AI/Automation

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Propel AI From Fantasy To Reality Retail Automation: A Do It By Itself Story Adapting to a Dynamic World through Responsive Intelligence Reinventing Capital Investments Leveraging AI in Quality Assurance Outsourcing in the Age of Intelligent Automation Imagine It Done! How Technology Is Driving Trucks For The Logistics Industry Robot and I: Future of the Workforce Why and How Should Hi-tech Manufacturers Employ More Robots Driving Into The Future: Infosys And Udacity Partner To Invest In Autonomous Vehicle Education Digital Transformation Must Start at the Core Consulting in the Time of Digital Transformation Rebooting the Operating System for Digital Financial Services A Bold but Crucial IT Move for the Connected Age Living with Ambient Intelligence: So at Home with Technology Can AI Bring Productivity and Economic Health Back to Financial Services? Better at Being Human, Thanks to AI 3 Trends With Big Impact On Enterprise AI Adoption AI and Human Capital Adaptive Systems to Drive Hyper-Personalized Shopping Experiences Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog

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3 Trends With Big Impact On Enterprise AI Adoption

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/3-trends-with-big-impact-on-enterprise-ai-adoption.html ----- Insights AI/Automation Artificial intelligence is now an intrinsic part of our daily lives. We think nothing of seeing personalized product recommendations on Amazon or optimized real-time directions on Google Maps. The day isn't far when we will be able to summon driverless cars to take us home, where Alexa would have already ordered dinner after checking inventory with our smart oven and fridge. That being said, enterprise adoption of AI has been more measured but is evolving rapidly to accomplish tasks ranging from planning, forecasting, and predictive maintenance to customer service chat bots, and the like. With more and more enterprise tasks being performed by AI, the question I repeatedly get asked by business leaders is "what next?" I believe, there are 3 big trends that would help propel AI adoption even further within the enterprise. First, is the move towards simplifying the science of AI. At present, AI requires very sophisticated human resources, such as data scientists to build machine learning models, and computational linguistics professionals to write knowledge extraction applications. This restricts AI applications and innovations to a select few, and consequently limits the speed of adoption within the enterprise. But this scenario will not last long. Technology companies are building tools to automate tasks performed by these skilled individuals, thus enabling even a data analyst or business user to build AI applications. For example, Infosys Nia, a next-generation AI platform built for enterprise, consolidates several AI technologies – machine learning, deep learning, knowledge extraction,

natural language generation, among others – so that an enterprise can use the right tool for each of its problems. And, because most functions are automated on the platform, it brings down the time, cost, and effort, of adoption and innovation within the enterprise. The second trend is an effort towards auditability and 'explainability' of AI, especially machine learning. This is an extremely important area for enterprises that operate in heavily regulated environments or where decisions made by machines can be life-altering. Increased use of techniques like deep learning has made the task of exposing the decision-making process of these AI systems even more difficult. While Explainable AI (XAI) work is still in its infancy, enterprise AI platforms like Infosys Nia have started including auditability and basic visualization tools to take steps towards a system that doesn't behave like a black box. It would be hard to imagine wider adoption of AI within the enterprise without it. And the third trend is the quest for producing high quality analytics and predictions with a small data set. Most of the machine learning algorithms used in the consumer space rely on huge amounts of data to achieve desired accuracy. Getting a large data set for companies like Google and Facebook is trivial but most enterprises do not have this luxury for many of their problems. For AI to be applicable for a wider set of problems within an enterprise (or across enterprises of different sizes and maturity), techniques need to be created that allow for accuracy with limited data. In addition to new machine learning techniques, domain expertise can also be used to supplement pure data-based learning. In a way, these trends are about changing AI to accommodate enterprise needs. But what are enterprises doing to accelerate the adoption of AI? In my view, enterprises are still at an early stage of the AI journey, a stage that is fraught with challenges. These challenges stem from the human impact of AI, rather than the technology itself. Every revolutionary technology in history has drawn its share of naysayers and change resisters. At the dawn of the Internet revolution, a number of people thought it was a temporary fad. Similarly, many didn't take the mobile wave seriously till it was too late. Likewise, in today's era of AI, there are many who doubt its potential and others who fear its impact. Organizations must allay these concerns swiftly because ultimately no business can succeed without the support of its people. Most enterprises will find in AI an opportunity to amplify the capabilities of their staff; when AI takes over routine, repetitive jobs, the people who used to do them can focus on uniquely human pursuits such as innovation, creative thinking and problem finding. Organizations that are sensitive to the human factor, go further faster. Because, the best way to overcome any resistance is by involving employees in the transition from the start, and sharing with them both the larger vision at the enterprise level and their own renewed/ reskilled roles within it. While it may not be easy to make the transition to AI, if done right, AI can help enterprises differentiate themselves. At full potential, AI can achieve impressive results for the enterprise – serve customers better, improve a variety of business and efficiency metrics, scale without adding headcount, and above all, provide the deepest insights into the organization's data. =====================

