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VOL. 33 | ISSUE 2 | FEBRUARY 2020

TECH TALK

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All Tech Superpowers**

— Chris Wolf
VP & CTO, Global
Field & Industry,
VMware



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PRESENTS

Accelerating IT Growth with Emerging Technology

Upcoming Markets & New IT Solutions That will Transform Business Leaders' Fortunes

28th Feb 2020 | 5.00 pm | Juniper Hall, India Habitat Centre, Lodhi Road, New Delhi

With the Smart Techs of IoT, AI/ML, AR/VR etc becoming more and more important for IT products, platforms and solutions, there is a need for the entire partner community in the IT world and also the CXOs to understand what new products, platforms and solutions are available now, giving rise to new markets and how to make the best use of this opportunity by understanding these new markets and opportunities ahead of the time in near future when they begin to dominate the entire IT world and will also be used in other sectors such as buildings, smart cities, creative fields such as design and so on. This conference is an attempt to thrash out these opportunities with the channel ecosystem, CXOs and senior market leaders.

Session Theme 1 – On Cloud/Cognitive

Session Theme 2 – On Data storage, migration, analytics, management, security, policy

Session Theme 3 – Hardware, software, solutions and services

Session Theme 4 – System Integration, integrating platforms, IoT/AI-ML/AR-VR enabled products

Target Audience

- ✓ Systems Integrators, Channels Partners and IT industry's decision makers

Proposed Composition of the Audience

- Systems Integrators, Software, Cloud Service Providers, Network Infrastructure, Server Storage service and Solution Providers
- Channel Partners for Hardware, Software and solutions
- Technology Decision Makers, Influencers from Enterprises and SMBs, Commercial Organisations

Profiles of Invited Speakers from IT industry and other sectors

- IT Decision Makers
- Marketing Directors
- Channel Heads
- Major System Integrators
- Data Analytics experts

Inaugural Session - Cybermedia speakers

- Pradeep Gupta, CMD, Cybermedia
- Ibrahim Ahmad, Group Editor, Cybermedia
- Thomas George, Managing Editor, Cybermedia
- Archana Verma, Editor, DQ Channels

Agenda

- 05.00 pm – 05.30 pm – Registration
- 05.30 pm – 06.30 pm – Inaugural Session
- 06.30 pm – 06.45 pm – Keynote Address
- 06.45 pm – 07.00 pm – Networking Teabreak
- 07.00 pm – 08.30 pm – Presentations in Sessions by Sponsoring guests
- 08.30 pm – 09.00 pm – Vote of Thanks
- 09.00 pm – 10.00 pm – Networking Dinner + Cocktail

Total duration – from 05.00 pm to 10.00 pm

We have slots available for Keynote address, speakers and presenters. We offer very good branding packages to our speakers

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Tech will save Earth, not activism

NASA came out with a concept to make food out of thin air called Solein. The process captures CO₂ from the atmosphere and converts it into protein. Finnish company Solar Foods wants to put that on your plate in some form. Elsewhere scientists are working on an “artificial photosynthesis” to convert CO₂ into methane, a component of natural gas. There are companies making giant scrubbers to suck CO₂ out of the air and convert it into an artificial hydrocarbon fuel. China has come out with giant anti-smog and air purifying towers to tackle air pollution. Delhi recently got a smaller version of that at Lajpat Nagar.

Something that could replace fossil fuels is nuclear energy. Unlike many other proposed and hypothetical alternatives, nuclear is actually already here and in abundance. Of course for some curious reason, environmentalists hate the N-word. Generally people are also apprehensive about it thanks to big disasters like Three Mile Island (1979), Chernobyl (1986) and Fukushima (2011).

But even nuclear technology has moved forward. Currently scientists are proposing the use of Generation IV nuclear reactors that are safer and more efficient despite being cheaper. In fact there is one model that consumes nuclear waste, making it a closed cycle and hence can be classified as renewable energy. One of the backers of this tech is Silicon Valley billionaire Bill Gates, who launched TerraPower for just that way back in 2006.

Talking about drinking water shortage, we now have the technology to suck the humidity out of the air and convert it into water on a large scale. We had even featured a Wienerberger plant in our last issue where waste can be used to make lightweight and more efficient bricks which can be joined together with Dryfix. This can do away with cement altogether. In the Delhi pollution problem, construction dust plays a huge role.

We can totally change the way we plan and build cities to drastically bring down pollution. Smart cities and IoT (Internet of Things) devices will go a long way in monitoring all our processes and making them more efficient and streamlined in every way. Many public utilities are already benefiting from this. If 5G comes, then that can also revolutionize smart buildings. The possibilities are endless.

Changing your DP-status and taking to the streets to talk about issues which are known by all is counter-productive. Who doesn't know that pollution is bad? Who doesn't know that deforestation is bad? We all know it, but it is only the scientists who will bring about a lasting change. Technology, not environmental activism, will save the planet.

Sunil Rajguru

10 COMPONENTS OF THE FUTURE

It's quite difficult to predict the future of urban mobility, both in India and across the world. Technology will play a large part in how the entire transportation industry plays out on land, water and air in the upcoming decades. A look at some of the factors that could decide how you commute in the future...

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1. Smart vehicles: Electric vehicles are not the future. Smart vehicles are. The first person to realize this was billionaire genius Elon Musk. Tesla smart cars are expensive, but state of the art, sleek and sexy. If it was affordable, then everyone would buy a Tesla. A smart car is much like your smartphone using software with all its revolutionary over-the-air updates. That means even after you buy a car, it can keep learning

new tricks. Bugs are also fixed seamlessly. Apart from the now ubiquitous GPS navigation, there are also umpteen sensors and an autopilot functionality which is not exactly the same thing as a driverless car. Of course if petrol and diesel cars get smarter, they could also survive. While they may have limitations as compared to an electric car, a hydrogen car might prove to be better. Countries are trying to legislate out fossil fuel cars, but history has shown that such things aren't easy. Especially because of the gigantic fossil fuel deposits that are still in existence. In the end it won't be environmentalism or legislation that will dictate the future of urban mobility, but technology. The next big disruptor could well throw everyone's plans out of the window.

2. Mobile rooms: The moment a car becomes driverless, it ceases to have the driver's seat. In fact it ceases to need kind any kind of seat and conventional travel as we know it is thrown out of the car window.



The driverless car then becomes a mobile room that can be used for business, tourism, hospitality and unending long drives. If we do make legislation and technological breakthroughs, then urban mobility would be totally disrupted. You could have large mobile tourist rooms equipped with Virtual Reality-Augmented Reality-Mixed Reality (VR-AR-MR) that would give you a flavour of the history of the place you are passing through and visiting. Business conference rooms on the go could be popular. Like the way India has sleeper buses, you could have a multitude of smart sleeper cars. We would have a huge grid of nationwide smart cars, but could you extend that to a grid of pilotless planes? While the Boeing 737 MAX debacle is on everyone's minds, we will one day get past that. There is also the science of the ethics of a driverless car: Should an autonomous car save an old lady or a pram with a baby if it has to choose one? That's where Artificial Intelligence-Machine Learning will be tested to the limit. The car will become a thinking robot.



3. Smart batteries: Without this, the electric car has no future. Another thing realized by Musk and that's where Tesla took the lead. The Tesla Model S Long Range can go upto 600km on a single charge. The lifetime of the battery is 1.6 million km, meaning it can last your lifetime too. Many other electric cars from other companies have also reached the range of a few hundred kilometres. Musk has changed the whole concept of batteries thanks to SolarCity. Tesla is associated with Australia's Hornsdale Power Reserve,

which housed the world's largest lithium-ion battery and they are increasing capacity by another 50%. Smarter batteries are not only game changers for cars, but can be for homes and establishments and maybe even the entire energy industry. Panasonic, Amperex and BYD are some of the other large EV battery manufacturers in the world. The 2019 Nobel Prize for Chemistry went to the scientists who developed lithium ion batteries. Batteries are getting smaller, lasting longer and taking lesser time to charge. Sodium, Fluoride, Magnesium... everyone is looking for the next lithium killer.



4. Charging stations: This is a place where India could seriously lag. Post-2014, we are barely catching up with roads, power-LPG connections and toilets. So to have a nationwide electric charging grid will be a truly Herculean task. That's another reason why 5G in India has been indefinitely delayed due to intense capital expenditure. We may have 5G corridors, but their reach may be limited to urban centres. However we should definitely have large pilot solar powered charging stations in sunny states like Rajasthan. India is planning to go electric in a big way by 2030. But all those grand plans will fall flat if we don't have

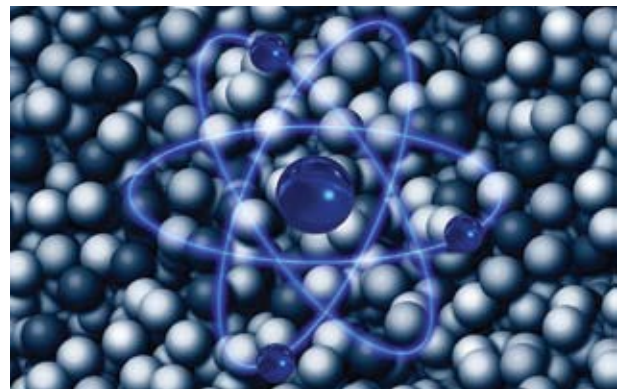
a nationwide charging station grid. That's another area where Musk has succeeded. Tesla has charging stations in multiple countries. As of last year, there were around 15,000 Tesla Supercharger stalls in more than 1500 locations worldwide. However Netherlands capital Amsterdam takes the cake with its thousands. It has the highest density of charging stations in the world for any city.



5. Mobile Apps: In the 2010s, ride sharing with Uber and Ola simply took off. GPS navigation and mobile apps meant that every car in the world could become a taxi and anyone who had a driving license could become a professional driver. You didn't have to leave the comfort of your home to hail a cab. SUVs and autos jumped on the bandwagon. While people had been discussing carpooling for ages, Uber Share just made things that much easier. Of course carpooling apps also came like BlaBlaCar, which made its foray into India. Then there's "Rent A Bike Bounce" and Rapido, where every bike becomes a taxi, Yulu electric bike etc. Many of these are powered by IoTs (Internet of Things) (even the helmet!). There are startups which want to make even things like skateboarding a popular form of urban transit. Lyft tied up with Segway-Ninebot for electric scooters. The types of vehicles that can be used for urban transit is endless. Thanks to GPS, IoT and mobile apps, the types of networks that can be created around them are also endless.



6. Up in the air: Thanks to the likes of Flipkart-Amazon and Swiggy-Zomato, the numbers of delivery boys has simply skyrocketed in India. That has proved to be a real game changer. But is another disrupter on the way? Could drones replace the delivery boys in the future? Amazon Prime Air launched a few years back and they want their drones to deliver packages to customers within a 10-mile radius within half-an-hour. Interestingly driverless cars also fall within this Amazon delivery division. Delivery drones are already transporting medicines and food all over the world and once even delivered a live kidney for a successful transplant. Boeing has tested a cargo drone with a payload of more than 200kgs. Many companies are exploring this option. Talking of the air, we have Uber Helicopter and that's another form of transport that could get popular. There are car-planes that have been prototyped and are readying for mass production. In the Hollywood film *Back to the Future*, one saw the sky full of people driving flying cars. Maybe it will be more like a sky full of driverless drones, copters, planes and cars all zipping across furiously avoiding each other thanks to high-tech sensors.



7. Gen IV N-plants: If you take all energy requirements by mankind, then by one estimate, fossil fuels are a whopping 85% of the pie. Out of the remaining, renewables like solar, wind and tidal are quite miniscule. We are reaching our limit with things like hydroelectric power. Hydrogen fuel in many cases is still compressed and transported using fossil fuels. In fact the first Hydrogen cells had a high carbon imprint during the manufacturing process in the first place. While alternatives may come in the future, right now nuclear is the only option we have. The old nuclear plants were inefficient and had disasters like Chernobyl. The latest ones called Gen IV are safer and more efficient despite being cheaper. Bill Gates is

one of their advocates. Right now the transportation industry is controlled by the fossil fuel network. While you can have solar charging stations in sunny regions, a replacement may come only in the combination of hydrogen and electric vehicles with small compact Gen IV nuclear plants powering charging stations in non-sunny regions.



8. Newer forms of transport: The better the public transport, the lesser there is a need for private transport. That's been a battle largely won by the personal car as this is still the most popular form of transport if a person can afford it. While trains, buses and planes have been around for ages, metros are really taking off, off late. In fact by last accounts India has about a dozen metros with another dozen in the construction/planning stage with more proposed. But maybe we'll need some new form of technology for public transport to totally break ahead of private. Things like maglev trains are path breaking but highly expensive. Something that could really catch on is Hyperloop. Musk's The Boring Company is building one under 200-acre Las Vegas Convention Centre. When completed, visitors will be able to travel at 250kmh: A 15-minute walk would end up taking about just a minute. There are other proposals like elevated cycle paths, urban transport pods and long moving walkways across cities.



9. Communication versus transportation: It was sci-fi writer Arthur C Clarke who said that the better personal communication got, the lesser there was a need for personal transportation. Taking it to its

logical end, if personal communication reaches perfection, then there's no need for transportation. We are reaching a stage where holographic 3D conferencing could be quite realistic and effective. Coupled with real-time collaborating tools which facilitate the instantaneous exchange of documents, files and videos, in the long run this could greatly reduce business travel. As VR-AR-MR gets more realistic and widespread, people could enjoy exotic locales and tourist spots from the comfort of their homes. You could also use that to complete your education without going to school or college. In sports, more fans watch key matches in large screens rather than actual stadiums. Transportation for both business and pleasure could come down with the advance of technology.



10. Population versus automation: For most of the civilized world, population has been growing and the transportation industry desperately trying to keep up the pace. World population growth peaked in the late 1960s and hovered at around 2%. Since then it is steadily declining and is around 1% today. It may well become half of even that in 20-30 years. At the same time automation is on the rise. Robotic Process Automation (RPA) can handle a lot of repetitive tasks that humans do while actual robots physical robots are replacing manpower. How will a world of declining humans and growing robots look like? Will transportation decrease or increase? EM Forster's short story "The Machine Stops", written way back in 1909, talks of an "omnipotent global machine" which takes care of all of mankind's "bodily and spiritual needs". People largely message each other all the time. Sounds familiar? Since communication is perfect, transportation nears zero and many people live permanently below the ground in a standardized room in the short story. Possible? Make a prediction about the future of the global transportation industry only at your own peril!

WILL RELIANCE JIO CREATE ANOTHER DISRUPTION—IN CONNECTED CARS?

But is the traditional car industry ready for such a change? There's talk of cars switching from fossil fuels to electric models quickly on a large scale. There's the question of cars becoming smarter and embracing technologies like 5G

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Connected vehicles can communicate with systems in both directions: They can send and receive data across networks. This will be great news from the point of view of traffic management, security, safety, remote diagnostics, over the air (OTA) updates and insurance. Key components of connected vehicles are the Internet of Things and 5G. In fact one Gartner report says that the market share of 5G-connected cars could well touch 94% in 2028. This brings us to Reliance Industries, which could be India's major 5G player by then.

Path-breaker Reliance Jio is unveiling its connected vehicle ecosystem at AutoExpo 2020. Reports say that Jio is working on Artificial Intelligence, telematics and scalable IoT solutions and in talks with fleet management companies and vehicle manufacturers. Its vehicle tracking IoT-based device include real-time tracking alerts, transmission of data to government servers along with route and driver management. Currently it offers a 4G LTE eSIM IoT module. The dashcam information can be recorded and the data analysed accordingly.

The Tata Group is launching its own ecosystem of electric vehicles, which will include charging stations and batteries along with a battery recycling plant. They will present a mobile app to check the availability of chargers. It's much easier to make EVs smart, as Tesla has shown. It will be interesting to see what Tesla does to the Indian car market if and when it makes an entry here. Tesla chief Elon Musk had said some time back that he could not import cars into India due to high duties. It will be a game changer even if Tesla opens manufacturing units here.

The AutoExpo also saw the launch of other electric and concept vehicles. MG Motors unveiled the Marvel X connected SUV with integrated Internet capabilities. Mahindra & Mahindra launched its electric car, the eKUV. An ABI Research report said that the world could add 10 million connected cars in the year 2020 itself. India has a very small part of that pie, but that could change in the years to come.

But is the industry ready for disruption?

But a question to be asked is whether the traditional car industry is ready for such a change. There haven't been that many earth shattering changes since Ford presented their assembly line model. Now there is talk of cars switching from fossil fuels to electric models quickly on a large scale. Then there's the question of cars becoming smarter and also embracing technologies like 5G fully when it's implemented.

An ABI Research report said that the world could add as many as 10 million connected cars in the year 2020 itself. India has a very small slice of that pie, but that probably could change in the years to come

Will there be an enmeshing of both urban mobility and telecom mobility? Will the likes of AirTel also be forced get into tie-ups or will Jio achieve a monopoly in the telecom/urban mobility space by the end of the decade? Reliance could have a slice in almost every pie and achieve total domination.

Of course, then what of Maruti Suzuki, which has a stranglehold over the car-dealer-servicing market in India. If they decide to enter the connected vehicle market in a big way, could they dominate if they chose a totally different telecom provider apart from Jio and AirTel? They have already launched their Suzuki Connect. The connected cars market will also be influenced by the American players, especially like Tesla as mentioned before.

Then there's also the China angle. When it comes to telecom mobility and things like 5G, China is proving to be a clear market leader. China is looking to be a leader at everything and by and large has succeeded, but it's one failing has been the auto industry where after US and Europe, even Japan and South Korea made a headway. If the car on its own has not meant global domination for China, will it be the combo of connected car + IoT + 5G? The mega project Tesla Giga Shanghai will produce Tesla Models 3 & Y along with their battery cells. This is bound to give a fillip to Chinese smart auto makers.

So can China dominate the Indian market too? Well, the cloud and IoT power the connected vehicles market, so don't discount the role the IT industry will play, where America still dominates. It is quite difficult to predict which combination of diverse players and which combination of technologies will dominate the auto industry market by the end of the decade both in India and across the world. But a disruption seems to be in the offing whether the car players are ready or not.

DATA AND CONNECTIVITY TAKE THE WHEEL

Intelligent Mobility looks beyond the traditional approaches to solve the growing transportation challenges in today's world and uses the power of data and technology to create smart, efficient, personalized mobility solutions and services

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Indian cities are facing a dire challenge in terms of mobility. On top of that comes this dawning realisation that oil and gas that powers our mobility needs may not be there forever. The magnitude and complexity of this challenge demand thoughtful innovation and sustainable solutions.

Data, certainly hold the key to deal with a bunch of mobility challenges that the cities and individuals face today, and can also help solution providers

unlock more value from the mobility assets. The future of mobility belongs to the providers of intelligent mobility solutions.

"At Ather, we are not just building electric vehicles, we are building intelligent vehicles," says Swapnil Jain, Co-founder and CTO of Bengaluru-based EV startup, Ather Energy. He tells us about how intelligence and connectivity can open the door to endless possibilities for the OEMs and the solution providers

in the mobility sector.

"In this new era of mobility, we are seeing automotive industry is gravitating from mechanical/electrical to software. We have been able to create a differentiation in the market by native software integration, which has also helped us to create unique experience and capability for both consumers and businesses," said he.

He takes us through some of the possibilities that can be powered by Intelligent Mobility.

Transformational possibilities of Intelligent Mobility

Intelligence and connectivity can power us with the unique capability to transform the product development cycle, enhance product features and vehicle ownership experience, and most importantly, create profitable business models.

The data from the vehicles can help in rapid product development, optimize costs and also brings improved performance, and reliability.

We can bring data-driven features, personalization, navigation, on-board diagnostics, OTA (over-the-air) update, etc.

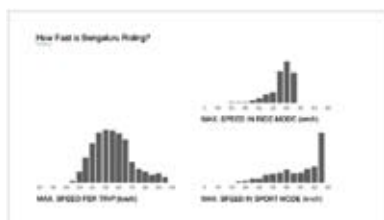
The data around driving behavior can help in enhancing ownership experience by bringing in ease of charging, predictive maintenance, 24x7 roadside assistance, remote diagnostics, warranty, etc.

We can also create monetization opportunities and create various revenue model around subscription, share, lease, etc.

The data on vehicle usage also helps out in estimating the End-of-Life or determining the resale value of the product.

