 clocked upto 2.05GHz paired with the GPU ARM Mali G76 clocked @900MHz giving users a powerful performance. With 6GB of LPDDR4X RAM, Redmi Note 10S is equipped with 64MP primary camera.

The new Redmi Note 10S is the first device in India to feature the latest MIUI 12.5 (Interim) update out-of-the-box. The phone sports a massive 5000mAh battery with 33W Fast charger in-the-box.

Redmi Note 10S is available at the price of INR 14,999 for the 6GB+64GB variant, INR 15,999 for 6GB+128GB.

Infinix HOT 10S smartphone



The new HOT 10S smartphone is a massive upgrade from its precursors in the HOT series, packed with an array of top-notch features, superior gaming technology, powerful processor, latest OS, massive battery and a super-sharp camera that will give an immersive, engaging and all-rounder smartphone experience to the consumers.

It is available at a competitive price of INR 9999 on 4GB RAM + 64GB variant, and INR 10999 on the 6GB RAM + 64GB.

Infinix's HOT series comes in an exciting Diamond Cut Flow pattern design on the back while the big screen ensures that the users get access to the most immersive mobile viewing experience. It stands out for its 6.82" HD+ Cinematic display a 90.6% screen-to-body ratio

and 20.5:9 aspect ratio. To compliment the big screen, the smartphone comes with a 90Hz refresh rate, which ensures super smooth interaction between the users' fingers and the screen whereas the 180Hz touch sampling rate allows faster screen response, especially for the pro gamers to perform better in gaming.

Infinix Hot 10S comes with the best processor Helio G85 Octa Core 64-bit processor, backed by the Mediatek HyperEngine technology for intelligent dynamic management of CPU, GPU and memory. In order to take the gaming performance to the next level, the smartphone is backed by the novel Dar-Link Game Boost technology. The technology enhances the gaming interaction and display experience in heavy Games like Call of Duty, Free Fire, PUBG, etc. by preventing screen tearing, ensuring natural colour reproduction, elevating the performance of the touch panel, and managing the resource allocation between the game and the chipset efficiently to prevent heating from long game play hours.

The all-new HOT 10S comes with a 48MP AI Triple rear camera with f/1.79 large aperture and quad LED flash, a 2MP depth sensor to capture perfect wide shots. On the front, the smartphone features an 8MP AI selfie camera with f/2.0 aperture and two LED flash installed on both of its sides. Both the cameras come with multiple modes like AI 3D Beauty, Panorama, Document mode, AR Shots, Short Video, Custom Bokeh and more. HOT 10S features a heavy-duty 6000mAh battery that keeps the smartphone operational even after long hours of heavy usage.

TECNO CAMON 17 Pro selfie smartphones



TECNO CAMON 17 Pro comes with 48 MP selfie camera that can capture the beautiful details in an elegant way with an added professional finish. The embedded artificial intelligence (AI) technology can elevate selfie through accurate algorithms which can identify features based on gender and also adjust the environment light to make the user front and centre of the shot.

The wide selection of user-friendly tools equipped at TECNO CAMON 17 Pro help users personalize the images they want to portray. Users can now conceal blemishes, hide dark circles, perfect body shape, and do a lot more to fine-tune beauty as they please.

The TECNO CAMON 17 Pro comes with trademarked TAIIVOS technology. TAIIVOS, which stands for TECNO AI Vision Optimization Solution provides users with an unprecedented visual experience, especially in low-light environments. TAIIVOS can filter image noise better and optimize image clarity, thereby enhancing night photography effects. The 6.8-inch 1080x2460 FHD display with 90 Hz refreshing rate offers it a smooth, snappy and refreshing experience. It contains the 8 core CPU with HyperEngine game optimization, making it TECNO's fastest chip yet. With an 5000mAh battery, the TECNO CAMON 17 Pro comes with fast charging so users do not have to wait.