Adaptive Systems to Drive Hyper-Personalized Shopping Experiences

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/adaptive-systems.html ----- Insights AI/Automation At the Consumer Electronics Show (CES) held in January 2018, participants witnessed some very impressive state-of-the-art retail solutions like in-store VR shopping, motion and traffic sensors, digital display signage and try-on room experiences. It was intriguing to watch robots' welcome shoppers and initiate meaningful conversations. They even took up the role of sales associates, looking up product details and inventory. New technologies are poised to become part of the future brick and mortar stores and outlets as retailers shift towards providing experiences as a key differentiator Retailers are looking beyond optimizing shopping transactions to providing experiences that the shopper can find engaging and exciting. Technology will play a key role in driving the in-store experience helping the brand and the retail outlet to develop a better relationship with the shopper. Recent studies have shown that shoppers are willing to pay more for a good shopping experience. These have prompted various retail brands ranging from existing players like Nike and Adidas to emerging players like Rebecca Minkoff and Farfetch, to open up experiential retail stores to capture and retain the customer's mind space. Digital makeover of the future brick & mortar stores The Brick and Mortal stores of the future will be more of Concept stores or Experiential retail stores that would be characterized by: A walk through the Concept Store A customer interacts with a Conversational Interface to research a lounger for her home and picks out a product from one of the home utility retail stores. She adds it to her online shopping cart, but decides to visit the store to see the lounger physically. Upon arrival, the retail store identifies the customer and pulls up the customer's shopping cart. The store associate is equipped with the relevant information on the hand-held device and is able to engage the customer in a meaningful conversation about the product. After viewing the lounger, the customer decides to make the purchase and is assisted by a humanoid which serves as a self-service kiosk. The customer confirms the payment using facial biometrics and proceeds for checkout. The complete customer journey is seamless, driven by emerging technologies. This seemingly simple customer journey necessitates an IT system that can adapt itself to each customer's needs on a real time basis at scale. Adaptive systems for a seamless shopping experience Various emerging technologies that include intelligent, self-adapting systems, come together to provide a unified shopping experience. The retail stores of the future will utilize Machine Vision powered by on-premise cameras to identify customers and track their movements, enabling chatbots and humanoids to offer contextual assistance. In-store analytics will pick customer insights based on the dwell time across various sections in a store and the buying patterns to create a digital twin, viz., a virtual shopping profile that would contain the customer's shopping history, preferences and more. Location based services along with the digital twin will help stores create customized hyper-personalized

recommendations. Inside the store, the shelves and trial rooms would have digital interfaces and sensors using AR/VR capabilities through which customers would be able to interact and engage with the brand. The big bet is therefore on technologies such as, In-store Analytics, Machine vision driven customer tracking, Location based services, Conversational Interface, Cognitive Platforms and Blended Reality which together will interact to create a seamless shopping experience for the customer and help retailers build brand loyalty and maintain customer mindshare. In order to achieve improved inter-system integration, better customer insights, efficient resource allocation and automated back-end operations, retail stores will have to implement IT systems which are adaptive in nature. Adaptive systems would open up numerous opportunities for system integrators in areas of application development and infrastructure services to name a few. Indeed, exciting times lie ahead for consumers and retailers with greater acceptance of the 'new technology led experiences' in the retail stores.

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Advanced Robotics: Autonomous Solutions Take on Dull, Dirty, and Dangerous Work

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/advanced-robotics.html ----- Insights AI/Automation Much attention has been focused on the potential loss of jobs that robotics and artificial intelligence may bring. However, advancements in robotics technology and their application in new areas can make jobs easier, more pleasant and safer. Exploring opportunities to automate the "dull, dirty and dangerous" work that humans are still doing in the digital age, we see the potential to improve the quality of work, enhance capabilities and reduce employee risks. We may be well into the digital age, but there is no shortage of work that still requires human intervention. Some of these jobs are laborious. Others are hazardous. And some are downright repulsive. Industrial welders in heavy manufacturing, for instance, are routinely exposed to extreme heat, toxic pollutants and high noise levels. We still send miners carrying measurement and scanning devices into small, hot spaces deep inside the earth with little air to breathe. Hospital staff are exposed to harm every day while disinfecting rooms and disposing of medical waste. In offices around the world, employees dread the hours they will spend on mundane, repetitive tasks such as claims processing, employee onboarding and new customer registration. As we explore new ways for automation to take on difficult or undesirable work, the appetite for new robotics is increasing continuously. A premier global provider of market intelligence predicts that global spending on robotics systems and drones will hit $116 billion in 2019 and grow at a compound annual rate of 20% to $210 billion in 2022 and this growth is driven by continued improvement in ease of use as well as the demand for flexible automation across many industries.1 While there is concern about job loss, it has not discouraged companies from integrating greater artificial intelligence capabilities into their robotic solutions. As a

result, opportunities are emerging for robots to work autonomously and intelligently in new and varied environments across industries. They are doing this by assimilating and analyzing increasing amounts of data flowing in from Internet of Things (IoT) devices. A dangerous job: Transforming the power grid For the utility industry, increasing transmission capacity and reducing power loss in aging overhead conductors is an ongoing challenge. A leading energy and telecom cable company that had millions of miles of overhead transmission lines in use recently introduced the industry's first universal heat-dissipating technology for overhead power lines, which increases conductor capacity by 25% and reduces power loss by lowering the operating temperature by as much as 30%. The technology enables utilities to optimize the long-term performance of their power grids and strengthen their ability to supply safe, reliable and cost-effective power into the future. While the manufacturer was able to produce new conductors with the new solution in a controlled factory environment, few utility customers were eager to replace their existing cables, given the huge investment of time and money it would require. They wanted a way to apply the technology to existing power lines without shutting down the grid. However, their aging overhead conductors had accumulated decades of silica and carbon deposits, bird droppings, and moss that had hardened over time. Any solution would have required first cleaning the conductors, representing hundreds of thousands of miles of the grid in the United States alone, and then applying the technology. The only existing option was to drop in linemen by helicopter to crawl across the narrow transmission wires — charged with very high-voltage electricity — to clean and coat the conductors. Instead, the company worked with Infosys to develop the world's first intelligent cleaning and coating robots for high-voltage transmission conductors. This was no small task. The robot had to be able to operate in a difficult environment and incorporate a cleaning method capable of scrubbing off years' worth of deposits and yet be light enough to maneuver across the electrical lines. At the same time, it needed to be smart enough to avoid obstacles and address the varied cleaning situations it encountered. Powered by lightweight motors to keep their weight down, the resulting robots have an advanced drive-by-wire system. They run autonomously and decide whether to go forward or backward using sophisticated, onboard, decision-making image-processing cameras. A built-in IoT gateway enables communication with ground stations to monitor battery life, speed, coating volume in storage tanks, flow , and other important metrics. The robotic solution makes it possible for the manufacturer to deliver significant value to its customers — projected savings of up to $2 billion by avoiding cable replacements and up to $6 billion in reduced transmission losses — without risking the lives of their linemen. Doing the dirty work: A robotic solution drives sustainability At Infosys campuses, our goal is to reuse, recycle or responsibly dispose of waste whenever possible. We are committed to reducing the per-capita usage of energy and fresh water. We have implemented various green initiatives that include use of efficient fixtures, wastewater treatment technologies, reuse of treated wastewater, rainwater harvesting and smart meters that help us monitor our consumption in real time to eliminate water wastage.2 The wastewater treatment processes produce a significant by-product: six to seven tons of sludge every day — teeming with bacteria. That sludge, if treated, can be a great source of manure for plants and ground