Ather takes the game forward

Real-time Data



Every critical component of the vehicle is constantly connected and monitored. The data collected from various sensors on

the vehicle goes to the cloud to provide us with real-time information on vehicle usage, riding pattern, etc. These data have helped us in enhancing our product, creating value-added services for consumers, etc.

Smart Dashboard

An intelligent and intuitive dashboard can automatically detect the riding stage and dynamically



SWAPNIL JAIN, Co-founder and CTO, Ather Energy



shuffle between navigation and other functions with ease. You can store and view the important documents such as

driving license, vehicle registration, insurance also on the screen.

Navigation



We built our own navigation on top of basic Google Maps and the commute easier for the user. The real-time traffic data help the user plan

the alternative routing and can help you locate the nearby charging points.

OTA upgrades



All the control units on our vehicles can be upgraded via an OTA update. We can add new features, fix bugs, run remote diagnostics, and

enhance user experience.

SOLVING INDIA'S CONNECTED VEHICLE CONUNDRUM

Manish Patel, Chief Information Officer, MG Motor India speaks on the potential benefits that connected vehicles can offer in Indian context and the current roadblocks faced by the automotive OEMs in unleashing the full potential of it

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Connected vehicle technologies have a lot to offer to Indian consumers not only in the form of luxury and comfort but in terms of enhanced safety features as well. Some automakers have already launched their connected vehicles in India. But there are some innate challenges with India such as bandwidth and the regulatory bottlenecks in India, which need to be addressed quickly, to realize the benefits offered by these technologies fully.

What are some of the innate challenges that the automotive OEMs come across in terms of connected vehicles?

There are some core challenges that an OEM would have in India when they launch a connected vehicle. What works outside India does not necessarily work in India, and predominantly so from the network perspective. The reason being our networks are different. For example, in India, we have 2G, 3G, and 4G networks, and that doesn't contribute to the connectivity outside of India.

Roaming profiles also make quite a bit of a difference

in how the vehicle latches on to the networks outside the home network. Switching Mobile Network Operator (MNO) is cost-prohibitive in the absence of profile changing option over-the-air. If we had the profile change over the air, then the differential cost could have been absorbed by the OEMs.

There's a challenge in the application layer also. Most of the apps which are being deployed by the OEMs run smoothly on 4G networks. The moment you step away from 4G or even within 4G, due to a change in the throughput the apps just might lag.

With the advent of 5G, most of the work will be done at the application layer. Outside India, all of these are left to the application layer, which means the OEM and the partners take care of all the regulatory needs at hardware or software level, and MNOs are responsible for providing just the pipeline. That's not the case in India, but it needs to be changed when we have 5G. Another concern is how voice and SMS are going to be treated in the upcoming 5G era?

We are the fifth-largest auto market in the world, and vehicle connectivity is going to be a standard functionality

being provided by every OEM soon. The MNOs will have to give a thought to it, and TRAI and DoTs need to have a clear guideline; because it's not just about vehicle connectivity, tomorrow it could also be for healthcare, manufacturing, agriculture and so on. The government and the MNOs also need to work together to ensure that the connectivity on the periphery and within the country is flawless.

We also have been working with our ecosystem partners starting from the hardware supplier to the software provider, from the application partner to the connectivity provider to address some of these challenges.

Connected vehicles mean a lot of things from vehicle management to driver assistance, and even infotainment, and commerce. How do they play out in the Indian context?

Infotainment has always been a given in the cars in the form of either in-car audio. But car infotainment is being driven on to the touch screens today. We provide a 10.4-inch HD touchscreen display for the infotainment system in the MG Hector. The idea is to give a user as many functionalities that he gets on a mobile phone, so he doesn't need to necessarily rely on his mobile phone when he sits in the vehicle.

OEMs also tend to be a bit more careful in providing apps. If I give the users apps but I cannot be assured of the throughput of the bandwidth and network performance, then no matter what I will always have a peeved user saying hey, what good are your apps when I can't run them anyway? So we as OEM tend to be a bit more careful when we are designing apps and optimizing them for the scenario where 4G is not available or even throughput within 4G drops, they continue to perform still.

Data on driving habits, fuel consumption, vehicle servicing, etc. can also help insurance companies in designing a customised motor insurance policy with unique premiums. When data is not available to the insurance companies, they are just revising the insurance based on the claims that you make. Automotive OEMs would have loved them to be a part of their ecosystem, but the insurance companies need to step forward and say that they are willing to do this. Unfortunately, the insurance companies in India are not yet ready for this. But at some point in time, they probably will.

Data related to vehicle parts can also help in predictive maintenance and identifying quality issues. OEMs can also determine the nature of the problem and also whether it is a problem with one vehicle or a thousand other vehicles also. It's something that helps OEMs engineering team to run diagnostics on that specific part to identify the nature of the issue and the solution to fix the issue.

There are some other value-added services through our



MANISH PATEL, Chief Information Officer, MG Motor India

call centres. For instance, we provide a concierge service. There is a dedicated button on the screen for this. The moment a user presses that button, a call comes into our call centre. We can help you find the nearest gas station, restaurants and push that information in the navigation. We can also chalk up a travel plan for the user on a specific route. If a user needs help with a flat tyre, we can coordinate that with a dealership to come and help in sorting out the issue. A bunch of emergency services can also be provided similarly to the users if needed.

Could you tell us about some of the enhanced safety elements brought in by the connected vehicles?

There are ways and means to capture information related to vehicle crashes or accidents. But, they haven't come as a standard fitment in the vehicles yet. At MG Motor, we provide an emergency service to the users. For instance, the moment our vehicles meet with an accident and the airbags in the vehicle get deflated, a simple algorithm triggers an SMS to our call centre from the embedded M2M SIM in the vehicle. The call centre immediately calls the customer to check on him to determine how critical an accident is. Does he need a paramedic service? Does he need roadside assistance? We also know the vehicle identification number (VIN) and the exact location of the vehicle. From there, we know what I need to push to the customer because that is a service that has been requested by the customer. If the damage to the vehicle is such that we can't make a call to the vehicle, then we call the user on his mobile phone. Let's assume that the mobile phone also is damaged. The next thing we attempt to do is to call and inform his nearest kin about the alert we received. These are some emergency scenarios, where we are currently engaged with our users.

FUTURE OF THE INDIAN ELECTRIC VEHICLE INDUSTRY

Many of the biggest automobile players have launched EVs—both four and two-wheelers. Now, there is an urgent need to build viable infrastructure support for EVs like fast chargers, e-highways and overhead electricity networks for trucks and buses

Nimish Trivedi



“Air pollution is the new tobacco.”

– Dr Tedros Adhanom Ghebreyesus, Director-General, World Health Organization (WHO), 2017.

Now in 2020, not only is the above statement the

new world reality, but India is particularly affected by it. As per a recent Greenpeace air quality report, 231 out of 287 Indian cities are severely polluted, with PM10 levels exceeding the limits set under the National Ambient Air Quality Standards (NAAQS).

While multiple factors contribute to the rising air pollution, a significant one is the amount of vehicular/carbon emissions that get released daily in the atmosphere. We are the third largest carbon-emitting country, accounting for 7 per cent of global carbon emissions. Suffice to say, we might be the fastest growing economy in the world, but it comes at a cost of severe climate change.

The Indian Government is cognizant of this fact and has announced the ambition to reduce the emission intensity of India's GDP by 33-35 percent by 2030. Electric Vehicles (EVs) will be playing a major role to transform the said goal to reality. NITI Aayog has already recommended the sale of only electric vehicles by the year 2030. In addition, adoption of EVs will not only reduce air but noise pollution as well. The future will definitely hold quieter roads!

In the light of these developments, here are certain advances that we envisage for the future of EVs in India...

Changed Infrastructure will support seamless EV mobility: There is an urgent need to build viable infrastructure support for EVs, similar to what exists for traditional vehicles today. In the future, there needs to be charging stations at all key areas in respective cities, akin to the petrol and diesel stations of today.

Combined with fast chargers, e-highways, overhead electricity networks for trucks and buses, personal stations and vehicles for daily commute and technological support, we remain hopeful that EVs will be as widespread as petrol and diesel vehicles. This will be instrumental in gradually phasing out the sale of diesel and petrol vehicles by 2030, one of the significant sources of air pollution present today.

In future, Indians will prefer EVs over traditional vehicles: As per industry, the Indian electric bus market is poised to produce more than 7000 units in the next 5 years. Under FAME – II, the Government has also started inviting state proposal around relocation of central subsidies towards EV buses. In addition, startups like Prakriti have launched all EV cab services, along with developing its own charging infrastructure to further provide clean and sustainable transport alternatives.

On the personal vehicle front, many of the biggest automobile players have launched EVs – both four and two-wheelers, which are expected to further increase. By 2030, the Indian public/private transportation system, along with cab services, is most likely to be fully electric.

India to become an EV production and



NIMISH TRIVEDI, Co-Founder and CEO,
Prakriti E-Mobility

manufacturing hub: At present, the Indian EV manufacturing is too nascent especially compared to neighboring China. But, there are ample chances to not only catch up but equalize the gap or even surpass it. The Government has increasingly carved out a range of incentives for EV producers—cutting the Goods and Services Tax (GST) from 12% to 5% or eliminating import duties on capital goods used to make lithium-ion cells.

There have been subsequent efforts to increase domestic R&D to develop in-house lithium-ion cells in the country. Also, by 2021, there are plans to increase the duties on lithium-ion and other electric vehicle parts which will further boost domestic EV manufacturing. The industry too is gearing up, with the country's top auto manufacturers (Mahindra Group, Tata Group) having thrown their support behind EVs. We are confident that this will bear substantial fruit, propelling India towards becoming a dominant EV manufacturing market in the world.

India is on the cusp of a great innovation opportunity. The Government as well as the citizens understand the impact of an EV-based ecosystem not only on businesses more importantly on the climate. The growth of the EV industry is essential for such a clean and sustainable future. It is time for all of us to fight for it!

The author is Co-Founder and CEO,
Prakriti E-Mobility

SMART TRAFFIC MANAGEMENT

On-road surveillance equipment powered by technology like Video Analytics can immensely assist in providing accurate updates by the minute and will be a boost to smart traffic management

Abhishek Kumar



The World Road Statistics Report 2018 states that India sits at the top in the list of countries with the most number of road accidents followed closely by China and the USA. The 2018 WHO Global Report on Road Safety also suggests that India accounts for almost 11% of road-accident-related deaths in the world. Lack of compliance with rules and regulations and the lack of strict enforcement of laws are some major elements that contribute to these statistics. Thankfully, the New Motor Vehicles Act 2019 came as a boon for improving road safety in our country.

Automation, as most of us are aware, has played a significant role in most sectors and is now making

cities and their roads smarter and more high-tech. This influx of technology has made lives fairly easier. Although countries like the US and China already have smart cities and are ahead of the rest of the world, developing economies like India are quickly catching up in an attempt to make the country more efficient in terms of road traffic management. Let us take a look at some of the challenges and potential solutions to drive smart traffic management with enhanced surveillance infrastructure.

The challenges posed by urban mobility

Even with the advent of technology, urban mobility poses a variety of challenges. With cities like

New Delhi and Beijing reaching hazardous levels of pollution, reducing emissions is crucial. In a largely populated country like India, this might prove to be difficult due to the heavy road traffic which leads to vehicle idling in turn leading to more emissions from the vehicles. In addition to this, a number of vehicles are poorly maintained which only worsens the situation. Although India has made attempts to counter its ever-increasing traffic and pollution levels, we still have a long way to go.

Traffic congestions continue to be an abysmal challenge for India. They directly lead to the loss of man-hours and lesser productivity due to the increased amount of time one spends on the road. Congestions further increase the last-mile delivery costs and add to the SLA (Service-Level Agreement) violations. So, in order to boost economic activity, superior traffic management is the need of the hour.

Another rarely discussed facet of urban mobility is that of traffic signals. Traffic signals in urban cities can be seen following a pre-set configuration, wherein they do not factor in the real-time traffic movement of the city. Often, vehicles have to needlessly wait at the red signal when there is no traffic on the other roads. This cumulatively slows down the overall traffic movement speed of the city. Till now, traffic violations also caused a similar challenge, which is now being checked by the new traffic law.

How stringent law enforcement will pave the way for better safety?

Stricter laws based on advanced, tech-driven surveillance systems have come into place, thus helping commuters stay safer on the roads. The New Motor Vehicle Act 2019, which came into effect from September 1, 2019, has strict penalties including high fines ranging from Rs. 1000 for driving without a helmet to Rs. 10,000 for drunken driving. The Act also includes imprisonment for severe traffic violations such as speed racing which will earn you a term of 3 months and up to 1 year for a repetition of the violation. In an age where we come across an incident of traffic violations resulting in accidents on the road almost every day, the new law will ensure lesser time being spent on the roads due to a commotion and will increase peoples' compliance towards rules and regulations.

Smart Traffic Signalling – The Next Logical Solution!

Now, with the surveillance-based New Motor Vehicle Act in place, smart traffic signalling is perhaps the next logical step towards urban mobility.



ABHISHEK KUMAR, Regional Director, South-Asia, Onvu Tech

Based on real-time traffic movement, the solution will further help in keeping the roads free of congestion and ensure a smooth flow of the traffic. Improving on-road surveillance with installations of CCTV cameras in more cities and ensuring proper maintenance of them would prove to be highly beneficial.

This method will also ensure that navigation apps such as Google Maps can be plugged into the systems, thereby further decongesting roads by providing accurate information as per the real-time traffic conditions. It will help in decongesting roads to the very extent possible.

On-road surveillance equipment powered by technology like Video Analytics can immensely assist in providing accurate updates by the minute and will be a boost to smart traffic management. Today, with security being on the priority list, there are a number of companies that have entered the surveillance equipment business. As technology advances each day, we might soon see such highly improvised, tech-driven equipment managing traffic in cities on a large scale efficiently.

The author is Regional Director,
South Asia, Onvu Tech

A DIGITAL BUDGET FOR A DIGITAL INDIA

The Union Budget of India presented in 2020 was rich on technology with focus on Data Centre Parks, BharatNet (which powers rural India), startup relaxations, IPR, Knowledge Translation Clusters and the National Mission on Quantum Technologies & Applications. It talked of the “proliferation of technologies, specially analytics, Machine Learning, robotics, bio-informatics...” while mentioning that the new economy was based on “innovations that disrupt established business models. Artificial Intelligence, Internet-of-Things (IoT), 3D printing, drones, DNA data storage, quantum computing, etc., are re-writing the world economic order”. In short, it made all the right noises. It by and large received thumbs up from the tech industry. A look at some brief reactions...



Establishing new data centres the key



"The Union Budget provides a major boost to the interests of broadband services enablers and aligned stakeholders as one of the major takeaways that evidently emerged was the fact of connectivity being at the core of all key pursuits planned by

the government. Towards this, initiatives announced such as providing push to smart metering, setting up five new smart cities, establishing new data centres across the country and more importantly the allocation of Rs.6000 crore towards BharatNet to provide connectivity to 100,000 gram panchayats within this year itself, augers well for the telecom industry."

—Rajiv Kapoor, Vice President, India & SAARC, Cambium Networks

Enhancing India's Digital Ecosystem

"All in all the Union Budget 2020 is a welcoming step towards enhancing India's Digital Ecosystem. Significant investments in the space of cybersecurity, electronics manufacturing, and promotion of IT and IT-enabled services is indeed a great move. The corporate tax cut and benefits derived by new companies, along with improved GST collections, will increase the revenue generation. Initiatives like data center parks across the country, increased focus on BharatNet and National Mission on quantum technologies will boost employment, address skill shortage issue and definitely attract global investments to boost the overall economy. Overall the budget has fulfilled the aspirations of all, from common man to a business tycoon."

—Ashis Guha, CEO, RAH Infotech

Boost for new gen sectors like Fintech & IoT

"The budget this time looks very encouraging. Among other things two areas stand out for me. Firstly the Finance Minister's specific mention on recognising new disruptive technologies being an

integral part of the economy is very welcome—this will give boost to players like us who are focused on Data and other new gen sectors like Fintech and IoT. Secondly the acknowledgement of liquidity crunch as a problem area and the eventual measures to alleviate this by the focus on NBFC sector and their lending prowess will go a long way in helping improving the business climate in the country."

—Prashanth G J, CEO, TechnoBind

Conducive for the start-up sector

"As per our expectations, the Budget 2020 has proposed a slew of measures to propel the economy towards growth. The government's sustained push for tech innovation and entrepreneurship is encouraging from a market perspective. The Budget has particularly proposed a conducive environment for the start-up sector in India and these measures are sure to cement India's position as a hotbed of startups. The market also stands to gain from the revised Income Tax structure as it indicates a higher disposable income in the hands of the common man. This could prove to be positive in terms of investments and could potentially boost the capital market."

—Basavaraj Puttappa, Founder and CEO, Zeva Astras

Data to be one of key drivers of economy



"The government's intent to roll-out a policy to enable private sector to build data center parks throughout the country is a welcome move. We believe this is in view of government's efforts to push data localization as data will be one of the key drivers of

economy. Localized data centers which can be accessed and controlled from a centralized system will significantly improve data privacy and security allowing free flow of data within borders."

—Venkatraman Swaminathan, Vice President & Country General Manager, Schneider Electric IT Business India

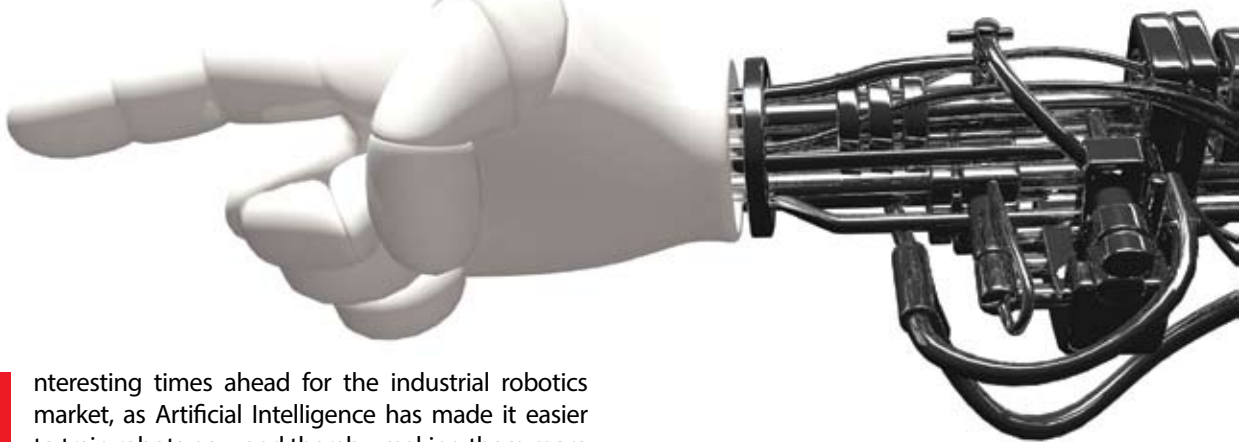
A good start, but a long way to go towards \$US 10 trillion

India has set very ambitious targets for itself with a goal of becoming a US\$ 5 trillion economy in 2025 and doubling that to US\$ 10 trillion in 2032. There is no way we can do that with the traditional old economy. Only the new digital economy can do that. The Cloud. The Internet of Things. Consumer Internet. Artificial Intelligence. Industry 4.0. Robotic Process Automation. Data Analytics. Smart Cities. We will have to leverage all of them to build new and power old industries. The Budget 2020 is a good start for all of that, but we have a long way to go. The budgets in the coming years will have to be keep adapting policy to keep the digital pace accelerating. The Ministry of Information and Technology will play a greater and greater role as the years go by.

INDUSTRIAL ROBOTS: DON'T OVERLOOK THE RISKS

Thomas Fuhrmann, MD, TÜVRheinland India speaks on the growth prospects for industrial robots in India, talent gap in the sector, and how it helps companies address the potential risks and hazards to ensure the overall safety of robotic products

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Interesting times ahead for the industrial robotics market, as Artificial Intelligence has made it easier to train robots now and thereby, making them more accessible to a wider array of industries besides traditional manufacturing. Today the collaborative robots which are designed to work alongside humans have made the adoption of robots easier for industries which are not traditionally associated with the use of robots, such as construction, retail, logistics, healthcare, etc.