Lava Z2 Max smartphone



Lava Z2 Max has been developed to support online education so that the students achieve their goals without any technological challenge. Equipped with a huge 7 Inch screen and a 6000 mAh battery, the largest in its price segment, the smartphone renders a bigger canvas to fulfil children's big dreams.

Lava Z2 Max has been launched at a price of Rs 7,799 and can currently be purchased from Lava's e-store, offline stores and e-commerce platforms like Flipkart & Amazon.

Other key specs of Lava Z2 Max include a 13+2 MP dual rear camera(s), an 8 MP selfie camera, Corning Gorilla Glass 3 display protection and a HD+ notch display. The phone runs on a MediaTek Helio processor and comes with a 2 GB DDR4X RAM and 32GB storage. The phone has inbuilt box speakers that render loud and clear audio.

GPU

COLORFUL iGame GeForce RTX 3060 bilibili E-sports Limited Edition Graphics Card



The new iGame GeForce RTX 3060 bilibili E-sports Limited Edition graphics card sporting a fresh and colorful look designed for gamers. The GPU uses an advanced cooling design with its dual 90mm axial fans on opposite sides. It has an all-alloy shroud design that gives it a premium look and added cooling.

The graphics card comes with RGB lighting on the shroud's surrounding edge to complete the gaming look. The RGB LEDs are fully customizable using the iGameCenter app. It is the first to

sport a magnetic backplate design. This allows builders and modders to personalize the backplate with ease.

The COLORFUL iGame GeForce RTX 3060 bilibili E-sports Limited Edition graphics card will be available in limited quantities for INR 62,000 MSRP.

LAPTOP

New line-up Gaming and Creator series of MSI Laptops

The complete line-up of gaming and creator laptops equipped with 11th Gen Intel® H series processors up to NVIDIA® GeForce RTX™ 3080 Laptop GPU which will enhance the overall performance with up to 30%. MSI delivers the high-speed combo of PCIe Gen4, Thunderbolt™ 4, and Wi-Fi 6E. For the gaming laptops, MSI introduces exclusive features like "Discrete Graphics Mode" to improve graphics performance and ultrafast panels with up to FHD 360Hz and QHD 240Hz refresh rate. The laptops will be available in India later this year.



Creator Z16

MSI Creator Z16 laptop is outlined with golden ratio and superb 16:10 display. Creator Z16 is designed based on the law of beauty, the golden ratio. The overall design of Creator Z16 is combined with a concise CNC-milled aluminum chassis & Lunar Gray outlook, the slim chassis, thick just under 16mm, which is a perfect combination of introverted texture, modernity, and practicality.

The display also echoes the golden ratio with a 16:10 screen for extra 11% more viewing space and QHD+ resolution. The Creator Z16 brings MSI True Pixel technology, which produces the most accurate-possible colors and each panel of is hardware calibrated in the factory to ensure it meets 100% DCI-P3 color gamut.

The Creator Z16 sports the latest 11th gen Intel processor and NVIDIA GeForce RTX 3060 Laptop GPU. Together with MSI's exclusive Cooler Boost Trinity+ cooling solution, the Creator Z16 renders 3D animation 40% faster than what the previous gen product does. Users can also enjoy high mobility and connections. Wi-Fi 6E is three times faster than Wi-Fi 5, unleashing the power of high



speed internet.

The Creator 17, geared with a premium Mini LED display, is the thinnest and most powerful laptop in its class. For creators who are looking for monstrous power and a bigger screen for 4K editing, the creator 17 is a great choice.

The Creator M16 comes with a 16-inch, 500 nits display, which is 66% brighter than most other laptops. It also has an ideal 16:10 aspect ratio, giving a wider viewing area.

MSI worked with Tsuyoshi Nagano, a highly-praised visual artist who is famous for his awesome artworks for the epic tactical RPG "Romance of the Three Kingdoms" and "Nobunaga's Ambition". The body design of Katana GF76 and GF66 was inspired by the craftsmanship of the artisans. It combines the concept of both blade and armour, allowing users to game like a real samurai.