soil. Previously, it was left in traditional open beds where human workers manually shuffled the unhygienic byproduct until it dried. In rainy seasons, that proved to be a slow — and particularly putrid — process. To free up employees from that task, Infosys collaborated with researchers at Leibniz University in Germany to conceptualize a solution for a fully automated sludge greenhouse that could use primarily solar energy for 95% of the required heating for drying. Trucks transport the sludge from the sewage treatment plant and dump it into an enclosed high-performance greenhouse. There, an autonomous robotic vehicle (called the "electric mole") distributes the sludge evenly across the greenhouse floor and rakes it to ensure that the bottom layer is repeatedly brought to the surface for uniform drying. Because the sludge is corrosive in nature, the robot is a highly ruggedized vehicle that can move through the muck without damage. The system also has built-in IoT sensors so a remote operations team can monitor the processing, including temperature, humidity and sludge quality. Manual drying could take 12 days or more, depending on humidity levels. The robot can perform the same task in less than half that time. The resulting sludge quality has also improved, producing cakes of fertilizer that are used throughout the campus. "Our commitment to a greener planet through responsible practices powered by the intelligent use of technology to automate waste management processes just got deeper with this implementation." - U B Pravin Rao, Director and Chief Operating Officer, Infosys Ltd. The solution has been rolled out in Mysuru, Bengaluru, Trivandrum, Pune and Hyderabad, where the robots can treat 3.5 million kilograms of sludge annually with no human involvement. Infosys has plans to implement the automated system in Pune, Trivandrum and Hyderabad, and has repurposed similar technology to treat chemical waste for its clients. Eliminating dull work: An intelligent alternative for monotonous tasks For banks and other financial services firms, ensuring that their ATMs, pin pad readers, check scanners, and other devices work properly and provide uninterrupted service, even as application features are updated, is critical. Unfortunately, testing these devices can be mind-numbingly monotonous. This kind of high-cost and unrewarding, yet critically important, task is ripe for robotic automation. Enter the robotic arm. The physical robot, with an integrated optical character-recognition system with smart-vision assist, has the innate intelligence to conduct a reliable sequence of operations to simulate human end-user movements and interactions with machines during automated test cases. The robotic arms can test the devices on-site while being controlled by testers in remote locations. The workers schedule automatic testing and execute tasks via a web- or desktop-based utility. The solution is not only less expensive and less prone to error than on-site human testing, but it can also test devices around the clock to enable continuous infrastructure software upgrades. The automated solution has reduced the cost of testing by 60% and increased productivity by 30% to 60%, depending on the device being tested. In addition, it has integrated seamlessly with a variety of third-party tools and architectures. A similar approach has been used to develop a robot-assisted testing program for financial services applications on smart devices. "We see the use of autonomous technologies increasing in the payment space. This includes both robotics and software robots. The need to replace human actions with high-reliability robots for tasks that are repetitive and traditionally error prone is increasing. The market continues to repurpose

[its] workforce to innovate on the customer-/user-experience side, enabling increasingly more frictionless experiences for our customers." – Jose Rivera, Vice President, Advanced Technology Services, Elavon Inc. Looking ahead, there will be increasing opportunities to develop and deploy autonomous systems to take on increasingly sophisticated tasks in real-world conditions without human involvement. These intelligent robotics systems and devices — leveraging increasingly advanced AI capabilities — are being piloted and implemented across the manufacturing, mining and automotive sectors. Robots can liberate employees from mundane tasks so they can focus on work that requires their higher-level skills. More importantly, robots can take over work that poses significant risks to human health and safety. 1https://www.idc.com/getdoc.jsp?containerId=prUS44505618 2https://www.infosys.com/investors/reports-filings/annual-report/annual/Documents/AR-2017/financials/pdf/Infosys_AR17_Annexures_to_the_Boards_Report.pdf ======================

Better at Being Human, Thanks to Human Centered AI

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/ai-better-being-human.html ----- Insights AI/Automation Fear and paranoia about where AI is headed help none. Informed optimism, combined with a strong foundation to make innovation safe through co-operative governance, will help us amplify human potential – not destroy it with AI. Over the past few years, a growing tribe of AI doomsayers has made several predictions on the threat of AI. The prophesies include, among others, an impending war by killer robots and the need for humans to become cyborgs to stay relevant in the age of artificial intelligence (AI). Statements such as these are not limited to technology leaders. For instance, a prominent theoretical physicist has warned that "AI could spell the end of the human race." Additionally, a British inventor publicly voiced his concerns about how the human race will be unable to survive against more intelligent machines. This may seem far-fetched to many of us. As humans, we are all programmed to be aware and cautious as an in-built safety mechanism – but not to the point of being paranoid. Paranoia merely breeds panic and serves no purpose other than to impair the human condition. Humans are curious and positive creatures. This ability – to feel and find happiness in the simplest of things – without proven and accurate data is a human privilege. It gives us a unique advantage against any AI tool, robot or cyborg. To be fair, some of the concerns voiced by the global community are certainly well-founded. For instance, the CEO of a high tech automaker raised valid concerns that "AI will follow the will of the people that establish its utility function". In simpler words, he worries that AI can be dangerous in the wrong hands. To counter this, the industry needs robust regulatory frameworks and stringent governance that ensure that innovations in AI are not hijacked for unethical or criminal purposes. Microsoft's AI bot, Tay, and its series of racist comments on Twitter is a classic example of how AI software may repeat user behavior gleaned from public data, particularly when there are no filters. Thankfully, Tay has been taken offline now and Microsoft is working