What kind of business transformation and market growth opportunities for industrial robotics do you see here in India vis-a-vis globally?

Globally, the Industrial Robotics sector has been on the upswing for the past few years. Industrial robots are improving in terms of capability and performance, and their use is rapidly growing across manufacturing and associated industries where fast, accurate and repetitive work is the norm. In India too, Industrial Automation is on the rise, marking a significant increase in the adoption of human-machine collaborative tools primarily in the automotive and electronics sectors.

The demand for industrial robots has been witnessing a huge upsurge over the past decade due to the rising adoption of smart factory systems. Global manufacturers, who would like to set up their smart factory production

facilities in India and be a part of the Government's marquee 'Make in India' initiative, will definitely look at deploying industrial robot ecosystems in the country. As per published market research, robotics is a desired necessity for making the Indian industry globally competitive and for attracting the right domestic as well as global companies to invest in the 'Make in India' dream.

How has been the adoption among discrete and process manufacturing sectors?

Industry 4.0, along with digitalization initiatives provides lucrative opportunities for the industrial robotics. Industry 4.0 has fuelled the development of new technologies such as collaborative robots, AI-enabled robots, etc., and has enabled industries to streamline processes while increasing efficiency, improving quality and eliminating errors. Increased focus on workplace safety and enhanced production capabilities have further driven industries to invest in robotic systems.

The Indian market for industrial robots is expected to double over the next 3-5 years. Rising labor costs, increased quality considerations, and hazardous tasks are forcing Indian manufacturers to opt for industrial robots, despite the

relatively high capital investment. Currently, the adoption of industrial robots is primarily in the manufacturing sector for a variety of operations such as welding, painting and material handling operations as it satisfies the business need for consistent quality and repetitive. Another business need is flexibility in manufacturing multiple product models while adhering to shorter time-to-market standards. All of which are guaranteed with the use of robotic systems.

How crucial is it to adhere to testing and certification standards? Could you please tell us about some of those testing parameters?

Due to its own characteristics and application environment, the risks of a robot are relatively high, and safety is extremely imperative. Being familiar with local as well as international standards, we can help corporates understand certification requirements for robotic products in global markets but also to obtain certifications and secure regulatory approvals in the domestic market. TÜV Rheinland has extensive knowledge and experience to perform both risk assessments and safety circuit evaluations. We evaluate design schemes, identify the hazards and risks for humans and analyze the overlap between robots and other machines, systems, materials, and software. Our reporting can be used directly in the CE-marking process, and our certification services are well known and accepted all over the globe.

Could you please tell us about your Robot Integrator Program and the value it brings to your customers?

TÜV Rheinland has launched the industry's first comprehensive 'Robot Integrator Program'. This new program saves robot integrators significant time and reduces investment costs by allowing them to mark each cell compliant with ANSI/RIA R15.06. As opposed to a traditional certification or an on-site field labelling program, TÜV Rheinland's Robot Integrator Program certifies the knowledge and skill-set of robot integrators in addition to testing robotic cells and processes against ANSI/RIA R15.06. This reduces the need for frequent on-site or off-site testing and allows manufacturers to apply a single TÜV Rheinland label to multiple cells.

How big is the cybersecurity threat for industrial robotics?

Robots are a combination of mechanical structures, sensors, actuators, and computer software that manages and controls these devices like any other machinery and need to be considered in such a way when evaluating cybersecurity risk.

As industrial robots become smarter, better connected and linked to the internet, there are increased risks from



THOMAS FUHRMANN, MD, TÜV Rheinland India

cybersecurity-related threats that can undermine usage and deployment of robots, lead to intellectual property loss, production delays and possibly inflict physical damage.

The need for safety in systems has been recognized for many years, and now the increasing proximity of collaborative robots with human workers continues the need for safe working practices. With an appropriate cybersecurity risk review, followed by product testing and implementation of safety controls an organization can be assured that its industrial robots are operating in a safe and secure way.

Robotics companies often find it difficult to reach the right talent and skills for the work- How do you bridge the gap?

We all agree that robotics is one of the most exciting categories emerging in India today. Sectors such as manufacturing, construction, and healthcare are playing a huge role in driving up demand for robotics talent in India and there is enormous scope for the application of the technology across other industries as well. And when it comes to hiring manpower in this field, companies focus more on niche talent rather than years of experience.

It's not always possible to find the right people with prior experience in the robotics sector, especially for entry-level jobs. While hiring talent for the first time or adding talent to an existing team, we use a strategic approach to the process by drawing up the required traits, training, experience and capabilities the desired candidates should have. We have also initiated and expanded the personal development plan for employees at every level starting with support for young talented professionals who work with us.

RE-IMAGINING BANKING WITH MIXED REALITY

MR is no longer a myth or fictional story but a genuine technological advancement. Though it is still evolving, it has great potential in creating smart and personalized banking experience

Rajesh Mirjankar



We are living in an economy where experience is at the heart of any business. Like it is with retail giants such as Amazon and Flipkart, where people judge everything by the quality and speed of experience, banks these days are facing the same challenge to live up to the expectations of the customers. It is vital for banks to invest in digital capabilities that will help

them in improving the customer experience.

In the past, physical convenience mattered tremendously. Most consumers banked with financial institutions right down the street. As recently as a decade ago, it was the only way to deposit money or get a loan easily. However, with technology, financial institutions use customer data and behavioural insights to deepen customer relationships thereby

offering customer convenience primarily rather than just pushing the products that advance the bank's agenda. Technology is disrupting every aspect of the banking industry—be it customer onboarding, the process of undertaking a loan, bill payments, making investments, depositing money, amongst many other facets.

The industry is ever-increasingly bustling with carrying out these activities in a more efficient manner and always under pressure to sustain in the new-age world of technological disruptions. Although banks and financial institutions are leveraging Artificial Intelligence, IoT and analytics to deliver enhanced customer experience, the next remarkable technology that can prove to be a real game-changer in providing a truly digital experience is Mixed Reality (MR).

A combination of Augmented Reality (AR) and Virtual Reality (VR), MR if implemented the right way, holds immense potential in re-imagining customer experience in banking and financial services. The technology can significantly impact and disrupt a plethora of banking functions such as customer acquisition, virtual branches, transactions, payments, customer service and training. It has the potential of elevating the customer experience to a level which all banks have been striving to achieve.

For instance, with the use of MR-enabled eye-gears, banking executives can access the entire banking portfolio of a customer at one sight and help in reducing the customer verification process from several hours to few minutes. With the help of MR, banks can transform the monotonous way for visualizing financial information with access to information in 3D view and use touch, speech, or hand gestures to access more detailed information. Till now, what was only limited to sci-fi movies can now be brought to real life and implemented in the banking sector. Thus, many activities such as accessing the credit history of customers, adjudging his creditworthiness etc. can be made instantly and effortlessly. This enhances efficiency in the form of faster decision making and quicker initiation of the loan granting process.

MR also enables the customer to get access to his financial information from the comfort of his home without a need to visit the bank branch. An interactive dashboard can accurately tell him about his financial health, investments, bank statements and much more. This indeed creates a personalized experience for the customer.

Also, using mobile banking apps equipped with



RAJESH MIRJANKAR, MD & CEO,
InfracsoftTech

AR, customers can locate nearest ATMs, branches and also get direction to the nearest location. AR applications use the camera captures from smartphones, GPS, and provide a user's exact location to the branch/ outlet distance. Customers can also use other perks that banks offer such as special discounts and reward points at food and other shopping outlets while navigating the app. The phrase 'Look and Feel' gets a new meaning altogether with the integration of these emerging technologies into banking.

Despite the slow adoption of AR-VR technologies, the nascent Indian AR-VR market is expected to grow at a compound annual growth rate (CAGR) of 76 percent over the next five years, according to a report by GrowthEnabler, a data and intelligence firm on disruptive technology and digital start-ups.

MR is no longer a myth or fictional story but a genuine technological advancement. Though it is still evolving, it has great potential in creating smart and personalized banking experience. Banks can derive several business use cases to adopt this change and convenience in business processes and operations to realize the full potential of this latest technology that can radically transform data visualization and customer experience.

The author is MD & CEO of InfracsoftTech

FUTURE OF VR: POTENTIAL TO REDEFINE REALITY

The VR headset of today is made up of the poor-quality VR screens, low-performing processors and not-so-updated hardware devices. This has to drastically change in the future

Saurav Bhaik



“VR is a way to escape the real world into something more fantastic. It has the potential to be the most social technology of all time”

—Palmer Luckey, Founder of Oculus Rift.

Virtual Reality (VR) is the most distinctive but also the most hyped technology at present. When VR penetrated in, people were amazed to find something so exceptionally arousing. Initially, the technology of VR being surprisingly different, gained success in varied and sumptuous areas of work. People were enthused to experiment and experience its very idiosyncratic features and advantages, only to sooner realize its slope of merits and demerits.

A Huge Scope for VR Enlightenment in the Market

When big brands like the iPhone entered the

market, their main competition was with Nokia and Samsung. And it is understood. But in case of something like VR technology, its competition is with reality, it's with the things we can sense, touch and feel, things that are uncommon to technology.

“Soon there will be virtual reality, and augmented reality. If you assume any rate of improvement at all, then games will become indistinguishable from reality.”

—Elon Musk (Some years back).

Though, a technical gap persistently prevails and misses the final touch. VR experiences are required to be so good that people can't differentiate them from reality. Luckily, people's expectations with VR are no less than becoming a part of a virtual world which is indistinguishable from the real world. Two years ago VR growth was at its peak. People believed VR had the potential to interact in this digital environment. Some

studies also stressed on its potential of growth and unexpected downfall.

According to the Gartner's VR Hype Cycle of 2017 and 2018, a declining scope of virtual reality in the market has concluded. The chart clearly states that the emerging technology of VR took a remarkable upscale in 2017 to eventually drop down in 2018. The existence of VR technology is comprehended to have unexpectedly vanished.

We understand that the users face delusion as they dealt with something more dynamic. But there's always room for improvement. Especially for VR technology because people think it can help communicate better in the professional environment.

The 'Technology Adoption Curve' tells us that with the arrival of any new and popular product in the market, the early market which involves early innovators and early adopters comes first to adopt it. Then this practice is followed by the mainstream market of majority adopters and those who adopt technology seeing its mass acceptance and in the end comes the laggards, who don't pay much attention to this market.

According to the VR technology adoption curve, the mass adoption and true immersion of people with VR remains a far-off dream. It is likely to be attainable, but not as per the timescale anticipated on its climb up hype-cycle.

It is the key to understand here that the very basic concept of VR acceptance ratio only goes positive when its early market of acceptance will make an optimistic impact on the users. The curve says that the recognition of VR in the market is just a start and it has to go far enough to meet up to its potential expectations. It is predicted that VR is the very beginning of the change from the computer age to the experiential age. Maybe the 'technology adoption curve' is based on a hypothetical whim but the concept of teleporting people to another world still has to be conquered.

VR Limitations in the Market

The 'not-so-advanced-technology' proficiently plays an important role in degrading the quality of content in a product. In simple words, the lack of hyper-realistic content is the significant factor behind the suspected defeat of VR technology in the long run.

Unfortunately, the experience of VR today is making people wait and feel wasted. The VR headset is made up of the poor-quality VR screens, low-performing processors and not-so-updated hardware



SAURAV BHAIK, Founder & CEO, Tagbin

devices. The downsides of which have caused after-symptoms like headache, blurred vision, bulkiness and uneasiness.

Final Solution is Awaiting

Not denying the pieces of evidence, it is right to presume that VR can be the future, only if VR go spotless engaging the reliable user expectations and fixing the unavailability of the latest technology.

VR is supposed to offer people a stereoscopic vision, which looks realistic. The technology incorporated in the VR headsets has to modify its interface so that it can serve people with a pleasant viewing experience. For instance, electronic reading devices, like kindle is crafted in a manner that gives its viewers a real feel of reading from the book. The display screen of the kindle is engineered in a way that is friendly to normal eyes and doesn't feel bulky.

Similarly, in order to incorporate a hyper-realistic content, the display of the VR headsets has to be ultra-HD and more improved. The screen used in present-day VR equipment is below standard. These screens are not sufficient enough to run an Ultra-HD display and require more power with larger-sized GPU processors.

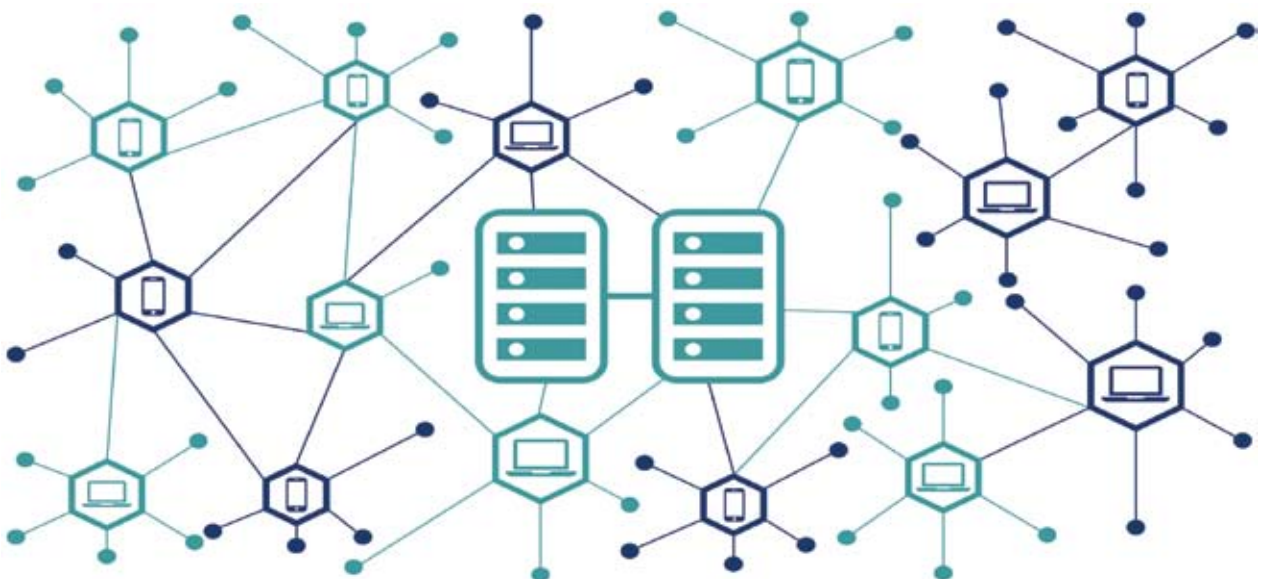
The power of processors increases when the size of its transistors reduces. But it is only possible when according to Moore's law "the number of transistors in dense integrated circuit doubles about every two years". VR technology then can standalone with an updated powerful GPU processor, optimized and convenient to be used as a spectacle. Fortunately, the day when technology will ultimately outgrow itself, VR is likely to have a glorified future.

The author is Founder & CEO, Tagbin

ROLE OF BLOCKCHAIN IN TRADE FINANCE

Private blockchains have a role to play in trade finance – and in any networked environment where technology is used to connect third parties together, where shared data is involved, and where trust is important

Tim Nicolle



It is important to be cynical about blockchain and to cut through the hype. But on the other hand, trade finance offers a compelling set of use-cases for the deployment of simple ledger verification – and, in time, smart contracts.

As most of us know, blockchain is a mathematical technique used across a network of nodes to generate an encrypted record of a transaction. With strong encryption, participants, both in the network and externally, can rely upon the resulting ledger entry as irrefutable evidence of the logging of the transaction into the ledger.

It is important to break down the above paragraph into its components – so that we can then consider the relevance of this technique in the real world of commerce and trade.

First, the blockchain is being used to evidence the logging of a transaction. That is not the same as the transaction has occurred.

Second, whilst the logging of the transaction

may be mathematically irrefutable, it does matter in our view, “whose blockchain it is”. Whilst trust may be derived from the methodologies employed, any ledger system is only as good as the people who built it.

Third, extending ledger entries into the legal world of an enforceable contract is also problematic. Legal systems are lagging a long way behind the leading edge of technology and fintech. Care needs to be taken when it comes to relying upon the ledger entries alone.

With these very practical reservations expressed, where can the blockchain play a role in trade finance?

We are a global provider of trade finance, with clients in over 30 countries and a leading player in the Indian export finance market. We have the flows and the networks in place to start linking together banks, capital markets, insurance, logistics, imports, exports, and trades. It is a very exciting time, and as our business digitizes, we are ideally positioned

to include ledger-verification and smart contracts to support the legal agreements that underpin our business.

The main reason why this works is that our form of trade finance is very simple. The exporter ships, we pay him. The buyer can pay later, and we take the buyer credit risk. This is not like traditional trade finance which is quite complex, involving multiple banks and many communication steps. The simplicity of our model can be used as the basis of a trusted environment, which means that the implementation is quick and the value is immediately available to all the participants.

And so we are doing exactly this – so that every interaction “above the waterline” is matched by a similar interaction “under the waterline”. As we all know, the waterline is the boundary between the visible world in the air and the invisible world under the water – and our systems and processes adopt a similar approach. Above is the conventional world, below is the blockchain.

When an exporter ships his goods, he enters into a financing agreement with us – shipment-by-shipment. This is an old-fashioned contract, absolutely visible, although our exporters can sign digitally. Behind the scenes, the action of signing the contract inserts the signed transaction data into the ledger which results in the private blockchain evidencing the signature and the automatic generation of a smart contract matching the physical contract that the exporter has signed. This process is mirrored throughout the customer journey. When the buyer makes a payment, this is shown on our dashboards and visible systems — but also then recorded by us into the ledger and verified across the network. Each visible step in the conventional world is matched by signed transactions entered into the ledger and broadcast across the private network.

Today, the value of these steps is that we can then provide, in parallel and simultaneously, both a ledger-and a conventional view of our world to our financiers, logistics partners, insurers and customers. The addition of the ledger gives a second, verified way to understand what is going on – cutting through the complexity of de-normalized, processed and presented data to the core transactions underlying our business–shown “unvarnished”. Moreover, the operation of the ledger verification automatically broadcasts the transactions to the interested participants in a secured manner and ensures that everyone is in step and as close to real-time as we can make it.



TIM NICOLLE, Founder and CEO, PrimaDollar

This benefit is realized now – and it has a direct impact on the confidence that our counterparties have in the way that we work with them – and results in better communications, better flows of information and, in time, lower funding costs for our clients.

At some future point, we can expect that our implementation of smart contracts will start to bring benefits too. Whilst legal systems are generally still not yet ready to recognize smart contracts as being legally enforceable, we see benefits flowing from operating them in parallel. As mentioned at the start, we believe that it does matter whose blockchain it is – and that there is a difference between one blockchain implementation and another, even though mathematically they should be identical. When it comes to using smart contracts as evidence of a binding legal contract, we believe that a track record will matter. Getting these implemented now means that we will build up a history of correct and accurate processing with traditional contracts being matched into smart contracts, thereby building up the confidence of our counterparties and the history of the accurate performance of our systems. These things will matter in the future, at a time when perhaps the world starts to recognize the validity of smart contracts supported by ledger verification.

So private blockchains have a role to play in trade finance – and in any networked environment where technology is used to connect third parties together, where shared data is involved, and where trust is important. The simpler the network and the product involved, the more quickly trust in the ledger can be built – and the more quickly value can be realized.

The author is Founder and CEO, PrimaDollar

WHY IS THE FUTURE OF COMPUTING ON THE EDGE?

Imagine paying at a vending machine, and waiting beyond 2 seconds for your chosen item. Now, instead of the vending machine, what if it's an elevator full of dignitaries stuck on the 100th floor of a luxury resort? Well, to make such situations truly rare—the various sensors in the vending machine or the elevator need a superpower

Sindhu Ramachandran



The futuristic Edge over the cloud

Edge computing helps overcome the curse of network latency. The origin of Edge computing can be traced back to the 1990s, when Akamai introduced Content Delivery Networks (CDN). A CDN usually uses edge nodes closer to users to prefetch and cache web content. These edge nodes can also perform some content customization, such as adding location-relevant advertising, and more importantly, CDNs save bandwidth through caching. In Edge computing, the data gathering and processing occur at the application source or device, or at least nearby. This proximity could range between the hand-held or local devices and appliances, to point-of-sale or physical units distributed across locations. In fact, the concept of CDN is generalized by Edge computing by leveraging the cloud computing infrastructure.