Additionally, the Gaming-Red backlit keyboard represents gamers' pursuit of power. To deliver even more immersive experience, MSI also created the MSI Sword 17 and Sword 15 in a brand new Clear-White color is the symbols of refined masterpiece, which aims to sharpen users' gaming experience and with a well-calibrated Tech-Blue backlit keyboard, enabling gamers to choose according to their unique styles.

With laser patterns and sturdy titanium grey body, the Pulse GL is an epitome of technology and strength. MSI boosted the performance of popular GF series to a never-before-seen level by featuring the latest 11th Gen Intel H series CPU, went from a 6-core CPU all the way up to 8 cores and NVIDIA® GeForce RTX™ 30 series GPU, generating up to 60% improved CPU performance. The new Katana GF also provides 25% more FPS, making it an advanced solution for every-day gaming.

The GE76 Raider in particular can take full advantage of the latest processor and GeForce RTX 3080 Laptop GPU with up to a 165W TGP, which is the highest in its tier.

Not only the hardware, some exclusive optimization also been introduced in the event. User experience is all that matters to MSI, it has integrated all the advantages of software to a brand new AI-powered new MSI Center. MSI Center can intelligently configure settings according to the user's preference, which will ensure that the system is running under the optimized performance.

Moreover for audio experience! MSI's audio system has reached an all-time high. Driven by intelligent AI acoustic algorithms, the MSI exclusive "Speaker Tuning Engine" is the smartest engine that monitors the audio in real-time! It eliminates distortions and vibrations while maintaining the audio quality.



HP's Powerful Gaming Portfolio



The HP OMEN 16, the latest additions to the OMEN ecosystem focus on delivering new experiences that push beyond the expected to keep gamers connected and entertained, and excited for what is next.

Experience stunning graphics to bring the latest games to life with up to an NVIDIA GeForce RTX 3070 Laptop GPU 8 GB or AMD RDNA 2 architecture-based graphics. Crush content with up to Intel Core i7-11800H series processors 5900HX Mobile Processors. Quickly use multiple apps with

or 8-core AMD Ryzen 9 up to 32GB DDR4 3200 MHz and games get ultra-fast access to critical files with up to 1TB PCIe Gen 4x4 SSD or up to two 1TB PCIe SSDs supporting Raid 0.

HP's innovations in internal design continue to push the boundaries of what is possible with blades that are 2.5 times as thin and have over a 200% increase in blade count compared to the OMEN 15. It comes with 83Whr for up to 9 hours of battery life.

OMEN 17 arrives in its most advanced form yet, cruise through the latest AAA hits with up to an NVIDIA GeForce RTX 3080 Laptop GPU 16 GB with a TGP maximum up to 165W and up to Intel Core i9-11900H processor. Multitask between games, browsers, or apps like a pro with up to 32GB DDR4 3200 MHz memory and play faster and harder with up to 1TB PCIe Gen 4x4 SSD or up to two 1TB PCIe SSD supporting Raid 0.

Experience cooler and more comfortable play when questing through the latest games thanks to the addition of 24 more blades that are 17% thinner along with a 14% larger outlet open ratio, which contributes to a -5 °C reduction in temperature on the keyboard surface deck compared to the previous generation and keeps those gamer palms feeling cozy.

OMEN Laptops features fast paced gameplay flows brilliantly across the up to QHD 165Hz IPS panel with 3ms response time and 100% sRGB. For the first time on OMEN Laptops, experience color accurate low blue light with Eyesafe display certification by TÜVRheinlan to keep eyes fresh during extended gaming sessions.



Efficient cooling is made simple with OMEN Tempest Cooling Technology with Dynamic Power, OMEN Gaming Hub's Performance Control, and Undervolting managing the internals removes guesswork for efficiently running resource heavy titles.

Expansion is quick and simple with single-panel access to the SSD and RAM by way of Phillips-head screws at the base of both laptops to make hardware swaps a

breeze. Online gaming does not miss a beat with Wi-Fi 6E and a built-in 1x Thunderbolt 4 port provides one universal port for hassle-free connectivity.