on upgrades. A Case for Stronger Controls However, incidents such as the corruption of Tay may be giving AI an undeserved ticket to hell. All innovations have teething troubles. In the early days of cloud computing, security was the key concern. The question in everybody's mind was: Is my data safe on the cloud? Certainly, phishers and hackers were lurking in the shadows, waiting to steal sensitive data. But, this fear did not stop businesses from leveraging the transformational benefits of cloud. Very soon there were strong regulations making it mandatory for cloud service providers to adhere to certain standards. Today, security is no longer a major issue in cloud transitions. Many organizations are making committed strides in this direction – to ensure that AI innovation is safe. The same can be said of AI. With the right controls, why fear the power of big data and the value of deep AI? With proper regulations, big data and deep learning can only serve to amplify human potential, propel the global economy forward, and improve the overall human condition. Interestingly, many organizations are making committed strides in this direction – to ensure that AI innovation is safe. OpenAI, a non-profit AI research company, has been established to understand AI-centric governance and ensure that AI is used safely. Recently, a group called the Partnership on Artificial Intelligence to Benefit People and Society – comprising Google, Facebook, IBM, Amazon, and Microsoft has been formed to establish best-practices, conduct and publish research about all AI-related topics. AI Can Make Us More Human When touting the benefits of technology, it is important to have a well-rounded and unbiased view. Consider for example that today, after decades of technology revolutions, 9.6% of the world's population continues to live in dire poverty. Despite all the technological advances that the world has seen in these past decades, a large proportion of the global population is still struggling to survive. Technology, largely, has thus far served the haves. AI has the potential to take the benefits of technology and learning and transform the lives of those who have been left behind – by the sheer scale, speed, and accuracy it can bring to global and large-scale initiatives. AI offers a great opportunity to provide a civilizational upgrade to the masses by allowing us to apply our innate qualities of 'empathy' and 'compassion' to improve the lives of have-nots. Freed from repetitive and mundane tasks, humans will be able to harness the power of knowledge on-demand to address daily job problems. AI can help them discover opportunities to truly advance their unique traits of imagination, creativity and a quest for purpose. In doing so, we will be able to solve bigger problems such as hunger, disease, ignorance, and poverty. AI, in fact, holds the promise of helping us become more human. The Power of AI The current definition of a 'job' is a flawed one. Most of today's jobs are nothing but mundane economic tasks that need to be fulfilled. The dynamic and human mind is capable of much more. If anything, it needs to feed on creative, imaginative and innovative challenges such as the socio-philanthropic condition. This is where the power of AI comes in. Here's an example: It's 2017. Tom and Dave are operations engineers with traditional 'jobs'. Tom is a subject matter expert (L2 function) while Dave is a dispatch/routing agent (L1). This two-person team is trained to understand insights generated through big data and ensure smooth operations. In future, this whole process can be replaced by a single person who can not only leverage analyzed data but also predict issues and recommend corrective actions. This will be enabled by a combination of cloud (for real-time actionable insights) and digital natives (to execute the

recommended action). The end result: Higher operational productivity and better efficiency for the business. What about Tom and Dave, then? Tom becomes a knowledge worker who finds ways to enhance the underlying IT operations, optimize robotic execution and enable intelligent decision-making using digital natives. And, instead of simply relaying and executing actions, Dave is now free to find better ways to add value to the company and realize his true potential. Dave could be creating the next 'uber' marketplace for his enterprise. What about the robots? With deep learning, the robots can learn to think and act based on data knowledge trees and human action knowledge trees. They can be taught to understand how human and business events influence economic activities, thereby empowering them to generate better output. Many organizations are making committed strides in this direction – to ensure that AI innovation is safe. Consider how AI can deliver value to BPO employees who attend customer complaint calls, bank tellers who dispense cash or toll booth operators who issue tickets. Imagine a future where healthcare providers leverage their digital avatars to provide trusted real-time care when required, without patients having to visit ERs.AI and automation will bring about significant and positive disruption in the lives of such people by encouraging them to adopt value-generating roles. In fields such as oilfield drilling and space exploration, where calculations are massive and extreme precision is critical, AI and Deep AI can offer advanced predictions, helping engineers improve drilling processes and enabling astrophysicists to make ground-breaking discoveries. The possibilities for digital natives and AI are endless: it can positively transform banking, finance, agriculture, government operations, healthcare, drug research, and clinical trials, to name just a few areas. Bottom Line In conclusion, AI can help machines serve humanity better by creating a harmony between digital and biological intelligences. We can safely put away our fears of a dystopian world or a post-apocalyptic future where humans serve robots. As we empower robots to take on some 'jobs', we will dedicate ourselves more emphatically to improving and enhancing the human condition. That is where the true power of AI will be evident. Read more articles on artificial intelligence and automation >> =======================

AI Can Ensure The News You Read Is Real

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/ai-can-ensure-the-news-you-read-is-real.html ----- Insights AI/Automation Credit the pursuits of biomedical engineers for developing a microscope called 'SCAPE' (Swept Confocally Aligned Planar Excitation) that can not only view groups of neurons in a living brain; it can do so while the person is busy engaged in an activity. With this innovation, scientists hope to get a deeper understanding into what fuels the brain of a human. We can also hope that SCAPE will help scientist come closer to understanding human 'thought' and decision-making. I find it fitting that this kind of scientific achievement is happening in tandem with the development of machine learning. That's why I was surprised by the latest scourge of 'fake news' on the Internet, which is