Why now on the Edge?

The 5th generation of cellular network technology or 5G is expected to have 10x higher bandwidth than the current 4G technology. However, even with 5G, sending data across vast distances will involve network latency unless the 5G connected end-devices have higher computing power. This is exactly why edge computing is the key to realizing the profoundly transformative potential of 5G, as both computing power and network bandwidth are mandatory to reach the 10x speed.

Moreover, Gartner predicts that by 2020, about 5.8 billion Internet of Things (IoT) sensors will be used in the enterprise sectors, including automotive. However, with the growing number of IoT sensors generating terabytes of data, there is a felt need for fast, reliable, secure, and cost-effective data

processing within or nearby these sensors or Edge devices. This need has created a common IoT approach of edge computing software communicating with IoT cloud platforms. But again, the latest 5G-enabled IoT use cases mandating lesser than 20 milliseconds of turnaround time along with high throughput data volumes demand more of both - computing power and network bandwidth.

This combined push from cloud services, pull from IoT, and a shift from being data producers to being data consumers has catapulted the edge computing market to be worth \$34 billion by 2023, as predicted by IDC.

Advantages of the Edge

• **Eliminating latency** - Applications

expected to give near real-time performance, cannot wait for a data processing request to return from the cloud before taking action. Hence, sensor data from safety-critical industrial operating & control systems are processed using edge gateways to eliminate this network latency and achieve a quicker response time.

• **Portability** - The software for edge solutions are usually portable to different hardware platforms. This prevents them from being tied to a particular vendor's hardware or software.

• **Cost-effective** - In edge solutions, the relevant data that is sent to the cloud can be filtered out based on some thresholding applications. This filtering reduces the cost of data transmission over the network, cost of cloud storage, and the processing cost of irrelevant data.

• **Operational autonomy** - Edge computing provides the ability to have local storage and local computation, thereby making solutions autonomous in their operations. This allows the device to continue functioning even if it is not connected to the network. Advanced analytics algorithms or machine learning models which can learn from limited data can be efficiently deployed on edge gateways to facilitate efficient computing on smaller data sets.

• **Security** - Starting from permission-based access control and encrypted communication to certificate management and easy integration with existing solutions - typical edge computing improves the security and privacy of an IoT application. Moreover,



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by managing the amount of sensitive, private information transmitted through a network and the number of sensors & actuators connected to the Internet, potential security attacks are minimized.

Leveraging the Edge

Edge computing enables connectivity with the sensors and actuators across a multitude of industry protocols that facilitate different styles of device communication and supports the most common protocols. Resultantly, various use cases of edge computing that are rapidly emerging include video surveillance, image recognition, connected vehicles, autonomous driving, industrial automation,

voice recognition, AR-VR media engagement, blockchain and fog computing. Edge computing is also enabling drone management for unmanned maintenance and virtual fraud detection for retail, banking, entertainment, and more. Apart from all this, Edge computing's scalability, versatility, and reliability also makes it an attractive proposition for companies implementing digital transformation. With faster data processing speeds for improving efficiencies, productivity, speed to market, and customer experience, edge computing also expedites digital transformation based on where a company strategically chooses to employ edge devices.

Edge computing has become a very important factor driving the adoption of technologies such as IoT, which is further enhanced by offerings like AWS Greengrass, Azure IoT Edge from the big players. However, the most innovative applications of edge computing, along with other new-age technologies, are emerging to make an average human's life better, safer, and more comfortable. This empowerment is not just here, but here to further evolve in the form of multiple devices and applications. Some examples of which include secure smart homes, resilient power grids, safer remote surgeries, automated vehicle insurance, and futuristic wearables with functionalities that are only limited by the technologist's imagination.

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VIDEO GAMES CAN IMPROVE BRAIN FUNCTION

Even though video games could cause addiction, playing certain games can help improve the cognitive function of the brain. Children who play video games develop better cognitive skills and develop better learning abilities, according to some research

Debojit Acharjee



A video game is a kind of electronic game that is played on an electronic device with the help of a user interface like a gamepad or a joystick, and the game is displayed with an inbuilt display unit or using an external display device like a TV screen or computer monitor. This was first created by academic computer scientists during the 1950s. They were played for research purpose only.

In 1960, the professors and students of the US

Massachusetts Institute of Technology (MIT) played video games like tic-tac-toe, on computers such as IBM-1560. But during that time, video games were not familiar to everyone, because personal computers and game consoles were not easily available in the market. But after the growth of the electronic industry, gradually video games became very popular around the world. Many companies like Atari, Nintendo and Sega started selling game

consoles in the market during 1980s. Later companies like Sony also introduced many gaming consoles like PlayStation and captured the market in late 90s. After the emergence of PC gaming, people started playing video games on their PCs and laptops, either at home or work but now people like playing video games on their mobile phones also.

Video game addiction and de-addiction

According to the American Psychiatric Association, video games can't cause any kind of addiction. But video games can cause a different kind of addiction. It's a kind of behavioral addiction that makes someone to play video games excessively and that interferes with everyday life. There is no approved medication for this type of addiction but still most psychiatrists are treating video game addiction using psychiatric drugs.

Behavioral addiction is a kind of addiction that doesn't involve the use of any drugs but it happens because of a rewarding behavior. This type of addiction happens because of the rewarding system of our brain. Our brain is functioning because of the neurotransmitters like serotonin, GABA and dopamine. Certain activity or behavior of person can increase such neurotransmitter levels in the brain and can give pleasure. That's why this could vary from person to person, because everybody's brain chemistry is not same. Some people might find video games addictive but some might find it a waste of time only.

Usually any drug related addiction is cured using de-addiction (substitute) drugs. In case of a drug addiction, the brain gets dependent on a particular drug and to de-addict someone from that drug, a substitute drug is used with a tapering plan. As the substitute drug is tapered gradually on daily basis, the brain starts to reduce its dependency on the addicted drug.

Similarly, for any behavioral addiction like video gaming, the de-addiction can be done using a

substitute game. For example, if a user starts playing a game, he finds some difficulty in the beginning but after winning the first level of the game, his dopamine level increases and so he wants to play for the next level, but as the level goes up, the difficulty level also goes up. This causes the brain to take stress from the game and wants to play again and again to reach the top level (reward). This process makes anybody (from children to adult) to get addicted to a video game.

Therefore, de-addicting from such video games can be possible using a substitute video game. Just like a benzodiazepine is used as a substitute for alcohol addiction, a substitute video game will be able to de-addict someone from such addictive game. Games like PUBG causes addiction because of their addictive algorithm and interface, but if a similar video game is created using reverse engineering and then changing the gaming code in such a way that it will cause less difficulty and less awarding, then playing that game will make someone to get de-addicted from a similar video game. Just like most people don't like watching a movie twice, such substitute games would prevent people from playing the addictive games again and again. However, to get rid of video game addiction, the best solution is to play them limitedly for a certain period of time. Playing video games with breaks, instead of playing for hours, can also prevent the addiction.



Psychological effect from video games

Apart from getting addicted to video games, it's also possible to get psychological effect from video games and all games are not suitable for every user of all age groups. Video games are rated by the Entertainment Software Rating Board (ESRB) of USA according to the age group. According to ESRB games which are designed for everyone are rated as 'E', above 10 years are rated as 'E10+', for those between 10-17 years of age are rated as 'T', games that are for above 17 years of age are rated 'M' and for 18 years and above games are rated as 'A'. If video games

are played by the suitable age group, then it will not cause any psychological problem. However, some video games are often played by the unsuitable age groups by means of piracy or if the game is free to download, and that could cause psychological effect on the user.

Video games can improve brain function

Even though video games could cause addiction, playing certain games can help improve the cognitive function of the brain. Children who play video games develop better cognitive skills and develop better learning abilities. A new research done by the researchers at America's Yale University found that children who play video games are always good at learning.

Your brain is yours... if you don't use it, you lose it! Many age related brain disorders like Alzheimer's disease, can progress in people who don't like doing brain work and lives a very easy going life. One research shows that people who play puzzles and board games frequently, are less likely to develop Alzheimer's disease. So playing board games and puzzles on your PC or mobile, can also help reduce the risk of brain related disorders like Alzheimer's disease. Moreover when you play a game like chess on a PC, you are competing with a computer and a computer is a complete logical machine. More you play with a computer, the better your brain learns to become logical. However, defeating a computer is not easy and some might find it frustrating, but playing with a computer instead of a human, helps a lot in improving the thinking abilities because if your opponent player is a human, then he may not have better playing skills to compete with.

Apart from Alzheimer's disease, some video games might also cure mental disorders like ADHD and games like Project: Evo and Akili are designed to cure ADHD but are waiting for FDA's approval.

Video games are also good stress busters, and a new study of millennial gamers has revealed that video games can help reduce mental stress. Behavioral Science Institute in the Netherlands found that some video games can help reduce mental stress and one survey done by Luke Hales, GM of the Dave TV Channel also concluded the same thing.

Future of video games

Due to the advent of new technologies, video gaming experience had gone to another level.



Previously video games were only played on game consoles but now people can play also on their smartphones. Apart from using gamepads and touch screens, a new technology called gesture control helps playing video games only with hand movements and gestures. This technology made playing video games lot easier and it's also suitable for people with all age groups. Virtual Reality (VR) is another new technology that allows users to experience video games or any 3D simulator in a 3D environment with the help of VR headsets. In VR gaming, one can actually feel the presence in the gaming environment and can visualize everything around them virtually. Apart from gaming, VR is also used for simulation and training purposes.

VR can also be used for educational purposes and it can also help the doctors to get training on how to operate a human body using a surgery simulator (video game). I think VR technology is more useful to perceive things easily because it gives a real life like experience. Besides VR, there is another technology called Brain Computer Interface (BCI) and in this technology a headset is used to communicate with the computer from the brain directly, using electrical signals, and it can be used as a control device for video games also.

As technology improves, video games will become more and more enjoyable and useful in the future. Starting from game consoles to touch phones, video games are enjoyed by people of various age groups, and even though there are some dark sides of video games, playing them appropriately will not cause any problem and we can get the benefit of playing video games happily.

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MAKING LEARNING EASIER WITH GAMIFICATION

In gaming, the difficulty level of subsequent tasks increases and the learner climbs up the ladder to complete the challenges in the next level. Integrating this into regular teaching can result in maximizing learner engagement and enjoyment

Beas Dev Ralhan



Eduainment involves the presentation of learning material in an entertaining style. It includes learning through music, videos and games, numerous hands-on activities, and exploration of spaces outside the classroom. In recent times, an edutainment-based learning approach that uses game design and elements of games to create more appealing learning environments has become popular. This approach is known as the Gamification of Learning.

Gamification of Learning can be defined as the incentivisation of the learning process using the aforementioned gaming components. For instance, on the successful completion of a task, the difficulty

level of subsequent tasks increases and the learner climbs up the ladder to complete the challenges in the next level. Along with that, score points, competition, collaboration and immediate feedback are integrated into the regular teaching-learning process to maximise learner engagement and enjoyment.

How can it be implemented?

The following are some suggestions to help implement gamification in the K–12 academic sphere:

- Game mechanics should be adopted properly to ensure the best results in gamified learning in terms of learner motivation. Badges and

5 stars score cards alone are not motivating or engaging enough for today's learners. Game mechanics involve combined strategies such as missions, leadership points, levels, achievements and rewards. For example, extra points can be awarded to students who perform exceedingly well or special rewards can be given to the leaders in a group activity to motivate participants. While incorporating such games in the academic sphere is a welcome move, educators need to be clear about the final outcome and how it will help students learn a subject.

- Educators should keep in mind the thought processes and capabilities of students of every age group. If the design of the activities is too complex for a certain age group, those students might be demotivated to participate. So, choosing the right game for students is very important. Also, facilitators must be involved in such challenges as such processes need 100 percent involvement of the facilitator to bring out the best learning outcome.
- Games should be directly related to the learning objectives. These objectives will define the kind of content and activities that are to be included in the learning process in order to meet the goals. The game mechanics need to be perfectly aligned with the objectives. An example of a learning game that has successfully achieved this is the Meerkat Maths HD for Mental Maths, a race-based multi-operational maths game, which helps improve participants' speed of mental calculations.
- Activity-based learning takes time to produce concrete results, and therefore, games have to be systematically made a constant part of the curriculum. This is also helpful as a gamified curriculum can bridge conceptual gaps via a recapitulation of the theoretical details of the concepts that a student might fail to apply, alongside audiovisual modules for further clarification. It also helps develop 21st-century skills in a fun and child-friendly manner.
- Assessments that are gamified eliminate the fear of tests. They capture students' attention, provide simulated situations to train them in handling real-life scenarios and help them retain information better. Questionnaires can be prepared in a crossword-puzzle mode, or based on motifs of common games, such



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as Tic-Tac-Toe, Hangman and Find-Your-Way so that students enjoy the process of assessments. While designing such games, facilitators must determine beforehand how much time such activities might consume and what the outcomes of such activities can be.

Implementing game-based learning is a decisive step towards transforming the overall approach of education. Earlier education was perceived as being devoid of enjoyment and entertainment, but with the introduction of game-based learning, this has changed. It can also help facilitators connect better with their students and motivate them to learn with more enthusiasm. Making game-based learning a part of regular classroom activity, implementing personalised teaching, assessing students on the basis of such activities and making efforts to keep parents aware of the approach and the idea behind it, can truly transform education into a fun-filled domain. Thereby, learners would look forward to learning not just for better scores but for happiness, excitement and personal growth.

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5G COULD REVOLUTIONIZE SMART BUILDINGS

David Trice, General Manager of Honeywell Connected Buildings, feels that something preventing smart buildings' huge success today is access to a network, which could be sorted out by having a protocol like 5G

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The problem with smart buildings

Maybe smart building is too broad a definition. If you look at the size of the market through the lens of buildings that have installed a BMS (Building Management System), it is probably no more than one-fifth of all buildings in the world in the context of commercial real estate. What remains are buildings that haven't installed a BMS nor are smart yet. I think we've still got a bit of a technological evolution to get to a point where making smart buildings is truly scalable. It's also an interesting dynamic because in some cases, builders are not going to ever own the property, they're going to hand it over to somebody else. In America, we've got the same thing happening

where we've got people make buildings at the lowest cost possible and they make decisions that are not influenced by smart technology. I think that's a universal problem. In America they're very interested in predictive maintenance, not only for the Asset Lifecycle Management, but also to remove labour costs.

Setting a data standard

We're focused on very specific standard for smart buildings. Part of the problem that exists today with all of these point solutions and proprietary OEM platforms and nobody's really ever thought about a data standard. We're trying to accomplish that with

Forge (an analytics software solution that provides real-time data and visual intelligence). We're going to use our Niagara platform, which is built to standardise and normalise data, as a mechanism to create that standard. It's not so much a protocol they have to subscribe to, but an approach that we'll take to create a standard for our customer. That's the way we're approaching it, knowing that somebody's got to solve the problem first and foremost. Standards are going to be what's key for an organisation to be successful going forward.

5G and smart buildings

One of the big things preventing rapid success in a building today is access to a network. A simple thing like that which seems to be a fairly easy thing to solve, but it's not for security reasons and otherwise. So having a protocol like 5G that you could use as an alternative is a really appealing idea. Where I start to get a little concerned is assets, controllers and things of that nature will eventually become intelligent as well and then we'll need a common protocol for them to communicate as well. That means you've got to have 5G even for dark concrete parts of a building that it might not be built for.

There are other technologies that can solve that problem, but it would be great to have a single protocol that gives you one way to communicate across all platforms that would solve a lot of problems. When it comes to security, we've got our own private network that we run underneath the 4G protocol to ensure our data is protected and nobody could infiltrate it. And so I think when 5G comes along, we'll do the same thing. It's not going to just be this open protocol that anybody can have access to. We will have a secure stream. Ultimately as Edge

We're focused on very specific standards for smart buildings.

It's not so much a protocol they have to subscribe to, but an approach that we'll take to create a standard for our customer. That's the way we're approaching it, knowing that somebody's got to solve the problem first



DAVID TRICE, General Manager, Honeywell Connected Buildings

devices get smarter, I think the whole idea of a BMS will be virtualized. I don't think it'll be an on-premise solution. I think it'll be run from the cloud. As each device gets smarter it'll be easier to control from the bottom.

Collaborating with competitors

Niagara is probably the number one selling open BMS platform in the market today. We actually talked to competitors like Siemens and Schneider Electric. It's necessary to do that because when we go to our customers they say: I've got one of everything. So, you can't focus on one versus the other. The scope of the problem that we're trying to solve is more than just a BMS problem. It's an operations problem. It's not just data from the building but individual and workflow data to my central platform in order to run the operation in the most efficient way. You know there are ways to get data out of every system—the Niagara framework has a driver for almost every one of those systems and we were to leverage that. What we do with it and how much autonomous control we can drive back into the building, perhaps is a major conversation now.

NEW-AGE FIRMS ACCELERATING CLOUD ADOPTION

Manish Israni, Head of IT Operations & CIO at Yotta, feels that with increased awareness, growing market, availability of skilled talent, government initiatives, increasing start-ups and emerging tech, India is poised to grow aggressively in the future

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Public, private or hybrid: What are the kinds of cloud that are becoming popular in India, also among both the large enterprises and SMBs?

India stands for expansion in the cloud services sector with increasing Internet penetration in the country. Shifting to the cloud is not an option for companies anymore, it's crucial. Cloud adoption in India is moving in depths of the country through increasing colocation services driven by sectors like BFSI and healthcare. Cloud usage of an enterprise purely depends on the business needs of the company, in my opinion; it could vary based on the requirements

for each application and workload.

The use of hybrid cloud solutions by enterprises has picked up pace in the past few years. SMBs are increasingly deploying cloud services due to reduced infrastructure cost, flexibility, better workforce collaboration and more. Hybrid cloud allows businesses to scale, be it large or small enterprises. As security is one of the key areas of concern for companies along with costs, hybrid cloud solutions allow them to reap the benefits of an affordable public cloud and ensure the safety of their critical data by hosting it on a private cloud.

What are the implications on India's Personal Data Protection Bill in the market and how does it fare when compared to GDPR?

The new norms with a restriction on the transfer of personal data is good news for the Indian data center and cloud operators as companies will now need a robust IT infrastructure to store and access data. The definition of critical personal data remains unsettled and will be categorised by the central government. Lack of clarity has affected the decision making of investors in the industry. Also, every sector is governed by a regulatory body, companies are in a midst of uncertainty of which regulations will be applicable to them like financial data also falls under RBI's mandate and critical data can only be transferred in case of health emergencies after the approval of DPA.

Person Data Protection Bill is majorly inspired by the EU's General Data Protection Regulation (GDPR). While there are similarities in the clarity of consent, compliance with law, individual rights, exemptions, etc; there are a few differences too. PDPB has shed more clarity on personal data categories - personal data, sensitive personal data, and critical data. The central government has the authority to categorise certain data as 'critical personal data' that must be processed in the country. GDPR has a list of 'special categories' to classify data but does not provide any guidelines to process. While GDPR aims not only to safeguard the data but also allow for a smooth cross border transfer of all types of data given the other country has an adequate data protection framework in place, PDPB focuses only on protecting sensitive personal data and regulating this data.

As security is a key concern for companies along with cost, hybrid cloud solutions allow them to reap the benefits of an affordable public cloud and ensure the safety of their critical data by hosting it on a private cloud



MANISH ISRANI, Head of IT Operations & CIO, Yotta

How are technologies like AI-ML changing the cloud environment?

Organisations are increasingly using cloud-based services and leveraging Software as a Service (SaaS) and Platform as a Service (PaaS) to execute and install AI-infused cloud results. Global technology players are taking lead in cloud-AI technology by initiating PaaS solutions integrated with AI abilities. The fusion of these technologies brings multi-fold benefits to an enterprise by changing the way data is stored and processed to deliver informed results. The scalability and low cost of computing allow for seamless running of an AI-ML solution. In a public cloud environment, the benefits of an intelligent solution can be further extended to the users. With the adoption of AI-based solutions for the cloud, multi-cloud environments can optimise their security architecture by identifying a possible threat or outage and take preventive measures. The demand for intelligent cloud solutions will increase in the areas of banking, education and smart devices among others and large enterprises must leverage this amalgamation to stay competitive in the world.



What are the major cyber threats of putting data on the cloud and what are the common safeguards used to avoid that?