Optional Intel Optane memory H20 with solid state storage offers a personalized computing experience with a new level of performance and large storage capacity options for gamers²².

The Victus by HP 16 comes with a distinctive lifestyle design featuring three striking color options in mica silver, performance blue, and ceramic white, all with a standard backlit keyboard printed with the memorable font found on OMEN devices.

The 16-inch display features options up to QHD 165 Hz and Eyesafe low-blue light and fits snug atop a design that boasts a nearly 15-inch footprint for practical everyday portability. Pixels have never moved faster with graphics powered by up to an NVIDIA GeForce RTX 3060 Laptop GPU 6 GB and AMD Radeon RX 5500M. Lightning-fast speed and responsive gameplay with options up to Intel Core i7-11800H series processors or 8-core AMD Ryzen 7 5800H Mobile Processors along with up to 32 GB DDR4 3200 MHz memory.

OMEN 25i Gaming Monitor makes waves as the first ever OMEN gaming monitor to feature HP Eye Ease with Eyesafe certification to reduce eye strain while playing. This hardware enabled low-blue light solution is built right into the display. There is no need to adjust settings or fret about a compromised color experience



thanks to a 30% reduction of excessive blue light compared with a standard LCD display. This monitor is designed with a host of innovative features including:

Crisp action explodes off the screen at 165 Hz refresh rate and 1ms response time with overdrive while AMD FreeSync Premium Pro technology and NVIDIA G-SYNC Compatibility yield low latency with wide adaptive refresh rate ranges without screen tearing regardless of your GPU. Witness a more lifelike, vibrant, and colorful experience than ever before thanks to IPS panel technology with VESA DisplayHDR 400, DCI-P3 90%, 400 nits brightness, and true 8-bit color.

The VAIO SE14 and SX14



The new VAIO SE14 starts at MRP Rs 88,990. The new model focuses on new SuperFin technology, new core and graphics and new platform integration. With additional advantages such as airflow enhancement and better power-saving features, it comes with intel 11th Gen processor and TPM (Trusted Platform Module) 2.0, BIOS Security, Chassis Lock Slot, Multiple I/O ports and multi-screen output.

With Metal+plastic chassis and upto 12 hours battery life, the new SE14 has technologically powerful and futuristic design, Intel Tiger Lake CPU with Iris Xe Integrated GPUs, Thunderbolt 4 with light gaming support, single/Multiple Conference Mode and 1080P IR Front Web Camera.

Price starting with MRP 1,72,990, the new VAIO SX14 is designed to meet today's mobile computing needs. The newly launched tech-beast caters to the learning needs and privacy concerns of the customers by offering fingerprint and face recognition with an instant login facility.

The new VAIO SX14 laptop comes with an Intel Core i7 Processor, 14-inch screen and 4K Ultra HD Display and crystal-clear sound with the Dolby Audio speakers. A USB Type-C/Thunderbolt port, 3 USB ports, an HDMI port, a VGA connector and a LAN connection; it's easy-to-collaborated and

increased battery life helps customers to stay connected for hours. It reduces the high frequency of typing noise as it has a fine-tuned keycap tooling and also comes up with a storage capacity up to 1TB.

AVITA Cosmos 2-in-1 Series



AVITA flaunts the all-new 2-in-1 series in charcoal grey, with a line-up of 11.6 1920x1080 FHD IPS touch screen that offers ultra-wide viewing angle. With a detachable keyboard, the COSMOS 11.6 2-in-1 transforms from a tablet into a laptop by simply opening the built-in stand, enabling users to stay productive with ease anytime, anywhere. The newest entrant laptop is priced at MRP 17,990.

The new-gen AVITA cosmos redefines fashionable laptops by equipping Windows 10 home with a 10 point touch panel, 2 year warranty, 178 degree wide viewing angle, 2MP front and rear camera, 3.5mm audio jack, mini HDMI port, microSD card slot, Bluetooth 4.0 that is particularly useful in handling complicated operations and visual content.



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