largely going undetected. People who get their news from social media sites and not traditional newspapers or television networks are particularly susceptible to fake news. That's because people often don't realize that what appears on social media may not be legitimate news. These social media sites have legions of followers but do not take responsibility for the fake news they disseminate. No platform is telling its users: Don't tune into our site, and why would they, after all their less-then-scrupulous practices are bringing them heavy traffic. Thus far, these social media platforms have not been held accountable for promoting fake news. Brain Science Versus AI Development The onus is on the followers of these social media sites to differentiate between remarkably similar real and fake news. Which leads me back to SCAPE and the field of neuroscience. As any scientist would tell you, we are still at the point where we know very little about the brain even after 40 years of intensive research. It's ironic that in the world of Information Technology, machine learning is advancing faster than the study of the human brain. Part of the reason is that our brain houses 86 billion neurons. These neurons form a web of 500 trillion connections. Yes, we're that complex. Yet it's easy to fool this complex and powerful organ with fake news placed on platforms with which we humans have formed a sense of trust. A case in point is how a fake story about Ebola leading to an entire suburb in Texas being quarantined went viral on Facebook and was shared 339,837 times. The other issue at play here is that if the brain is unable to differentiate fake news from the real thing, think of what can happen someday to a world connected by the Internet of Things (IoT). Unless we devote more effort towards robust cybersecurity powered by artificial intelligence (AI) , fake news will be the least of our worries. For example, hackers can actually turn IoT-connected devices against us. IoT is in its infancy, yet hackers have exploited millions of personal Internet accounts by using so-called back doors such as Samsung refrigerators and other kitchen appliances. Entire hospital IT networks have been compromised when hackers got access to connected medical equipment. And how did the enormous hack of the Big Box retailer, Target, occur in 2014? Reportedly through holes in its Internet-connected heating, ventilating, and air conditioning (HVAC) system. These are events right out of a science fiction movie. Addressing the Concern of Fake News Just recently one of the more prominent purveyors of fake news, Facebook, announced that it would begin to vet certain posts on its platform and even bring in a combination of algorithms and independent organizations to help them do it. This is a step in the right direction and I think the move to vet reports to see if they're legitimate news stories or fabrications says a lot about how social media sites and even technology leaders should respond to the world that we now face. It is perhaps time for large news platforms to pause for a moment, assess the current situation, and figure out which AI-enabled security technology could best be wrapped around their proprietary, consumer-facing offerings. It's not unlike medical researchers that have begun to make great strides studying the human brain. Not only should content providers be proactive about protecting the authenticity of information on their platforms, there is also a need to acknowledge that for IoT to succeed, they must have robust security measures in place that are powered by AI. If it doesn't, then you know the old saying: The bigger they come, the harder they fall. Read more articles on artificial intelligence and automation >>
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Can AI Bring Productivity and Economic Health Back to Financial Services?

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/ai-productivity-economic.html ----- Insights AI/Automation The next big thing in industrial services will be about accurately forecasting the future of physical assets through their digital twins. Experts from GE take you behind the scene on how GE created an intelligent, IoT-based industrial monitoring and diagnostics platform that's setting new standards. Few industries are more mired in traditional operations, legacy systems, and maintaining their status quo than financial services. More often than not, this rigidity is the byproduct of regulations and monitoring. Even so, unprecedented new competition and legislation along with a new, digital savvy customer base, have given the industry a genuine challenge: Evolve or die. Thankfully, recent times have seen the evolution and refinement of artificial intelligence (AI) solutions within financial services. As use cases have evolved from being fantastical to practical, industry leaders are compelled to renew legacy technologies, invest in next-generation innovations, and enhance the adoption of AI through a better understanding of its capabilities. In fact, these developments in finance will shape AI's adoption across other industries for the years to come. Banking is an age-old industry that is weighed down by monolithic systems, rigid regulations, and cultural traditions. Some countries like the UK use conventions and traditions dating back to the age of ink, quills, and dusty ledgers! For example, the internal compliance procedures at many traditional banks still require physical signatures to open bank accounts. Further, back office processes and routine decision-making also require paper-based forms and manual intervention, which delay services and add considerable costs. But changes are taking place. Thanks to advancements in automation and data-led intelligence, financial AI technologies with minimal, day-to-day impact on workflows are becoming feasible while still maintaining compliance with existing or emerging regulations. This is because knowledge repositories that capture boundaries and basic interaction rules — regulatory protocols that need to be digitized if new AI systems are to remain within the boundaries of the law — already exist. AI, in essence, stands on the shoulders of the data and process automation technology trends that preceded it. These trends, combined with new machine learning technologies, will allow financial services providers to concentrate on high-value activities and creative solutions. Automated systems will handle volume-based and repetitive activities at lower costs, enabling higher throughput and reducing the need for oversight — all the while ensuring that banks can deliver compliant sales and service outcomes. The notion that computers will dominate the financial services landscape is not new. Today, many specialized algorithms not only run the processes, but also make buy and sell decisions without stockbrokers. We can see an instance of this in high-frequency trading (HFT). HFT is a subset of algorithmic trading, focused on volume, speed, and autonomous decision-making. By using the data that is funneled into the system, these pieces of intelligent code can make informed market decisions