There are a record number of cybersecurity attacks happening around the world. The threat that looms on the traditional storage is also true for data stored on the cloud. As cloud allows sharing of files via links, leaks or loss of data through data breaches, a Denial of Service (DoS) attack by flooding system with huge quantities of data and jamming the servers, insider threats and hijacking accounts are some of the major cyber threats that companies need to beware of while using cloud services.

Companies can prevent from falling prey to data threats by taking preventive measures like putting in place an immediate response plan, having two-factor authentication access, monitor cloud services that are in use and assess their risk. Besides these, encrypting data and limiting the number of authorised users with access to encryption keys also helps. In terms of technology, Cloud Service Providers (CSPs) now use advanced of firewall technology like Web Access Firewalls, application services, layering and micro-segmentation. Businesses should also ask CSP's for complete visibility and control of their cloud operations via multi-cloud management tools. Most importantly, always keep backup copies of your

data offline, which sounds pretty simple but many businesses fail to do.

Is India able to keep pace with the demand for growing IT/cloud infrastructure, with concepts like Industry 4.0 and Internet of Things coming up?

According to a study by NASSCOM, the Indian cloud market is estimated to reach US\$ 7.1 billion by 2022 with 30% CAGR which was at US\$ 2.5 billion in 2018, dominated by SaaS and IaaS. India's cloud spending is only second to China at 40.2% CAGR. New-age companies are accelerating cloud adoption by implementing Cloud-first strategy along with emerging technology trends like IoT, AI-ML, edge computing, on-demand models, XaaS and so on. IT-related companies, communication, and Media sector have shown a higher rate of adoption as compared to sectors like Banking, Retail and Healthcare. With increased awareness, growing market, availability of skilled talent, government initiatives, a proliferation of start-up ecosystem and emerging technologies, India is showing high adoption levels and is poised to grow aggressively in the future. Global players like AWS and Google Cloud are also operating their IaaS facilities out of India owing to these factors. In the coming years, we'll see India become the global hub for cloud computing.

CLOUD—THE BAKER'S DOZEN FOR MYTEAM11

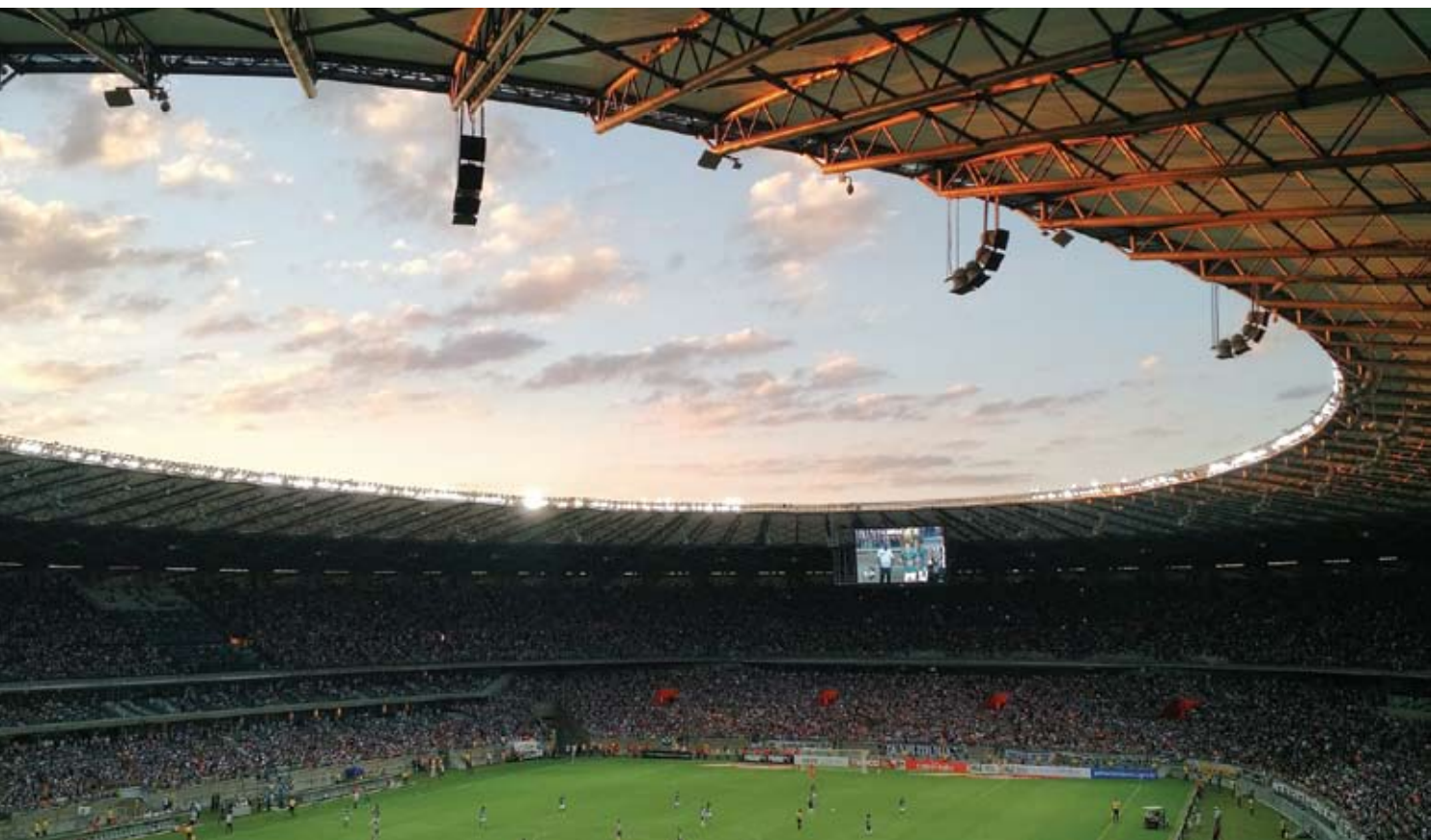
Experience, fraud control and real-time patterns can form an unexpected, but a big loaf of outcomes of getting on a Cloud. A fresh Cloud user tells us why Cloud is much more than a cheerleader when it comes to Fantasy Sports

Pratima H

Fantasy Sports may be a new and controversial industry but it is gaining a lot of ground—and fast. A user can choose players and make a team as per the rules of a platform and have a live-parallel experience while a real-time match is on. Imagine the kind of availability and uptime that one would need to ensure this platform delivers the fun and excitement users come in for (which

is a primary motivator for 72 per cent users—as per KPMG). Interestingly, this data also shows that 85 per cent users play fantasy sports on mobile apps. Can a platform afford to have the lights out when a game as torrid, thumb-heavy and as nail-biting as this is on?

Cloud can be a fantasy-come-true for a Fantasy Sports major but even then—Cloud is not an elixir. And just because Sports is a 24/7 industry, does not



mean that players have to be awake all night fighting fires.

Nitish Kumar Bugalia, Head, Product & Strategy, MyTeam11 Fantasy Sports Pvt. Ltd. gives us a lowdown on what works, what surprises and what follows with a Cloud investment.

What prompted the decision towards this company and then towards Cloud?

The company began in 2016. I worked in the financial services sector earlier and joined a few months back. But I have always been a cricket fan. I was a visiting consultant to this team for some time. When I thought of moving back to Jaipur, everything came together in a great way. I got an exciting and expanded role here. This is a big platform in India, perched as top as the second one in the fantasy sports category.

Now any company in the Internet and information business today has to have the most advanced technologies. The start-up was first operated out of a data centre that was not fitting the bill. I recall there was a significant match about to start at 8 pm and at 7.35 pm or so, we were blindsided—we observed some anomalies. Everything crashed in the next five minutes. We lost customers and a lot of potential revenue that day. Not to forget the social media impact of it. It took us three days to respond to angry customers. We had to face the writing on the wall—if we cannot control the platform well, how can we aspire to go for a bigger series? That's when Cloud came into the picture. After that, IPL to big global events—we have been cruising smoothly back to back.

How? Take us behind the Nets?

We identified what we were doing wrong. It took us two days to find out bottlenecks, it was not good

We first operated out of a data centre that did not fit the bill, leading to regular crashes. Once Cloud came into the picture, we've been cruising smoothly back to back, from IPL to big global events



NITISH KUMAR BUGALIA, Head, Product & Strategy, MyTeam11 Fantasy Sports Pvt. Ltd

to know that our technology stack could use a lot of work. That's when conversations with AWS started. We also had an aggressive timeline of an upcoming series. AWS started paving the road for architecture, partner connections and training. It was a big helping hand. Everything went really well. Just before the series, we accomplished a neat lift-and-shift from the data centre to the Cloud. It was a smooth experience. After the series ended, from then onwards, we started noticing more operational efficiencies on the Cloud infrastructure. We had an automated pipeline for development code.

So any other ancillary benefits that had started manifesting by now?

Yes, while we had a robust infrastructure now, with great availability-strengths, we also had a fully-automated testing, scalability; and to top that, we could now achieve personalisation and customisation for customers by enabling recent price-performance patterns. Besides saving money, we are also getting experiential advantages, fraud detection and automation with Cloud.

What were the financial gains and efficiencies that transpired?

For an 8 pm match, the traffic peaks at 7.30 pm. For an IPL, the traffic load is ten times more than any other game. Last year for IPL, we brought some top-of-the-line servers and paid huge costs for two months. But now, it has come to just one hour a day. The cost savings are immense.

Do you have to deal with separate instances? Is over-provisioning a difficult part of Cloud investments?

We do over provision sometimes if we are anticipating something. But we want to be sure rather than sorry. Cloud does have 99 point-many-decimal-level of reliability. We can leave this part to choice.

What about memory-intensive parts of the workloads?

They also work well here. Customers keep checking the points of their chosen team members. Before Cloud, this time could have been as long as 25 minutes because of poor data-lifting. But after Cloud, this time has shrunk to 3.5 minutes to 5 minutes. We change a lot in our code base. Thirty minutes in today's age is definitely poor customer experience. But not after Cloud. In fact, now we want to change these five minutes to real-time delivery of data. We are considering database changes. This part is interesting because we are also witnessing a jump in customer engagement. More and more customers are willing and eager to pay for sharp data.

What would you advise to someone who is sitting on the fence about a Cloud shift?

It depends on what role you are into. For me, I

Don't do it because everybody is moving to Cloud. For us, it was about what went wrong in the data centre and how Cloud could solve the capacity and availability requirements. It wasn't about features but needs for a specific business

would challenge an enterprise to think about the advantages from an end-customer's angle; and then let the teams work out the process and figure out what's best for them. Do not do it because everybody is moving to Cloud. For us, it was all about what went wrong in the data centre and how Cloud could solve the capacity and availability requirements. It was not about features but about needs for a specific business. I would urge an enterprise to tie back customers' needs to a goal and then create a technology solution. Cloud is not an elixir. It's simple Infrastructure-as-a-Service (IaaS).

Do you lean towards Private Clouds or Public Clouds?

We have just started on the Cloud journey. We do not see the need of a Private Cloud. As long as one has a good control over data, a Public Cloud works well and is safe.

From 3 lakh users in 2017 to about 15 million in 2019, that's some journey! What next now?

Cloud is laying a good foundation for what we want to do ahead. We want to provide the best-in-class experience for our customers. We are focusing on the data pipeline to create splendid real-time experiences, personalised contests etc. for our users. This is where Cloud would be super-helpful. It can also be a great force to detect early fraud patterns. The team can sleep well in the night and not be tied to the phone, as we did in the past. Sports is a 24/7 industry but the team can have their relaxed time too.

How relevant is a good ecosystem for the success of Cloud?

It may have been a gap five years back but not anymore. Look at the AWS marketplace. The variety and strength of technologies available hints of a great ecosystem. The pricing of the Cloud ecosystem can, however, be better, specially for price-sensitive customers as seen in India.

Finally, what is the future of Fantasy Sports, a market pegged as big as at 100 million users by 2019 (KPMG)? Is the skills versus chance debate still affecting this space?

Data shows that Fantasy Sports enhances sports' engagement. The platform is offering all possibilities that can happen in a game. Selection of players is dependent on a lot of factors. It is a personalised play. It is a category of both skills and the opportunity to have a holistic experience.

OVERCOME AI PARALYSIS: 5 WAYS TO DERIVE BUSINESS VALUE

Every Artificial Intelligence application fits just seven patterns. They repeat themselves in different combinations. These patterns are evident in products that are looking to integrate object, text, image, voice, face or gesture recognition

Nagarjun Kandukuru



Al is the new black. Regardless of their industry, business leaders seem to understand that AI will impact their future in a big way—much like electricity, the Internet and mobile have, in the past. This mindset also falls in line with the shift to a Tech@Core approach that we've found to be characteristic of the ongoing Fourth Industrial Revolution.

Based on the myriad conversations we've had with our clients and market research that's available in abundance, we hypothesize that businesses are finding it hard to identify a suitable starting point for AI implementation.

Finding the start line of your AI journey

As is the case with any other technology, the objective is to discover opportunities that can have an enterprise-wide impact. But most business leaders appear to be overwhelmed since they lack the mental model to understand how they can derive value.

They're delegating the discovery process to data scientists, who are certainly not the best people to

determine business priorities. If you're wondering where you can start your AI journey, we propose the following approaches. Also, this is assuming you have no prior knowledge of AI.

1. Automation and Andrew Ng's one-second heuristic

Full-blown automation completely removes the need for human involvement in any process—self-driven cars are perhaps what come to mind first, but other use cases of automation are seen in manufacturing, banking and cybersecurity.

Andrew Ng, the founding lead of Google Brain says, "If a typical person can do a mental task with less than one second of thought, we can automate it using AI." Some establishments have already started acting on the sentiment and are using AI-enabled bots to resolve customer queries. For example, you have bots deciding whether or not a purchase should be refunded, or a mortgage should be approved.

Our recommendation is to dive into the systems and processes within your enterprise to identify

one-second tasks that are performed repetitively. And, then ask your data/AI teams if these tasks can be automated.

2. Assistance and/or Augmentation with AI

AI's ability to influence decision-making in real-time paints it as an extremely valuable tech investment, and there's more to it than automation. It can also take on the role of providing assistance and enabling augmentation.

For example, in both brick-and-mortar and online stores, AI is seen taking on the role of shop assistants, helping buyers find items and make purchase decisions—Walmart's Bossa Nova, Sephora's Color IQ, Amazon's Online Recommendations engine are a few examples that come to mind.

Interestingly though, AI can assume different roles in different contexts within the same industry. For instance, in healthcare, it augments diagnoses and surgery to help the doctor make decisions. On the other hand, AI-enabled chatbots and virtual platforms assist patients with information gathering. Understanding whether a said task relies on cognitive decision-making or data-driven models can ease the discovery process.

3. AI for high-value predictions

Machine Learning, Deep Learning, Natural Language Processing and Automation have already made a huge impact on marketing, sales, customer service, employee engagement, recruitment and more.

We've partnered with a manufacturing company to build an AI-enabled application that can predict repair and maintenance schedules for heavy equipment. The application does all that while also accommodating advancements or postponements in service calls. It also provides easy access to critical information such as customer and equipment details that could impact sales opportunities for dealers.

Using AI to anticipate problems related to buyer preference, staffing or supply-chain management, and designing relevant solutions can help you extract greater value in the long-term, owing to the cumulative effect of making such predictions.

4. Out-of-the-box AI

In the short time that AI has emerged to the fore of tech discussions, we've seen that every AI application fits just seven patterns—Hypersonalization, Autonomous Systems, Predictive Analytics & Decision Support, Conversational / Human Interaction, Pattern & Anomaly Detection, Recognition, Goal-Driven



NAGARJUN KANDUKURU, VP for Global South Strategy, ThoughtWorks

Systems. They repeat themselves in different combinations.

These patterns are evident in products that are looking to integrate object, text, image, voice, face or gesture recognition. They can also be observed in the ever increasing number of open source, cloud-based AI/ML platforms and tools—much like those offered by Google, Amazon and Mozilla, which encourage developers to build intelligent software applications, allowing businesses to implement them without necessarily hiring AI experts.

5. Customer-facing applications vs. Internal Processes

Another way to discover AI use cases is to simply look at your internal and customer-facing processes, and determine which is in more urgent need of a tech facelift. For instance, if you're a food delivery service, AI can help improve user experience, by recommending meals based on purchase history—clearly a customer-facing use case.

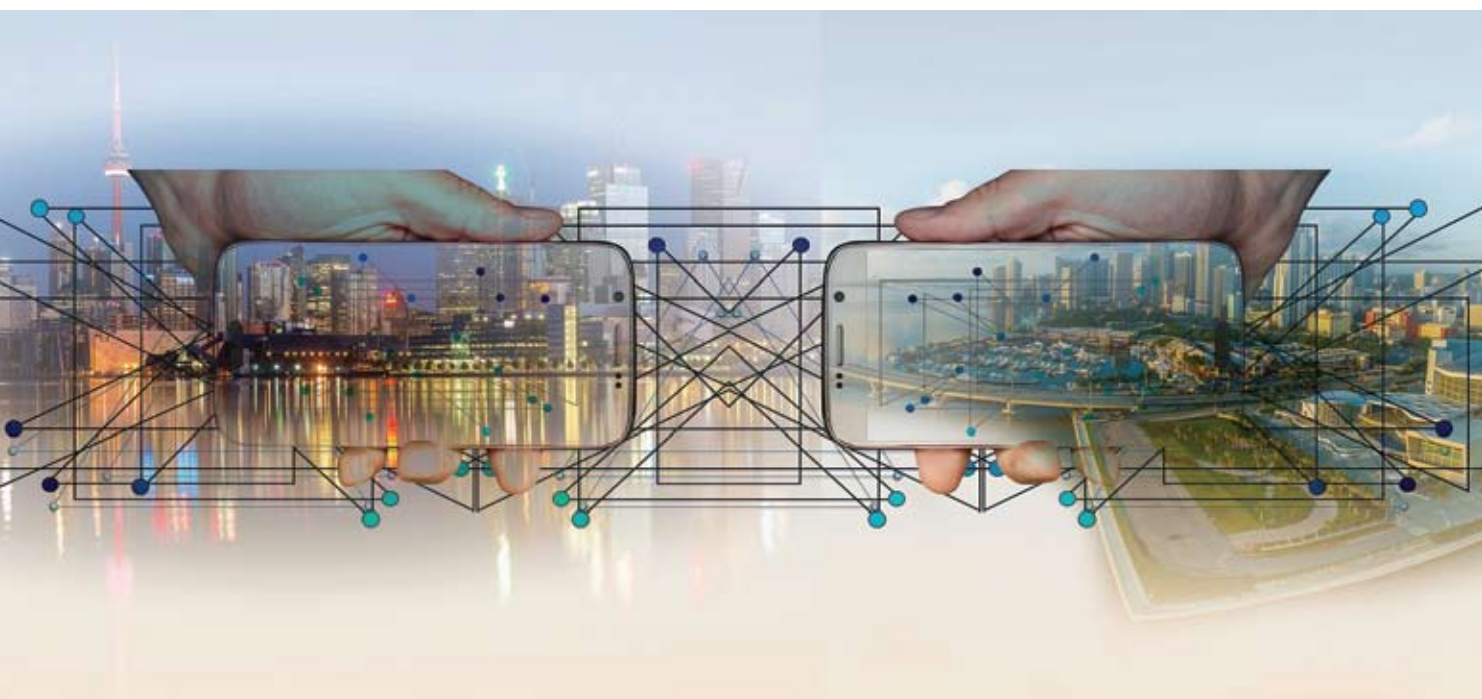
The key to exacting AI's full potential lies in identifying the most suitable role(s) within your use case. The five approaches discussed above may overlap depending on the nature of your business.

The author is VP for Global South Strategy at ThoughtWorks

4.0 IS THE CONVERGENCE OF ALL TECH SUPERPOWERS

Chris Wolf, Vice President and CTO, Global Field & Industry, VMware, talks about a host of issues including their cloud journey, the rising power of Kubernetes, the promise of 5G and what Industry 4.0 means for the tech industry.

Sunil Rajguru
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The cloud journey

We started on this journey about six years ago. We were connecting and working with organisations that were operating in two or more clouds for two or more years. That was kind of our criteria. We asked them: What are the problems you want us to solve? They turned out to be cost management, network, security and policy enforcement. They were trying to go cloud by cloud and to figure these things out on their own. It was very difficult to manage and scale. Our approach is to say, every cloud has unique intrinsic value. Every cloud is adding new capabilities on a daily basis. You're never going to be able to do everything across all cloud. So you pick the things or

the problems that customers want solved. You focus on that.