and can also react to split-second opportunities in the market in ways that human stockbrokers can't, given that human brokers simply cannot move quickly enough to make such trades. However, automation in trading isn't always about speed. Some algorithms are beginning to learn how to trade on their own through a variety of machine learning methods. Whether it's through Bayesian networks, evolutionary computation, or deep learning, corporates and startups are leveraging the access they have to massive amounts of data, in order to train machines to automatically recognize and predict changes in the market. This is distinct from HFT as these AI traders are looking for long-term investments, not immediate ones; and are looking for them on their own. That being said, high frequency and AI-based trading isn't a replacement for human traders, who hold critical roles in larger deals, book building, and other portfolio management processes. However, for scenarios that are characterized by high volumes, small margins, and speed, machines have proven to be more productive, cheaper to operate, and have the ability to produce higher returns. In fact, HFT's success is so widespread that it's now a key component of traditional investment banking strategies and, for some entities, is now overtaking traditional trading as the primary revenue and profit generator. Although the benefits of AI in financial services are clear, this isn't to say that autonomous or AI-driven trading isn't without its risks. For example, in 2012, US market maker, Knight Capital, lost over US$400 million in a half-hour after an algorithm malfunctioned. Even the New York Stock Exchange (NYSE) saw a pause in trading while technicians corrected software issues within an automated system. Still, it's arguable that the benefits of this technology more than outweigh the impact of occasional glitches. Given that autonomous systems are susceptible to 'judgement' lapses just like their human counterparts, it's unlikely that we will see completely autonomous models for banking, share dealing, and insurance risk analysis any time soon within the capital markets. The same goes for AI in retail banking, which has to tackle with the added complexities of human languages, dialects, and customer-centric interactions. These are not, however, AI-killing problems. In fact, this is exactly where those pre-existing knowledge systems that govern compliance come into play. AI's biggest opportunity lies in automating the frontline, where usage is most intensive and the return on investment is often lowest. Cutting costs, increasing throughput, and extending operating hours all result in more trade, lower transaction charges, and greater economies of scale. Retail banking has a different risk-benefit profile. The benefits of engaging with customers in a more automated and intelligent way offers significant cost savings, with the risk being spread over millions of customer interactions. The main issue is that the complexity of the more 'human' interactions is greater than the relatively simple, albeit impressive, number crunching that needs to take place in capital markets. What's crucial to both existing and new market entrants is how they use automation to interact directly with customers. Automation offers retail financial services organizations the opportunity to reduce their physical footprint, lower their operational and transaction costs, and accelerate their time to market. For competitive, branchless banks, like those operating as mobile app-based businesses, AI is a critical component of their strategy. Such businesses have the opportunity to automate customer-facing functionalities like frontline customer service, basic transaction fulfilment (transfers and payment reconciliation), and risk assessment for credit and transaction matching.

These actions can help reduce their operating costs. For example, these branchless organizations can use algorithms to circumvent the traditional mechanism for processing foreign currencies, in order to maximize the profit in a grouped trade. Doing so can reduce the overall transaction cost of fulfilling what would otherwise be a large number of low-value, high-unit, cost trades. This approach is best illustrated by the success of TransferWise in the retail foreign exchange (FX) markets. The same approach can be employed to dispatch cross-border transfers via the most effective and cost-efficient partners and routes. For PayPal-like organizations that offer an alternate route to traditional financial transfers, intelligent and AI-driven money-routing could represent huge cost savings. Further, it could also provide the foundation to scale transaction volumes significantly faster than would be possible if human intervention was required to do the same work. For other parts of the sector, such as insurance, AI presents an opportunity to take on frontline assessment of risk, fraud, and claims management. Using well-defined parameters, AI can be used to adjudicate and escalate claims, set premiums based on data-driven perceived risk, and even evaluate information to spot questionable activity. These are functions traditionally handled by armies of people and they represent one of the largest cost bases in insurance that AI can unpick. These advancements could also enable insurance companies to provide dynamic pricing to their customers, allowing them to enroll in products that are priced based on the personal choices and actions of customers. The financial services sector is in need of significant and immediate change. Be it to address inefficiency, improve profitability, support higher liquidity regulation requirements, or make banks more efficient in the face of growing competition. AI-based applications must be developed to deliver the desired benefits while staying within clear boundaries. With clear limits and good data, AI systems have the potential to deliver substantial benefits that customers and institutions can trust. Read more articles on artificial intelligence and automation >>
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AI for the Rest of the Enterprise

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/ai-rest-enterprise.html ----- Insights AI/Automation You wake up to Alexa's soothing voice wishing you good morning. Although she can't make your coffee, the ever-present assistant guides you to the nearest cafe to grab a cup. Your phone unlocks through facial recognition, and personal emails are already organized. From the start of each day, artificial intelligence (AI) fills and guides our personal lives, even for the simplest tasks. But that ubiquity often changes once we get to work. A KPMG survey of 30 of the world's largest companies found that nearly one-third used AI for selected functions. However, only 17% deployed technology at scale. Many organizations and startups have created amazing AI algorithms and techniques that can solve specific business problems. That narrow focus is valuable, but companies struggle with whether they can make the technology scalable. Even if they can expand AI enterprisewide, executives must grapple with serious issues, such as finding the right data to train the models, ensuring data privacy, ethical concerns, and reliability. AI isn't just a technology tool Companies

plan to expand their use of AI (Figure 1), but first must create a structured approach to discovering, developing, and democratizing the technology throughout the enterprise. Success lies in identifying the right opportunities to unlock business value, rather than thinking of it only as a technology tool with limited uses. Below are the steps required to expand AI companywide, instead of relegating it to a few isolated corners: How to embed AI There are different ways that AI can improve business operations while seamlessly integrating with existing systems. When implemented well, the resulting applications and services can operate with greater efficiency and offer better customer experience. Companies can use AI operations (AIOps) to incorporate preventive maintenance and self-healing capabilities into application and infrastructure management. AIOps can enable organizations to detect application failure even before it occurs, thereby giving support teams enough time to fix the problem or to self-heal without business disruption. This can be accomplished through the use of bot factories that produce armies of digital workers: sensing bots, analytical bots, and action bots. To manage business operations, companies can use conversational AI and process bots that combine to create virtual agents. These significantly improve efficiency and increase customer satisfaction by reviewing customer histories, asking relevant questions, and providing fast responses. For example, Infosys' AI-enabled Cortex 2 call center platform can analyze customer data, history, and call patterns, and then prioritize tickets. The result is reduced call handling times. These efforts are not as daunting as they sound. Application development now requires less technical knowledge than what many organizations expect. There are multiple low-code and no-code platforms available that allow engineers to create new applications in minutes. These provide out-of-the-box AI-assisted design and development, machine learning-based code generation, and mixed reality interfaces with a screenless user interface for a more immersive experience. Tools such as the Infosys Digital Foundry can create templates for selecting security, technologies, environment provisioning, architecture and design patterns, and for setting up source control with integrated DevSecOps. Testing and validation also benefits from AI, using QAOps, spidering AI, and AI-based data generation. Modernization suites can ingest legacy codes and noncode artifacts to derive meaningful insights and thereby ease integration of legacy systems with the latest application suites. Organizations need not view new applications as a burden or an overhead, but instead can view them as a means to modernize their existing systems. How can we democratize AI at scale? AI offers clear benefits but requires work on the part of the organization that embraces these technologies. Companies that switch to an AI-enabled world need to do so in a way that doesn't hinder their legacy systems. Businesses also need to manage their risks and create an environment that allows them to learn, apply, and take AI to scale. Here are ways to move in that direction: Andrew Ng, AI luminary and co-founder of Coursera, described AI as the "new electricity." In Ng's words, "Just as electricity transformed almost everything 100 years ago, today I actually have a hard time thinking of an industry that I don't think AI will transform in the next several years." With AI being so pervasive in our lives now, organizations cannot risk ignoring the technology or failing to understand its broad uses — future-proofing technology, managing risk, and delivering new business solutions. Applied AI is the necessary way forward for

companies that want to provide a superior experience for clients and employees. Click here to Download =====================

AI To The Rescue

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/ai-to-the-rescue.html ----- Insights AI/Automation In the highly polarized debate on whether Artificial Intelligence (AI) is the ultimate evil or the greatest good, the latter argument got a shot in the arm during the recent Hurricane Harvey. A teenage girl ill and trapped in her home managed to contact the Coast Guard rescue team through none other than her personal digital assistant. In the aftermath of Hurricanes Harvey and Irma, the media is full of poignant stories about how another application of AI, the drone, is proving indispensable in rescue and relief efforts. Less known however, is the role that drones and other types of AI can play in another operation associated with a natural disaster – the assessment and disbursement of insurance claims. Harnessing drones in a natural disaster has enormous implications given that their scale has been consistently rising. In the 1980s, a billion-dollar natural disaster was experienced 2.7 times a year, on an average. In the 1990s, that number went up to 4.6, and in the 2000s, climbed to 5.4. Estimates are that Harvey and Irma have destroyed property and automobiles valued in excess of US$290 billion, and done incalculable damage to life and livelihood. For the victims of natural disasters, insurance money is very often a vital lifeline. Unfortunately, with the scale of damage caused by Hurricane Harvey and the fact that it was closely followed by Hurricane Irma, means human claims adjusters could take years just to assess the scale of damage to property. Here, any mechanism that expedites the process and allows insurance companies to pay out claims at the earliest would be immensely valuable. The drone is proving to be that mechanism. It takes high quality images of affected locations that claims adjusters can view in real-time on their smartphones, or download onto their company database for future reference. Machine learning models study these visuals to locate and identify the extent of damage to property. This information is factored along with data, such as amount the property is insured for, age of the property, damages covered by the policy, etc., to arrive at the admissible claim. The process can be completed within a few hours, with minimal human intervention, and with a high degree of accuracy. Besides improving the speed and efficiency of claims settlements, drones can also mitigate insurance fraud and malpractice. When Superstorm Sandy hit the US in 2012, it was alleged that the investigator for a particular insurance company changed the conclusion of an engineering report from flood damage to "preexisting damage" without the knowledge or approval of the original engineer. This resulted in hundreds of denied claims being reopened. Had there been drones used for assessing the damage, the arguments could have been supported by more photographic evidence. A combination of drones, sensors and AI applications can also minimize the risk of injury to claims adjusters by taking over inspection of hazardous spaces. Going forward, we can expect AI - through smart homes - to be involved much earlier in the insurance value chain, especially in a disaster scenario. For instance, machine learning applications would analyze weather patterns to predict the

severity and likelihood of hurricanes well in advance, to not only enable smooth and early evacuation but also allow the affected population to secure their property. Insurers would increasingly use AI solutions to improve underwriting and pricing practices. And relief agencies would send out rescue robots to bring people to safety. PwC estimates that drones, by virtue of their contribution to risk monitoring, risk assessment and claims management are already worth some US$6.8 billion to the insurance industry. A number of insurance giants, including Travelers and Allstate, have instituted robust drone programs as part of their risk assessment and claims management processes. With their potential to assess damage faster, shorten the claims settlement process, root out fraud, and more importantly, improve customer experience, drones and other types of AI hold irresistible appeal for the insurance industry. This is the chance for a business that has somewhat lagged in cutting edge technology adoption to alter its course. Read more articles on artificial intelligence and automation>>
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Taking Artificial Intelligence Where the Human Brain Goes

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/ai-where-human-brain-goes.html ----- Insights AI/Automation The human brain — intelligent and unique — is challenging scientists, who are determined to decode its complexity and unlock possibilities to enhance human lives. By harnessing artificial intelligence (AI), they have already made breakthroughs in man-machine interactions through Watson, Siri, and more. But, for AI to have a truly transformational impact, artificial neural networks need to be further reinforced by human native intelligence. The human brain has advanced over time in responding to survival instincts, harnessing intellectual curiosity, and managing demands of nature. When humans got an inkling about the dynamics of the environment, we began our quest to replicate nature. Our success in imitating nature has been related to advances in science and technology. Take for example, our aspiration for flight. We replicated wings to achieve safe and long-haul air travel. However, we are aware that inflexible aircraft wings are not an exact replacement, and a likely solution may lie in the Self-Assembly Laboratory at the Massachusetts Institute of Technology (MIT). It is developing a 4D printing technique to create aircraft wings that adapt to aerodynamic conditions. While the human brain finds ways to exceed our physical capabilities, the combination of mathematics, algorithms, computational methods, and statistical models is accelerating our scientific pursuit. Artificial Intelligence (AI) gathered momentum after Alan Mathison Turing developed a mathematical model for biological morphogenesis, and authored a seminal paper on computing intelligence. Today, AI has grown from data models for problem-solving to artificial neural networks — a computational model based on the structure and functions of human biological neural networks. Teaching the machine The first generation of AI created machine learning systems. Machine learning focuses on the development of computer programs that can change, or learn, when exposed to new data. Algorithms