The hybrid cloud

Hybrid cloud is about having a consistent infrastructure and operational model anywhere you would want to run applications. We have the same infrastructure, same management, same tools, same processes for our applications, whether it's in an AWS data centre or out an Edge site or anything in between. From an integration perspective, if I land an application in AWS and I want to hook that application into AWS Lambda, or Amazon RDS or any other services, you can do that. You have

a lot of flexibility in how you compartmentalise different parts of the application stack. Note very customer and every application is going to land on the VMware fabric.

SMEs and their challenges

When it comes to SMEs in many cases, they have a smaller IT staff. They have to do much more with less people. They can be more aggressive in terms of trying to embrace new technologies that can give them more efficiency. It also applies to large enterprises, to always think about flexibility as a design principle. It can be appealing to say: I'm going to build the entire stack, all in this cloud, using all of their native tools and APIs. This can add a lot of business value, but at the same time that might make you not have some additional options in the future.

The ubiquitous Kubernetes

Kubernetes is highly strategic. The underlying container technology has for long had a value proposition of being able to build an application and run it anywhere. The technology has started to mature and you're seeing a much broader ecosystem come in around those core capabilities. We have been driven to ensure that we cannot just run an application anywhere, but operate it anywhere, which is often harder. How do we enforce security policy? How do we do backup? How do we do change management? So when I can have that consistency, this is where this technology becomes really important.

When I build an application using upstream open source Kubernetes as the orchestration layer, I can deploy that application to cloud, I can deploy it to a data centre, I can deploy to an Edge site. As my business needs change, I have the same agility for my applications and that's why Kubernetes is so important. As we start to build a richer developer services ecosystem, as a platform, you can see the Kubernetes community, potentially having even greater velocity than you see with the public cloud today in terms of what a single provider can do on his own. That's very powerful from a business and strategy perspective that I can build all this



CHRIS WOLF, Vice President and CTO, Global Field & Industry, VMware

intellectual property. And I can maintain all of this flexibility and control in terms of where I want to run that those applications and services I'm creating.

5G: More data in more places

5G is really exciting because it means having broader, richer connectivity to more places allows us to get applications and data practically anywhere at an incredibly low cost. That can disrupt a number of markets. That gives more access to more technology, into more online services, whether that's streaming videos or other personal services. There are lots of complementary technologies that are helping as well from a networking perspective. Our VeloCloud solution can dramatically help reduce networking costs, especially on some of the dependencies on heart circuits and improve performance.

We are making a lot of investments around 5G. We've had projects where we're looking to virtualize 5G networks. From a telco provider perspective, as we create these circuits, we might want to be able to take full advantage of the bandwidth of those circuits. There's definitely some debate on what 5G does in terms of how we actually build our solutions. Some people would say once we have 5G, we can literally just collect data from

all these different places and just run it centrally. But I think it's at the end of the day is going to be the opposite. Because we have all this ubiquitous connectivity, it'll actually make it easier for us to have more data in more places, not more data in lesser places.

New ways of using data

I think the most obvious example is autonomous vehicles, but we see more practical examples where if I can build a Machine Learning model, I can actually deploy it close to where I'm collecting data and make some spot decisions about things. We have a customer operating autonomous trains. We have another customer that has cameras in the jetway of an airport. The camera is actually counting the suitcases getting rolled down the jetway. So they know after so many suitcases, the overhead bin space on the plane will get full. So the gate agents can just start checking the suitcases and putting them under the plane. The business benefit to that is to get the planes off the gate faster. You could apply more planes through that gate on a given day. That helps the bottom line of the airline.

Using ML to the max

Looking at ML, we've been focusing in three specific areas. One, we're running ML algorithms against the various data sources that we collect. We're getting feedback from customers and our global support services. We're getting feedback from industry analysts logging across our different product sets. We've been using ML technologies to understand something as basic as: What are the most important features that we should add in the next version of the product? We can really analyse all of these different data sets and make really smart decisions.

Then there are smart products. We've been baking a lot of ML capabilities into the products. A great example is our acquisition of Carbon Black, which runs a massive data lake. We can stop, on average, up to a million attacks a day. We've added ML capabilities into our vRealize Operations tool. Finally we have smart customers. We've been ensuring that any of the ML technologies that they want to run anywhere is fully supported on our stack. We've had a lot of successes there. We already have customers that have built ML models into Google Cloud and they deploy them using TensorFlow on premises fully supported on VMware. And so on. There are open source projects too.

A key attribute of the 4th industrial revolution is that innovation has become democratised. We've hit a point now anybody with a great idea can participate in innovation, no matter where you are on Earth

4.0: Democratisation of innovation

There is some debate: Are we in the third or fourth industrial revolution? We see Industry 4.0 as the convergence of all of these superpowers of technology: Cloud, mobile, IoT and AI-ML. What's significant now is that we expect just the sheer volume of applications to have more than doubled in the next five years. We see a massive growth in terms of innovation, velocity and just a number of applications. Why you can say this is a new industrial revolution is the algorithms that we've been applying to technology such as AI have been around for decades but in the past we've not been able to scale them. But now that we have all this super dense, high performance, accessible compute power means that we can do some really incredible things. From making split second decisions based on an ML algorithm and data feed in real time, to increasing use of our mobile phones to present Augmented Reality and changing the way we're experiencing both life and technology.

A key attribute of this fourth industrial revolution is that innovation has become democratised. We've hit a point now anybody with a great idea can participate in innovation, no matter where you are in the world. Look at small groups of developers that have made incredible applications in the iOS App Store and they just go viral and take off. Angry Birds was another such example.

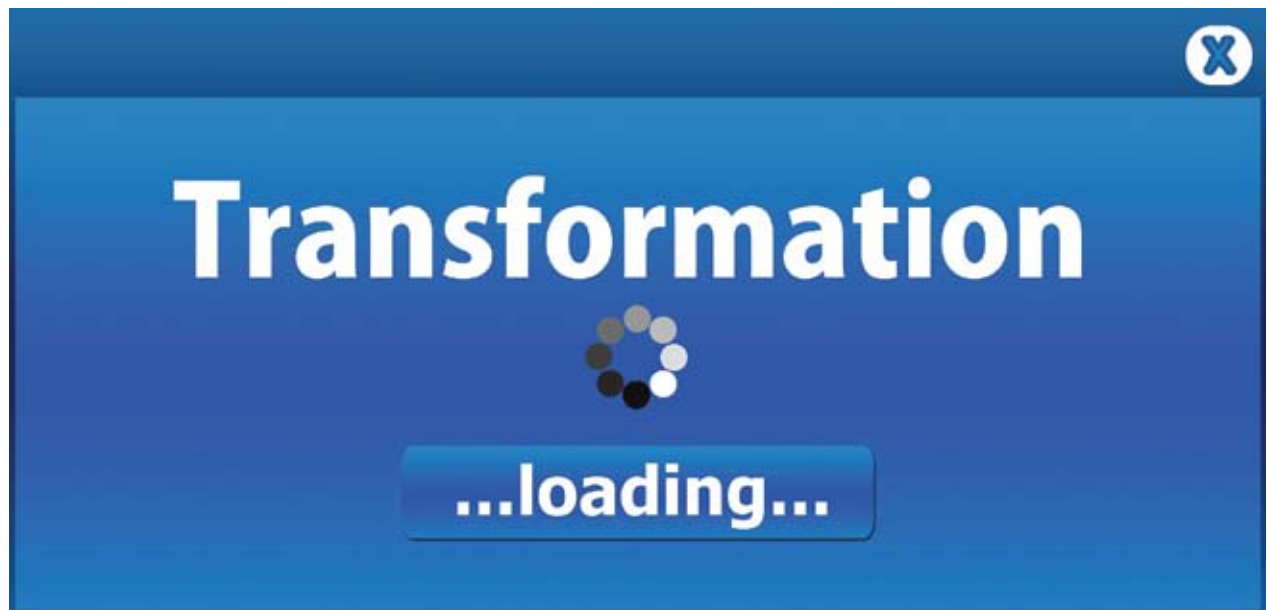
Car companies are saying: Why can't my car be an application platform? Why can't I have an app store for my car? Think about your phone, once you once you start down the path with either an Android device or an iOS device, it becomes a lot harder to switch, so automobile manufacturers would try to build that same type of customer affinity around their platforms.



DATA CONSTANTLY IN TRANSIT, DIFFICULT TO UNDERSTAND ITS PATH

Micro Focus' Genefa Murphy, Chief Marketing Officer, and Saurabh Saxena, Country Director-India, talk about the importance of digital transformation and the changes taking place in the IT industry today

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Implementing digital transformation

Genefa: Digital transformation is not new. It's been around for a long time. Now, it's just got that extra focus. When it comes to digital transformation, you need to look at both above the line and below the line mandates. Above the line is how you can use digital in order to create new revenue streams, new ways to interact or approach with your customers and engage with them. Below the line is how to essentially run the business to be as effective and efficient as possible.

But it's ongoing. Digital transformation is not a one and done thing. You have to run your business while transforming. You're always going to have to do

both. I think the biggest challenge that enterprises have face is when it comes to digital transformation is: Knowing where to start, knowing where to do it and how to take a practical approach. There are many forms of it: You can transform your engagement with the customer. You can transform your IT services. You can digitise your processes. There's the scalability issue too. We see varying levels of maturity when it comes to digital transformation. I think you've seen Europe having a more efficiency and effectiveness on the processes. In Asia Pacific, you've got smart cities initiatives like Digital India.

Then there's the larger enterprise versus SMB. Sometimes that's where the enterprise struggles and

SMBs potentially have an easier approach because they don't have as much heritage complexity, or the scale of complexity. That's where we differentiate ourselves. If you want a provider who is only going to be cloud first, SaaS first, cloud only SaaS only, that's not us. We specialise in the complex. We deal in the hybrid: Hybrid applications, hybrid infrastructure, hybrid data sources.

The Digital India story

Saurabh: In India, the gross merchandise in e-commerce has grown almost 2X in the last 3-4 years. That's ordering food, apparels and everything. Even in public transportation, Ola and Uber have grown from 140 million rides to about half-a billion rides a year in a similar time frame. You are engaging with the customers in a more digital rather than physical nature. In the government e-marketplace and eNAM (National Agriculture Market), the revenues that have increased in the recent year have been tremendous. It's predicted that in the next 4-5 years in India 55% of transactions are going to be cashless. Manufacturing organisations are leveraging digital. They're using insights for production planning and for supply chain optimization.

Analysts will come back and predict that every organisation across board is going to be digital in the next four or five years. Enterprises in the past have invested in a plethora of technologies, probably in silos. They do a CRM project in one way. They do an ERP project in one way. They do an HRMS in another way. They may have an ecosystem, which is across an Oracle, a Microsoft, on a private or public cloud, on virtualized VMware or even open source. It's all over the place. How do you get some sense in this whole ad hoc way? That's why digital transformation is critical. How can you run the way it was running and transform so that you have much more efficiencies, much more optimization and at the same time innovate at lower costs?

This young generation is also an impatient one. They will move from bank to bank, telecom provider to telecom provider, Zomato to Swiggy, Flipkart to Amazon overnight, if they don't get the services, if they don't like the user interface, if they don't like the way that they are being treated. Hence organisations need to keep pace with what the requirement is. This is the current digital ecosystem and digital transformation requirement.

Data explosion-IoT revolution—Are we ready?

Geneva: I don't think we are ready. With all of



GENEVA MURPHY, Chief Marketing Officer, Micro Focus

that IoT, there are a lot of unknowns. The context is changing. We talk about security, risk and governance. We talk about securing what matters most: The identities, the apps and the data. But what is an identity? Is an identity a person? Is an identity a thing? Should those identities be treated equally? The data that they are giving off: Should that be treated equally? Or should it have a different policy. So I may need to treat a person and the data that they create differently to how I treat a thing in an IoT world and the data that it creates.

IoT and other aspects like that bring across a whole other set of use cases that we have not anticipated for how data will be used. In a modern world where data is constantly in transit, across multiple facets, people are moving from their mobile device to their laptop, they're accessing a SaaS based application, a cloud-based application, an on premise application. It's becoming very hard for enterprises to truly understand the path of that data.

The dangers of AI bias

Genevieve: How are we making sure that the algorithms that we're actually building are not subject to the bias of the individual that is building them? You use ML to then evolve that algorithm and

take it to the next level. But if the foundation is not stable enough, then we're not going to be actually creating something that can really truly be successful. I think that's one of the challenges. The algorithm is still built by a human. If you start with a bias, all you're going to do is reinforce the bias. AI is only as good as the data that is available.

One of the big challenges is in the testing space. It's being able to look at building an application that has to run on different platforms: Windows, Mac, Android, iPhone etc. One of the big challenges has always been testing the multiple scripts that you have to create. We've embedded AI into our testing solutions to provide intelligence so that the tool can actually learn more. What does a login button look like consistently across all of these different platforms? So now we can just build one script instead of 5-10 in the past.

Saurabh: We are embedding AI-ML in each one of our solutions across board, whether it is in the area of application lifecycle management in the area of hybrid IT management or in security. We are doing user behaviour and end user analysis using AI-ML. We are automating as much as we can via Robotic Process Automation. I think the whole purpose of AI-ML is automation is: To automate as much as possible and get the humans to do much more innovative work.

Looking to the future...

Genefa: As we go forward in 2020, security will continue to be a prominent feature in the technology landscape, especially as you have the world of IoT evolving, people trying to understand what does

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SAURABH SAXENA, Country Director-India, Micro Focus

truly a world of zero trust actually mean? How do I develop next generation security policies and data governance too? We've seen the start of things like GDPR in Europe and now California has the California Privacy Act. The United States is looking at putting forward their global view of data privacy. We'll start to see much more about predictive analytics and insights and how they can be used to business advantage. There will be a continuing evolution of things like DevOps and how that evolves to be much more about DevSecOps.

Saurabh: The most significant trend that you've seen obviously, is the investment in security. Indian organisations are investing more and more into security testing and application testing at the beginning of the lifecycle itself. In the area of infrastructure, I think most of the organisations realise it's a complex, multi-cloud hybrid ecosystem. They're looking at simplifying the way they can look at what's available in their ecosystem. They are looking to consolidate everything that's happening across silos. It won't be a homogeneous ecosystem. We don't foresee that in the country. I think it's going to be a heterogeneous hybrid ecosystem because the decision making is spread across the enterprise; it's just not left to the CIO. The businesses are making decisions as well.

INSURTECH IS THE WAY FORWARD

Girish Nayak, Chief-Customer Service, Operations and Technology, ICICI Lombard General Insurance, talks about how technologies like IoTs, mobile apps, RPA and blockchain are helping the insurance industry

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Risk management and IoTs

InsurTech is an umbrella term. What traditionally gets labelled as InsurTech is where you're using technology around processes related to on boarding, policy insurance, KYC and maybe even claims handling. There is one aspect which people generally don't label as InsurTech: Risk management. For example in marine insurance, they are transiting goods from place to place on vehicles. High value consignments can be lost due to hijacking. If you send a refrigerated carriage, a malfunction or a traffic hold up could also lead to losses.

So right now along with customers we have a sort of management solution where we are able to track the consignment from source to destination, at what point in time it should be at what place. If we see it stopping for an undue period of time or

even at some other place, we can send a trigger to the nearest police station. We have been able to stop hijackings in the last three to four years due to this. We have been able to save refrigerated consignments too. There are certain sensors inside which tell you whether the refrigeration is working or not. In motor insurance, we have been offering on board IoT (Internet of Thing) devices along with insurance for about a year now. This helps in tracking vehicles and understanding driving behaviour. Right now we have just 15,000 devices and it is just giving us the basic data to understand and work out these models.

Overall the value of goods saved is large. So IoTs are very helpful in situations like these and also in other places like factories. We work with our customers to try and develop the relevant sensors. For the IoT devices, we work with the partners and we also receive all the relevant data points. Integrating IoT devices is not a challenge, figuring out how to use

that data to price the insurance is. A lot of customers like our value added services.

Mobile apps and invisible tech

Today an agent can use a mobile app, so he's able to issue a policy seamlessly in a paperless manner. Even when it comes to claims, when your car meets with an accident, you take it to the garage, which also notifies us with a mobile app. They can even speak it out via the app which gets transcribed. This is notified to the surveyor, who can do a remote survey. The garage just sends a video of the claim. We have done some 5 lakh remote surveys in the last year-and-a-half or so. As our reach increases, it's very difficult for us to send a surveyor to every small location. Our entire health agency also works on the mobile app. All the agents all use it for the complete on boarding process. On the app, they can see the pending renewals, how they are performing as compared to their peers. Health claims are also using AI to process claims faster.

So we may use a serious amount of technology behind every claim. But the customer may not know any of it and for him InsurTech is invisible. The only difference he sees is that something that earlier took 2-3 hours may now take minutes. Whatever technology we use, our main aim is to give service in the shortest possible period in the best possible way. We have been in this business long and have been capturing data digitally for long too. We have that rich data that we can feed to the AI models. We use open source and then we have our own team of data scientists that develops its own secret sauce to make our AI-ML models work better. Going forward they will become more and more customize for our line of work.

RPA and blockchain

(RPA) Robotic Process Automation is also something we've been doing for the last 3-4 years. We have about 350 robots. One area where we are using RPA is for our SME (Small and Medium Enterprises) business. In the smaller towns, agents need quick response from the underwriting, which is usually concentrated in the hub locations. We can't set up branches all over like most PSUs do, so we used technology in certain insurances where you have to deal with various permutations and combinations.

Using RPA, we based an entire process on email, one of the easiest tools available. So all the agent does is sends the client requirements on the email to a particular ID. The robot reads it, picks up the



GIRISH NAYAK, Chief-Customer Service, Operations and Technology, ICICI Lombard General Insurance

data, puts it into the system, gets a quote, sends that quote back, all within 4-5 minutes. The agent can even ask for modifications. Once the client is ok with that, he can issue a cheque. Those cheque details are sent back and the policy is issued. The idea is to give someone what they are comfortable with. They may not be comfortable with entering multiple fields in a mobile, which they find cumbersome. In certain cases an email may be better.

We have set up a blockchain concept and partnered with 5-6 other industry players for the no claim bonus. Basically, we have blockchain where we just notify our claims. So if you have a claim with me and you go to a different insurer one can immediately tell whether there is already another claim. Such data exchange can be useful using blockchain.

We went on the cloud about four-and-a-half-years back. Before that, some of the cloud technologies were not robust enough to handle the size and complexity of the banking system. It's very critical for the customer that the service should be uninterrupted. There was also the restriction that your data had to reside within the country.

TECHS THAT ARE TRANSFORMING FASHION RETAIL

AI in apparel industry has found its application in understanding the demand of the customers through the software. This is helping the retailers to target the right customers, with the right product and the right pricing at the right time

Deepak Mohindra



Indian fashion retail market is set to grow to US \$ 115 billion by 2027. However, understanding customers' ever-changing demands and to speed up time to market have been arduous tasks even for a big apparel retailer, but the situation is taking a positive turn due to rise in technology use in fashion retail. Year 2019 proved to be a significantly good year when apparel retailers in India tried their hands out in 4.0 technologies to pace up with the rapidly changing retail landscape. Use of Artificial Intelligence (AI), Machine Learning (ML) and data analytics has

increased which are being used in functions like 'Buy Online, Pickup in Store' (BOPIS), Click & Collect, Self-Kiosk. Exciting in-store experiences, combating online shopping challenges, personalized shopping experience and better data-driven decisions are some of the benefits that the retailers have been able to deliver with the help of these technologies.

AI-based personalized shopping experience and customer-centric merchandising

Undoubtedly AI has taken over the industries, be

it in automotive, food or apparel; every industry has adopted the technology for better reasons. Indian fashion retail is also pacing up with the trend and a lot of technology providers have emerged over the years, who are using AI-ML in their solutions. Forecasting future trends, identifying customer buying behaviour and fast fashion are the key factors contributing to the growth of AI adoption.

AI in apparel industry has found its application in understanding the demand of the customers through the software. This is helping the retailers to target the right customers, with the right product and the right pricing at the right time. Stylumia and Vue are two leading technology providers in this segment in India which are using AI-ML to keep fashion retailers updated with their on-point trend forecast.

AI-based Chatbots are the new sales representatives being used by the retailers to handle customer queries and contact with customers. These are computer programs or artificial intelligence designed to convincingly simulate human conversation through messaging or chat - the most preferred ways of communication by Gen Z. Streamoid Technologies is one such solutions provider whose AI-based chatbots named Stylebots assist in product discovery, styling advice and customer support. These allow customers to type and ask for a particular product, eliminating the hassle of applying filters, sliders, radio buttons and checkboxes making the product discovery much easier. The company witnessed exponential growth in 2019. ABOF is one of the big names in e-commerce retailing, using Stylebots.

AR-based Virtual Trial Rooms (Online and Offline)

The challenge for e-commerce was to provide an offline kind of experience where the customers could get the actual look of the garment. The problem of brands increased with high return rates due to sizing issues. While offline, the ease and comfort of online shopping with huge deals created a tough competition for them. Standing in the long queue of trial rooms and checkout counters were among a few challenges to be tackled. AR (Augmented Reality) came up with a solution to solve these problems which were manifesting every now and then.

In the start of 2019, Biba, the women's ethnicwear brand, collaborated with AstraFit, an online fitting room service for fashion e-commerce. It introduced the AR tool to its online platform which allows the customers to try clothes virtually on the 3D models helping them to see the size and look of the garment.



DEEPAK MOHINDRA, Chairman, Apparel Sourcing Week

Another tech company that has emerged strongly in this segment is TryNDBuy which is providing virtual trial rooms to the retailers. The company provides a technology that allows users to try clothes and acts as a virtual stylist suggesting the customers about the overall look.

POS and Self-Checkout Kiosk

POS has become a common system for the retailers and Indian companies are also using it more than ever. Being Human is one such brand that has a strong offline presence across the country and the brand has ensured it has a common POS across its stores including its franchise stores. In 2019, the brand started working on the mobile POS concept and the same is scheduled to be rolled out soon.

Companies like Ginesys have extended full support for developing new-age POS technology. This year, a fashion tech solution provider launched Mobile POS ZWING, a device which allows payments through anywhere in the store. The solution can replace the traditional checkout counters in the stores. The mobile POS is a small handy device

just like the debit card machine which allows the shopkeeper to complete the customer shopping purchase through that.

'Self- Checkout Kiosk' is a system that allows customers to bill their merchandise and complete the payment transaction in a few simple steps on their own with almost negligible intervention from the store's staff. This leads customers to not be a part of long queues as Self-Checkout Kiosk enables quicker checkouts.

A leading fashion brand, Lifestyle introduced the same in a few of its stores in 2019 and has been successfully running it.

A prominent e-commerce platform, Myntra also opted for 'Self- Checkout Kiosk' in its newly launched fashion lifestyle RFID-enabled offline store, 'Roadster Go' which allows customers to pick up apparel and accessories without any assistance from staff, discover real-time online prices and do a self-checkout in 30 seconds, eliminating the need to scan individual products or remove security tags from each garment.

Blockchain and interoperability

Blockchain is a technology which is gaining



ground strongly and the industry talked a lot about it in 2019. The most important benefit of using blockchain is that it allows the data to be more interoperable. This makes the data informational to be shared and be available with brands, manufacturers, suppliers and vendors. It also provides transparency. The use of this technology can help the manufacturers know if the product is original or fake. Blockchain helps in record keeping and provenance tracking as the product information can be traced through embedded sensors and RFID tags.

This further helps consumers as they are more aware and advanced than ever and they know about the unethical and environmentally harmful practices being conducted by their suppliers. It is impossible for companies to make sure that human rights are respected, working conditions are adequate and the environment is safeguarded without knowing where their products are made and that's why transparency is essential. Blockchain even provides detailed history about the product right from its origination to where it is presently.

In 2019, a tech start-up Infinichains started working on an organic cotton pilot study with Pratibha Syntex, India-based renowned apparel manufacturer, in a bid to trace product from farm to garment and from garment to farm using its 'credible' software tool. According to Infinichains officials, the software is being built to allow the acquisition of cotton to be recorded and for the correct payments to be made.

The most important benefit of using blockchain is that it allows the data to be more interoperable. This makes the data informational to be shared and be available with brands, manufacturers, suppliers and vendors. It also provides transparency and helps identifying fakes

The author is Chairman, Apparel Sourcing Week

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DIGITAL TRANSFORMATION: OPPORTUNITIES AND CHALLENGES

The data journey looks at how a company collects data from multiple digital end points; how the data is stored; whether the data is analyzed and processed through AI, ML or digital learning; whether it is being shared through collaborative and proactive feeds and feedback loops

Bala Mahadevan



As the world goes digital, rapid adoption of technology has become the sign of a developing nation. India's technological growth opportunities are being driven by increasing disposable income and affordable and faster Internet connectivity, resulting in increased customer adoption. Though digital adoption has helped India cross 500 million Internet users in 2018, the 'buzzword' digital transformation is often

misunderstood, leading to unclear benefits and a barrier to adoption.

Ideally, digital transformation refers to accelerated change of a business in the modern world due to the widespread adoption of digital technology services. The latest emerging technologies such as big data analytics, artificial intelligence, machine learning, cloud, Internet of Things, and cyber security are finding favor with business leaders.

With advanced technology, India could eye economic development, superior education and training, and provide business and employment opportunities. According to a study by Microsoft, 4% of India's GDP is accredited to the direct use of digital technologies such as mobility, cloud, IoT and AI. It created and strengthened business models, creating new offerings, services, and products, as well as enhancing work structures and human resource development. For example, the use of both cloud technology and IoT has enabled the government to kick-start India's smart city projects that offer a connected environment- ensuring better safety, convenience, economic growth, and energy efficiency. This technology will also be embedded into the city to deliver improved urban services like public transport, healthcare, intelligent buildings and green energy.

However, one IDG study revealed that while the businesses understand the benefits of going digital, only 60% of companies are yet to make the change. This is primarily due to challenges such as budgets, talent and security.

Budgeting is a major roadblock in the path to digital transformation, and rightly so. Implementing any new system or process into a business needs investment, and the same is true for digital technologies. According to an industry report, spends on digital transformation by businesses is expected to reach US\$1.7 trillion by 2020. And with most senior executives citing insufficient budget as a leading issue, businesses need to think laterally about the return on investment that follows digital technology implementation.

Also, over 60% of IT decision makers are unable to deliver digital projects due to talent-gap, says Infosys. Organizations need to invest in existing teams to upskill or bring new people on board. They may also find that digital change has led to the creation of specialist roles that weren't needed before, such as robotics technicians or big data analysts. Businesses need to thoroughly understand what skills they are lacking. Without skilled professionals at the helm, digital transformation projects will not be successful.

If digital transformation is the strategy of the future, security is its core pillar. Today a cyber-attack can undo the progress of a company made possible by digital transformation—leading to financial and reputational damage. Companies should prioritize updating their standards and protocols to prevent and anticipate attacks. They ought to consider the complexity of today's threats and find trusted



BALA MAHADEVAN, CEO, Orange Business Services, India

partners that can secure strategic assets, ensuring gains made in digital transformation are secured.

A lot of businesses make the mistake of thinking that digital transformation is just for the large customer-facing corporates. It is quickly becoming a mainstay for start-ups and SMEs. Whether it's streamlining processes, improving customer satisfaction or flexibility — all of which lead to heavy cost savings — the benefits significantly outweigh the risks if implemented in the right way. For example, with actionable insights from data analytics, business heads can focus on specific areas to scale performance or free up man-hours when employees are overworking – creating a balance.

We see data as a journey. It varies by company, size, scale, industry, region, regulations, business outcomes and strategy. This data journey looks at how a company collects data from multiple digital end points; how the data is stored; whether the data is analyzed and processed through AI, ML or digital learning; whether it is being shared through collaborative and proactive feeds and feedback loops; and if all these activities are being carried out in a safe and secure manner.

Through the ecosystem is filled with opportunities and challenges when it comes to digital transformation, it can be argued that no business will ever 'complete' digital transformation. It is a perpetual journey, influenced by the fast-paced world we live in today, driven by constant innovation and radical ideas.

The author is CEO, Orange Business Services, India

TECHNOLOGY HELPING ONLINE CARD GAMES IN INDIA

Many gaming portals are investing in data science algorithms to improve gaming patterns, collect and study data to develop customized gaming experience for card gamers

Sunit Warraich



The advancements in technology have touched our everyday life in some or the other way. Our dependence on modern-day technology is proof that it has improved our lives and made it convenient and entertaining. Every other day, a number of mobile apps are launched which help us ease our daily lives. Be it simple apps like a calculator or a banking app, each one provides a solution to a problem. Similarly, technology has influenced the gaming industry primarily in the last decade. Gaming apps are not only entertaining and engaging, but also provide a source of income where people can use their advanced skills in card games, general knowledge quiz games etc. to earn money.

The rapid growth in digital innovation has led to the expansion of online gaming industry in the

country. The new generation has shown more interest in digital games and entertainment. According to a recent study, approximately 55% of casual gamers and 66% of the heavy gamers across India were seen to be below 24 years of age in 2016. This demographic is significant for businesses in India as the average age of Indians is 33-35 years. The numbers of online gamers in the fiscal year of 2019 were 300 million; this number is estimated to go up to 440 million by the fiscal year of 2022. The online game downloads on app stores have also shown a growth rate of 165% from 2016 to 2018 in India.

Card games then and now

Playing cards has been quite common for centuries. The card games were introduced in the 16th

century in India by Mughal Emperors, it was known as "Ganjifa". Ganjifa was a court game played with lavish sets of cards.

In India, playing cards during family gatherings are a common tradition. Be it a train journey or gatherings during Diwali, playing a variety of games using cards is a familiar sight. Rummy, Bluff, Bridge, Teen Patti are among the most popular card games in India.

With the innovation in technology, the way these card games are played has altered drastically. These games have been transformed both in their form and features. However, the thrill and fascination for these games remain the same despite the change of platform, new features, new emojis or avatars, rules and players.

Card games were played with physical cards. However, the advent of the Internet has enabled it to be played on a digital platform. Technology has transformed game tables to a virtual lobby where there are more tables and versions to choose from. Online card games such as Rummy and Poker can be enjoyed on various online rummy sites that contain high-quality sound effects and high definition graphics to enhance the user experience. This new card game format enables players to customize the look of the entire game and offers the best playing experience.

The gaming industry in India

In India, a massive transformation in the gaming industry is due to the emergence of smartphones, as these offer high-end technology for affordable prizes. According to Statista, the market value of mobile gaming in India was estimated to reach about US\$405 million by 2022 and the number of mobile gamers was assumed to reach around US\$ 628 by 2020. Overall, Indian gamers prefer more mobile games than computer or console games, may be due to access to high-speed Internet, developed tools and apps (Google Play or Apple app store). Online card games have also increased with a growth rate of 100% every year. With the help of latest technology, our favourite card games have now become hassle-free and more enjoyable. Online games like Rummy and Teen Patti have become the latest rage among online players.

Technological advancements in online card games

Card games can be played anytime, anywhere on any device because of the easy availability of Internet for cheaper rates. Players can now have an enjoyable gaming experience in real-time. The new and innovative technology has exhibited innovative features



SUNIT WARRAICH, CEO, Rummy Baazi

and new formats in online card games which attracts more players towards the game. Card games on virtual platforms offer safe and transparent environment through various responsible gaming features. It is observed that the digital transactions on online card gaming apps are safer and hassle-free due to ultra-modern technology. These apps make sure that their user data, transaction details and personal information of their players remain safe as they enjoy gaming worry-free.

Today's gaming world has upgraded in comparison to what it was in the last couple of decades. New and latest technologies are evolving at an impressive rate which has resulted into apps offering realistic and unmatched gaming experience. Games like Rummy have been remodelled and easily available online in more interesting and thrilling form. Many Rummy gaming portals are investing in data science algorithms to improve gaming patterns, collect and study data and develop customized gaming experience for card gamers.

According to the present scenario of the gaming industry which is growing at an exponential rate, the coming times look promising. The future of online card games will be more interesting as the reports indicate that the gaming industry in India will be more than US\$1.1 billion by 2020.

The author is CEO of Rummy Baazi

CREATING THE WAREHOUSE OF THE FUTURE

More and more retail companies are now realising the advantages of newer technologies and how they could help in reducing inefficiencies and operating costs in the warehouses

Vivekanand



In today's day and age, industries are betting on innovation to progress and the supply chain function is not behind the curve. With fast evolving market trends and emerging new demands from consumers, supply chain needs to be well organised and optimised to keep up with these developments. Imagine an e-commerce player receiving millions of

orders every day and then dispatching them within one single day! In order to meet these sheer volumes of orders, supply chain becomes a highly critical function across for such companies.

India's retail market is expected to increase by 60 per cent to reach US\$ 1.3 trillion by 2020. The phenomenal growth of e-commerce in a relatively short

span of time and the rapidly evolving consumption patterns for consumer goods present a wide range of distribution challenges. There is stiff competition among players, more so, with the rise of new delivery patterns such as same day deliveries. With the advent of online shopping and the market expected to cross US\$170 billion by FY30, consumers today are looking for a more omni-channel experience. Furthermore, the implementation of GST has propelled consolidation of warehouses at one given location, which will make the task to manage the soaring volumes and demands a massive one. These factors have propelled supply chain companies to move beyond traditional systems to meet these challenges.

Businesses today operate in a volatile and multi-SKU (Stock Keeping Unit) environment, handling large numbers of orders to be shipped every day. Increased volumes, cost pressures, and the need to run leaner processes make inventory management in supply chain much more complex than before.

Warehouses are the most critical part of the supply chain, constituting about 60% of the function. They are the hubs for fulfilment and distribution services and catalytic to ensure a seamless supply chain. Hence, with growing complexities in supply chain and evolving market trends and consumer demands, flexible warehouse automation is the need of the hour.

So how are the warehouses evolving?

Convenience of instant gratification is only possible when the operations in the warehouses are driven by technology integration and automation. Retailers are now upgrading their warehouses with flexible automation as they race to meet the consumers' demands for faster deliveries and omni-channel experience. We are also witnessing a shift towards smart, flexible and agile distribution facilities, laden with applications of robotics, Artificial Intelligence and Machine Learning that help optimize the warehouse functions.

Today, Etailers and 3PL players are moving towards adoption of technology which can help them overcome the challenges that supply chain operations encounter every day. These technologies are also environmentally and workplace friendly which is a huge consideration for businesses. Companies are reaping the benefits of the huge advantage and potential that such technologies offer such as flexibility, cost-effectiveness, enhanced productivity and effective space utilization. For instance, 'cobots' or collaborative robots have entered the current warehouse



VIVEKANAND, Country Manager India and SAARC, GreyOrange

scenario where they work with a human operator to fulfil orders and enhance picking productivity. By combining AI and Machine Vision to revolutionise picking high-mix SKU inventory, these robots help improve the throughput multi-fold. Another example is where AI-driven autonomous robots are deployed to reduce order fulfilment and inventory replenishment time, thus enhancing business agility and growth as well as eliminating complexity.

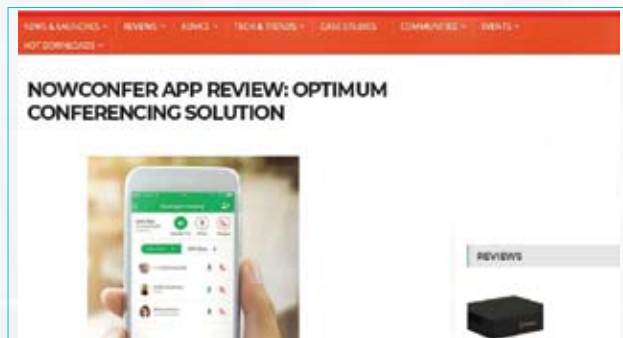
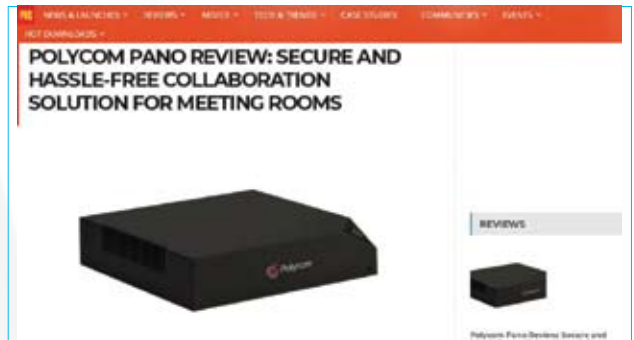
As we move forward, we will see an uptick in this trend of adopting these technologies in warehouses to move up the value chain. More and more retail companies are now realising the advantages of these technologies and how it could help in reducing inefficiencies and operating costs in the warehouses. By providing the promise of agility, these technologies also help businesses tackle the growing demands and aggressive competition in the market. In the years to come, a company's supply chain will help define its success and how it copes with the ever-growing customer expectations, and how digital transformation and bot economy will lead to futuristic, agile and flexible supply chains to stay ahead of the curve.

The author is Country Manager India and SAARC, GreyOrange

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BLUETOOTH HEADSET

ZEBRONICS ZEB-ENVY REVIEW

— Ashok Pandey
ashokpa@cybermedia.co.in

Zebtronics brings a new pair of headphones with an attractive design. It looks nice and trendy, has a detachable mic and foldable design, enabling you to carry the headphones easily in your bags. The Zeb-Envy comes with 33 hours of playback time which is seriously impressive, but would it translate the same in our testing, let's find out...

Build quality

Zebtronics Zeb-Envy has minimalistic design ethics. Its earcups have a hexagon shape exterior hosting LED lights. There is a button to control the LED lights of the earcups and it has three different light modes that looks cool especially in the dark.

The headband is made of steel and allows you to adjust the size as per your comfort. The inner cushioning is perfectly fine to wear it for longer hours. The earcups are comfortable to wear and good for noise isolation, as well. The detachable mic has good length with a rigid design enabling to bent it easily.

The control buttons are placed on the right earcup – volume rocker and track change, play/pause, and power on/off and LED control switch. And a USB port is located next to AUX port to charge the headphone.

Performance

Pairing the Zebtronics Zeb-Envy is quite easy as like other Bluetooth headphones, just power-on your phone's Bluetooth and the headphone. Look for the Zeb-Envy to connect the headphone.

Zeb-Envy is lightweight, only 238 grams, and equipped with Bluetooth version 4.2. The wireless range of the headphone is 10 meters. In the real world, the connectivity was perfectly fine within eight meters of range and then there was a little drop.

The earcups hold 40mm driver with 32Ω Impedance and 20Hz – 20kHz frequency response. To test this headphone, we used test tracks: Angel of Mercy by Black Label Society, Stadium Arcadium, brutal bass drops, trance music and Bollywood romantic and dance songs.

The Zebtronics Zeb-Envy headphones deliver a balanced sound and its frequency distribution is also well managed. On tracks with intense sub-bass content like Titanium by David Guetta which features dance club style beats, the headphone performed well pushing the appreciable amount of bass. Sia's vocals were clearly audible in between the bass of this electric pop song.

The mids sound clear and warm and provide enough detailing to keep enjoy favorite music. At the highest volume, the headphone provides an ample amount of loudness and at the same level, we found some amount of noise leakage too.



Price: ₹ 1,998 on Amazon

SCORE

PRICE: **8/10**
PERFORMANCE: **9/10**
FEATURES: **9/10**

Overall: **9/10**

KEY SPECS: SBT version: 4.2+EDR; Wireless range: 10 meters (Without obstacles); Driver Size: 40mm; Speaker Impedance: 32Ω; Frequency Response: 20Hz - 20kHz; Sensitivity: 118dB±3dB; Charging time: 3hrs; Playback time: 33hrs*; Microphone Impedance: 2.2kΩ; Microphone Sensitivity: -38dB±3dB

PROS: Design, LED lights, battery life, sound

CONS: Bluetooth range could be better

Battery life

Zebtronics claims to offer 33 hours of battery life. We tested the battery life in our real-world loop test. We fully charged the headphone and then played different genres of music on full volume. It was able to deliver more than 14 hours of playback in one full charge, which is not close to 33 hours, yet impressive.

Bottomline: Zebtronics Zeb-Envy has a durable body, compact design and unique LED hexagon lights on the earcups. The foldable headphone is easy to carry and offers a balanced audio output. Packed with impressive battery life, the headphone is the perfect choice at this budget.

SMART LED BULB

PHILIPS SMART WI-FI LED BULB REVIEW

— Ashok Pandey
ashokpa@cybermedia.co.in

Signify (formerly known as Philips Lighting) brings a smart LED bulb that can be operated using a mobile app or voice assistants including Siri, Google Assistant, and Amazon Alexa. The Philips Smart Wi-Fi LED Bulb works on the WiZ technology platform.

Setup

Like other LED bulbs, just install it in your room and switch on the power. Now install the WiZ app on your smartphone or tablet and connect to your home's Wi-Fi network. Now just follow the instructions to connect your bulb with Wi-Fi. Once connected you can control the bulb with your smartphone or voice assistants.

Features

The Philips Smart Wi-Fi LED Bulb lets you create the perfect mood for every moment. Choose from its millions of color options or use its preset themes or create special customized light settings. You can also tune your Philips Smart Wi-Fi Bulb to the perfect shade of white light, ranging from warm white to cool daylight to suit your daily tasks.

Using the WiZ app you can set up scenes, schedules, and "rhythms" (automated lighting transitions designed for regular, daily use). The app dashboard you quick access to a virtual on/off switch, a nightlight mode, and two sliders: one for brightness and one for color temperature.

Tap on the icon indicating the current white color temperature to access color settings. You get access to plenty of colors and other preloaded lighting features. All Philips Smart Wi-Fi bulbs support Alexa, Google Assistant, and Siri for voice control.

It also has timer and scheduling functions enabling



SCORE

PRICE: **9/10**
PERFORMANCE: **9/10**
FEATURES: **9/10**

Price: ₹ 749 on Amazon

Overall: **9/10**

KEY SPECS: Conveniently control your home lighting using the WiZ app, or with Amazon Alexa, Google Assistant or Siri shortcuts; Wirelessly dim your Philips Smart Wi-Fi LED bulb or choose from preset light scenes for ambiance; Change the shade of white light – from warm white to cool daylight – to suit your daily tasks; Make your home glow with any color you like, choose from millions of color options; Set light schedules and timers

PROS: Pleasant brightness, app interface, voice assistant

CONS: None

you to switch on automatically as you reach home.

Performance

We are using the bulb for quite a long time, the light quality is very pleasant. It works perfectly in different color schemes. The app interface is quite simple, anyone can access different settings easily and set the scene and schedule the On/Off timer.

Bottomline: Philips Smart Wi-Fi LED bulb is perfect to set the mood for any moment. With the pleasant and bright light, this the right bulb for your home and office

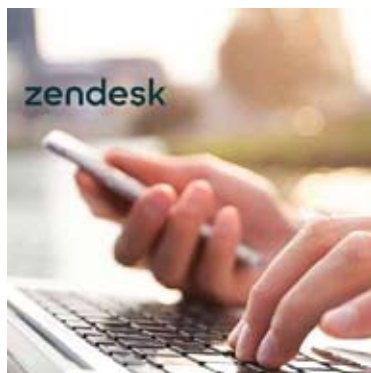
TEXAS INSTRUMENTS INTRODUCES JACINTO 7 PROCESSOR PLATFORM



Texas Instruments introduced the Jacinto™ 7 processor platform, bringing enhanced deep learning capabilities and advanced networking to solve design challenges in advanced driver assistance systems (ADAS) and automotive gateway applications. The first two automotive devices in the platform, TDA4VM processors for ADAS and DRA829V processors for gateway systems, include specialized on-chip accelerators to segment and expedite data-intensive tasks, like computer vision and deep learning. Additionally, TDA4VM and DRA829V processors incorporate a functional safety microcontroller, making it possible for original equipment manufacturers (OEMs) and Tier-1 suppliers to support both ASIL-D safety-critical tasks and convenience features with one chip. Both devices share a single software platform, which alleviates system complexity and cost by enabling developers to reuse their software investment across multiple vehicle domains.

ZENDESK LAUNCHES SELL MARKETPLACE

Zendesk announced the Zendesk Marketplace for Sell apps, which provides companies' sales teams with a central place to access critical customer information from additional tools in the sales stack. Now, sales reps can access important customer context from various marketing, quoting, storage and invoicing tools directly within the Zendesk Sell interface to create a single, comprehensive profile of the prospective customer. "Customers increasingly expect companies to collaborate internally and with partners on delivering a great experience, from education to consideration to purchase and when issues need attention," said Adrian McDermott, President of Products, Zendesk.



AUTOMATION PROVIDES COMPETITIVE ADVANTAGE TO RETAILERS

Retailers will need to prioritize automation that creates positive consumer experiences rather than as a cost saving exercise,



according to new research from the Capgemini Research Institute. The report, "Smart Stores – Rebooting the retail store through in-store automation," which surveyed over 5,000 consumers and 500 retail executives across North America, Europe and Asia, found that a majority (59%) of consumers who have previously visited stores with automation said they would be willing to shift their in-store purchases from a retailer without automation technologies, to one that offers them, rising to 67% for 22-36 year-olds. Most consumers believe automation can help to solve pain points they experience in-store including long checkout queues (66%), difficulty in locating products (60%), and products being out of stock (56%).

HITACHI VANTARA UNVEILS ENTRY-LEVEL STORAGE IN INDIA

Hitachi Vantara introduced its entry-level storage system, Hitachi Virtual Storage Platform G130, for the India



market. VSP G130 is an extension of the hybrid-flash VSP G series systems that supports smaller data center modernization initiatives. VSP G130 provides agile data infrastructure with minimal costs for SMBs, remote or branch offices that need local backup capabilities, direct attached storage (DAS) environments, and simplified virtual server deployments. Businesses need to adopt storage solutions that consolidate workloads with minimal investment, provide value and extract business insights. It is also critical for storage solutions to support current and future cloud strategies with enterprise-grade reliability and operational simplicity. VSP G130 is able to address all these challenges for customers with smaller deployment needs.

SOPHOS INTRODUCES INTERCEPT X FOR MOBILE



Sophos introduced Intercept X for Mobile with new security capabilities for Chrome OS devices and improved mobile threat defense for Android and iOS devices. It continuously monitors for and alerts users and IT administrators to signs of potential compromise so they can rapidly and automatically remediate issues and revoke access to corporate resources. Compliance checks detect jail breaking, rooting, operating system versions, and more, informing users and IT administrators of violations and taking automatic action.

CHECK POINT SOFTWARE NEW SECURITY GATEWAYS

Check Point Software Technologies announced Fast Track Network Security, a new suite of solutions which deliver unprecedented protection, scalability, and ease of deployment and control for enterprises, from branch offices to corporate data centers. It directly addresses the three main security challenges facing enterprises today: lacking a full set of security technologies to protect against advanced Gen V cyber-attacks; an inability to quickly scale up security according to business need; and complex, disjointed security management processes. The suite features five new Check Point Quantum Security Gateways for branch office to mid-size enterprises, and one gateway designed for Maestro Hyper scale orchestrations for large enterprises and data centers.

LYRA LAUNCHES 'PAYMENT SWITCH'

Fintech player Lyra Network India has introduced 'Payment SWITCH', a solution to facilitate real-time payment processing. It works on AI-backed software system that assists in communication between various providers and performs payment and settlement process smoothly for both online and offline transactions. It is a rule-based authorization and switching solution which dynamically routes payment transactions between multiple acquirers and Payment Service Providers in the most efficient way possible. The technology is compliant with RBI's regulation on storage of sensitive card information.

BUZZOKA VENTURES INTO MEME MARKETING

Marketing company Buzzoka has forayed into Meme Marketing. Meme is an innovative medium



to reach the digitally and socially savvy audience and is becoming popular with millennials which constitute a major chunk of the digital landscape. Memes are snackable, crisp and help to ride on topical content that is becoming a challenge for brands across the globe. Ashutosh Harbola, CEO, Buzzoka said "Memes have been all around the web and we are seeing higher engagement metrics and screen time with users. Sadly, no specialized player is helping brands to use the power of memes to the fullest. Memes have a definite potential to become a major phenomenon and we as a company are committed to taking the first foot forward." Harbola Adds "Anything that is engaging in this complex digital world is worth selling and we are assured that Buzzoka will gain desired results."

MEDIATEK LAUNCHES CHIPSETS FOR MID-RANGE 5G SMARTPHONES

Taiwanese fabless semiconductor company MediaTek launched "Dimensity 800 Series" ships for the premium yet mid-price range 5G smartphones. The "Dimensity 800" 5G chipset family offers powerful system-on-chips (SoCs) with integrated 5G modems. The first devices featuring Dimensity 800 Series SoCs are expected to launch in the first half of this year. The Dimensity 800 series integrates MediaTek's 5G modem in one compact design, delivering significant platform power savings compared to two-chip alternatives.



AVEVA RESEARCH FOR DIGITAL TRANSFORMATION AGENDAS

Artificial Intelligence, Engineering Design and Cyber Security are identified as priorities for organizations globally, according to an AVEVA global survey which identified the key investment drivers for digital transformation. The survey was conducted with 1,240 decision makers in ten countries1 in EMEA, North America and APAC across nine industry verticals2. There is a strong demand across both industries and markets to implement advanced technologies such as AI and data visualization to make sense of vast data streams in real time, with 75% of respondents globally prioritizing investment in AI and analytics. It was also found that Asset Performance Managers (APM) have the most demanding desires for technology investment, requiring a far-reaching product set and visionary approach.

PIONEER'S CONICAL SUBWOOFER WITH RUBBER SURROUND

Pioneer India has launched TS-A30S4 subwoofer with Glass fiber and mica reinforced IMPP cone. The combination of the material and dynamic tornado step shape realize high rigidity and authentic bass sound.



The highly compact subwoofer with 12" diameter is 4 ohms voice coil subwoofer. TS-A30S4 conical subwoofer is reinforced with glass fiber and mica, and its powerful motor assembly is able to achieve punchy and loud bass sound at 1400W maximum power. The subwoofer's Rubber Surround increases movement stability and linearity which help to produce accurate bass sound.

IBM AUTOMATION INNOVATION CENTRE IN PUNE

IBM inaugurated its Automation Innovation Centre (AIC) at Pune. The AIC is a state-of-the-art facility themed around Intelligent Automation and Future of Work, with experiential demonstration centres showcasing IBM's flagship Automation Platform, Digital Worker suite of solutions, Automation Operations Command Centre for monitoring and managing bots, and co-creation zone for quick Design Thinking with visiting clients, all hosted in an agile workplace. The AIC also showcases industry vertical solutions for Banking, Insurance, Retail, CPG, Telco, Healthcare etc and the intersection of automation solutions on enterprise applications such as Salesforce, SAP and Workday which are a significant part of IBM's services business.

INTELLECT SEEC LAUNCHES CONTEXTUAL SENTIMENT API

Intellect SEEC, the insurance software division of Intellect Design Arena Ltd, launched its Contextual Sentiment API on Amazon Web Services (AWS) marketplace. This API uses Machine Learning and Natural Language Processing (NLP) technology to provide real time text analysis and score/measure the contextual emotional response to a product/brand or a service. It enables customers to securely use the API for text analysis, including how a specific word was used in a given context. This new development will allow users to quickly detect sentiments expressed in company reviews, product surveys, social media posts, and other data sources to measure satisfaction and identify trends.

INDUSTRY SOLUTIONS STRATEGY FROM SERVICENOW

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BARCO LAUNCHES CLICKSHARE CONFERENCE

Barco India launched its next-generation wireless conferencing solution, the ClickShare Conference, based on the concept of BYOM (Bring Your Own Meeting), as it takes away



all the friction points related to hosting video conferences from your own device. Whether used in huddles spaces, meeting rooms or boardrooms, ClickShare Conference works seamlessly with your videoconferencing software, your camera brand, your laptop, and makes remote meetings as intuitive as having a face-to-face meeting. The new range that includes 3 models: the entry-level CX-20, the CX-30 and the high-end CX-50, provides users freedom to choose how they collaborate securely as the solution is triple-agnostic. They can join the meeting from any device and space while enjoying all the familiar benefits of the Unified Communication or videoconferencing tools and AV USB-peripherals available in the room.

UBER RIDES INTO JAMSHEDPUR

Uber announced the launch of its operations in Jamshedpur, making it the 58th city across India where consumers can book rides by simply downloading the Uber app. With this launch, Jamshedpur becomes the second city in Jharkhand after Ranchi, where riders can now book UberGo services. Jamshedpur reported one of the fastest adoptions of the Uber service in comparison to all new Uber city launches in 2019 since the launch of operations last December. The company plans to soon launch aUberPremier and UberIntercity service from Ranchi-Jamshedpur.

SYSKA LAUNCHES WI-FI ENABLED SMART PLUGS

Syska Group announced the launch of its Smart Wi-Fi Plug with Power Meter 16A and Smart Mini Plug 10A under its smart home segment for large and small to mid-range home appliances respectively. The Syska Smart Plug and Smart Mini Plug lets you control your home and office appliances through voice assistants like Alexa and Google Assistant from any corner of your home. You can turn on/off, set schedules and timers for the devices connected through this plug. They can be controlled remotely with the Syska Smart Home App and are priced at INR. 4,190/- and INR 2,599/- respectively. Both the smart plugs are available for purchase across leading online and retail stores.



LAWRENCE AND MAYO ADVANCED MOBILE MAPPING

Lawrence & Mayo's latest offering is the highly-advanced GexCel mobile mapping solutions that are set to bring a much-needed upgrade to the construction and infrastructure segment. The GexCel scanner single-handedly manages to capture, with no initialisation procedure and is ideal to quickly and repeatedly survey complex environments. The scanner represents a new step in the fast mapping solutions, besides the 3D geometrical documentation. The user has now the possibility to detect scene details with 5k resolution 360° colour images. Equipped with the desktop software to process the acquired data (point clouds and images), it minimises the "Drift" effects (patented bundle adjustment process), filter moving and aides to construct deeper analysis and create measurable blueprints.

ALGORITHM TO MAKE AI FAIRER

Dr Deepak Padmanabhan, a researcher from Queen's University Belfast has developed an innovative new algorithm that will help make artificial intelligence (AI) fairer and less biased when processing data. Dr Padmanabhan has been leading an international project, working with experts at the Indian Institute of Technology Madras, to tackle the discrimination problem within clustering algorithms. Companies often use AI technologies to sift through huge amounts of data in situations such as an oversubscribed job vacancy or in policing when there is a large volume of CCTV data linked to a crime. AI sorts through the data, grouping it to form a manageable number of clusters, which are groups of data with common characteristics. It is then much easier for an organisation to analyse manually and either shortlist or reject the entire group.

MADE IN INDIA RANGE OF METAL 3D PRINTERS

Intech Additive Solutions announced that they have designed, developed and delivered to the Indian manufacturing industry a true

"Made in India" technological solution, with the launch of their new range of Metal 3D Printers. The newly launched iFusion series of Metal 3D Printers- the iFusion SF1 and the iFusionLFMulti, designed and built in Bangalore, is a significant milestone in the innovation journey of Intech and Metal Additive Manufacturing in India. The iFusion SF1 is a smaller format machine dedicated to R&D laboratories, universities, institutions and academics. The iFusionLFMulti is a large format multi laser machine with extensive features designed for the industrial use of metal additive manufacturing.



VERIZON-HERE NAVIGATIONAL SYSTEMS

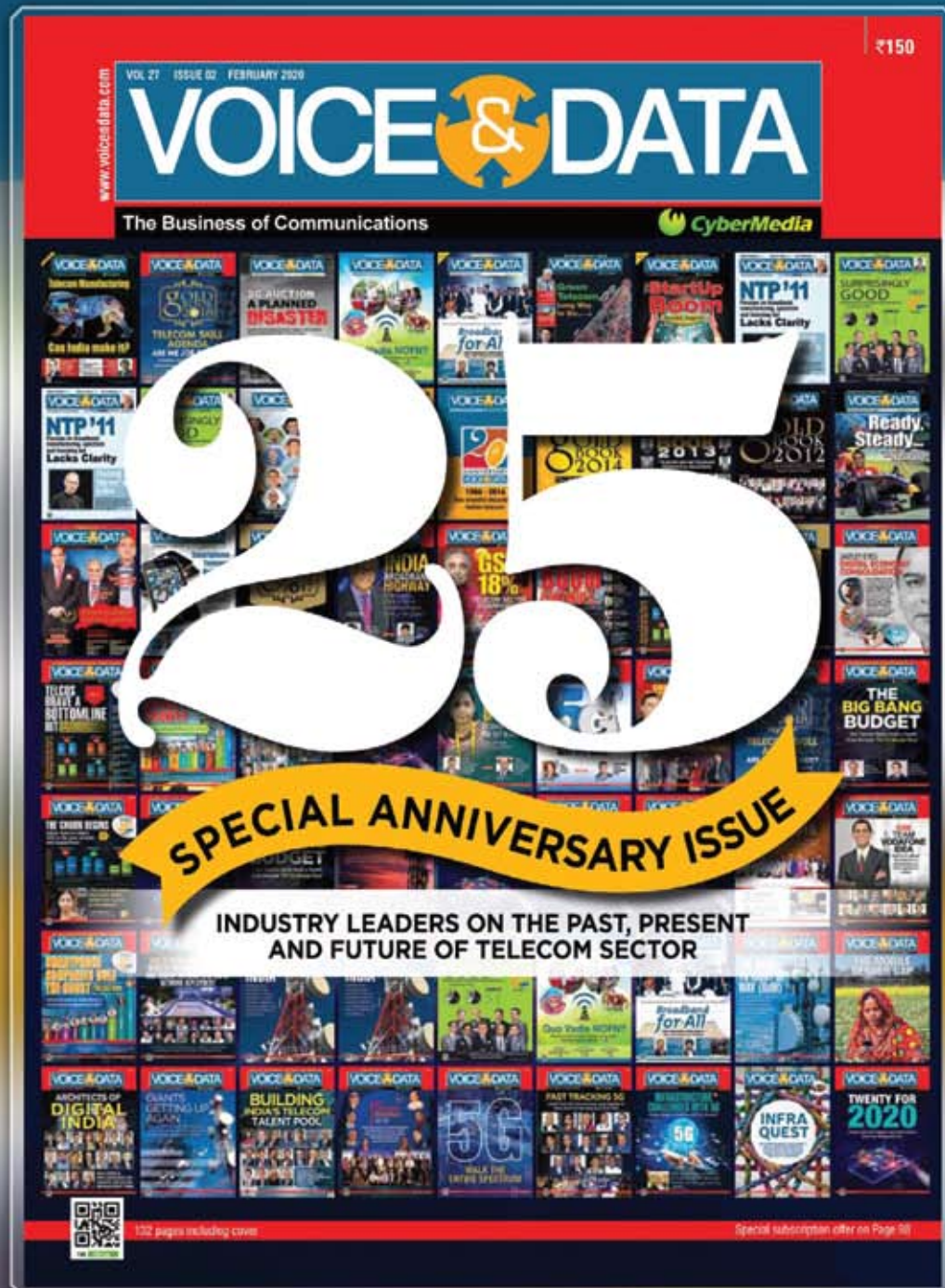
HERE Technologies and Verizon announced a strategic partnership to explore cutting-edge applications of Verizon's 5G Ultra-Wideband network and multi-access edge compute (MEC) platform, 5G Edge, coupled with HERE location, data technology and autonomous vehicle expertise. The partnership focuses on co-innovation for a wide range of enterprise, industrial and consumer-facing use cases. The two companies are starting their collaboration by working on vehicle and pedestrian safety such as collision avoidance, and better location identification and navigation for ridesharing pick-up/drop-off and delivery services.



ACCENTURE-GOOGLE CLOUD COLLABORATE TO HELP LIFE SCIENCES COMPANIES

Accenture and Google Cloud announced that Google Cloud will be the cloud technology provider for Accenture's INTIENT™ life sciences industry platform. The new, multi-year agreement brings Google's cloud and Artificial Intelligence capabilities together with Accenture's life sciences services and platforms and is intended to help life sciences organizations make their data more accessible, secure and valuable. The INTIENT platform provides life sciences organizations with end-to-end capabilities from discovery and research to clinical development and the delivery of treatments. Accenture launched INTIENT in May 2019, building on more than seven years of collaboration with over 25 life sciences companies to develop and deploy platform technology solutions.

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