from the first generation of AI 'taught' machines to identify images and objects, see obstructions, correlate, and discover relationships between variables. It resulted in intelligent applications that managed single tasks at a time. AI makes industrial machinery accurate, reliable, and self-healing; and paves the way for calibrated performance resembling human action. Modeling techniques locate indecisive voters, identify crops that are most suitable for a specific topography, and verify clinical diagnosis and treatment. AI integrates with robotic controls, vision-based sensing, and geospatial systems to automate advanced systems. It enhances disease prevention and treatment, boosts engineering systems, and drives self-organizing supply chains. As of today, AI provides near-human customer care at the Royal Bank of Scotland, and assesses insurance claims at Fukoku Mutual Life Insurance. In fact, we now rely on machines for decision-making across processes — underwriting, recruitment, fraud detection, maintenance, and more. Real Core Energy uses machine learning algorithms that evaluate production and performance parameters to guide oil drilling operations as well as investment decisions. 1800-Flowers.com gift concierge service uses AI to recommend gifts. It combines customer interaction with macro buying trends and consumer behavior to recommend personalized gifting ideas. Philips has developed a deep learning-based, automatic screening solution for detecting tuberculosis, a disease that affects 2.5 million people in India. The human race conceded to artificial intelligence in move # 37 of the game between Lee Sedol, the world champion of Go, and AlphaGo in Seoul, South Korea. Experts took weeks to understand the 'wisdom' of the AlphaGo machine. The structure of artificial neural networks is inspired by the human nervous system. It helps 'train' machines to make sense of speech, images, and patterns. DeepFace, the Facebook facial recognition system, was trained to recognize human faces in digital images by using millions of uploaded images. Researchers at MIT have developed a model for facial recognition that duplicates the neurological functions of the human brain. Machines learn to think Computational neuroscience bridges the gap between human intelligence and AI by creating theoretical models of the human brain for inter-disciplinary studies on its functions, including vision, motion, sensory control, and learning. Research in human cognition is revealing a deeper understanding of our nervous system and its complex processing capabilities. Models that offer rich insights into memory, information processing, and speech / object recognition are simultaneously reshaping AI. A nuanced understanding of the structure of the human brain can help restructure hierarchical deep learning models. Deep learning, a branch of machine learning, is based on a set of algorithms that attempt to model high-level abstractions in data. It will enhance speech / image recognition programs and language processing tools by understanding facial expressions, gestures, tone of voice, and other abstracts. We are at the threshold of experiencing advances in speech technology that will lead to more practical digital assistants and accurate facial recognition that will take security systems to the next level. However, contemporary deep neural networks do not process information the way the human brain does. These networks are highly data-dependent and should be trained to accomplish even simple tasks. Complex processes require large volumes of data to be annotated with rich descriptors and tagged accurately for the machine to 'learn.' Further, deep learning systems consume far more power than the

human brain (20 watts) for the same amount of work. We need to discover less intensive machine learning approaches to augment artificial intelligence with native intelligence. Our world is awash with data from Internet of Things (IOT) applications. Deep neural networks capable of consuming big data for self-learning will be immensely useful. Just as children identify trees despite variations in size, shape, and orientation, augmented intelligence systems should learn with less data or independently harness knowledge from the ecosystem to accelerate learning. Such self-learning algorithms are necessary for truly personalized products and services. The interface imperative The merger of human intelligence and AI will turn computers into super-humans or humanoids that far exceed human abilities. However, it requires computing models that integrate visual and natural language processing, just as the human brain does, for comprehensive communication. Language learning skill is one of the defining traits of human intelligence. Since the meaning of words changes with context, 'learning' human language is difficult for computers. AI-embedded, virtual assistants can address complex requests and engage in meaningful dialogue only when they 'think and speak' the human language. Machines should learn to understand richer context for human-like communication skills. They should be endowed with richer cognitive capabilities to interpret voice and images correctly. AI systems such as IBM's Watson, Amazon's Alexa, Apple's Siri, and Google Assistant will become more useful, if enhancements to the quality of language and sensory processing, reasoning, and contextualization are achieved. Voice-activated devices and smart machines will create a centralized, artificial intelligence network or 'intelligent Internet,' which will redefine man-machine and machine-machine collaboration. In the near future, drones with built-in navigation systems will deliver goods in crowded cities. And smart home appliances will translate recipes, assemble ingredients in response to voice commands, and serve gourmet meals. Of course, as computers become more powerful, more networked, and more human, they become capable of independent interaction with stakeholders. However, creativity and strategic thinking differentiate the human race from artificially intelligent entities. Today, we do not fully understand concepts that make our intelligence unique. We need to know more deeply how the human mind operates, as a means to incorporate emotional and social intelligence into machines. Human beings will continue to control everything until machines become self-referential systems. Till then, we must revisit our ecosystem, which spans education systems, skill development processes, and social welfare models, to make way for more efficient methods. AI systems will be a force multiplier for every industry and human activity. It can transform billions of lives via myriad applications, and solve fundamental issues: clean the air we breathe, purify the water we drink, enrich the food we consume, and ensure our wellness. All it needs is that the person-to-machine user interface mimics the brain-to-brain interface. The world will be a better place for successive generations when technology works in transformative and invisible ways. While native intelligence of the human race has produced inventions that are ubiquitous, the confluence of human intelligence and artificial intelligence will amplify growth and deliver sustainable progress. Read more articles on artificial intelligence and automation >>
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Artificial Intelligence: All That Businesses Need To Know

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/all-that-businesses-need-to-know.html ----- Insights AI/Automation Artificial Intelligence (AI) is a high decibel discussion. When the conversations turn to AI, opinions are usually polarized into one of the two extreme camps: those who believe that AI will make our lives better, and those who are convinced it will accelerate human irrelevance. The reality, as always, is somewhat more nuanced. AI technologies are taking disruption to a whole new level. While business leaders are concerned about how AI can be potentially misused, human workforce is getting worried about its role in the future of AI-led business. In this episode of Infosys Podcast, Infosys anchor Alex speaks with Sudhir Jha, senior vice president and head of product management and strategy, on the latest trends and maturity of AI technologies. Sudhir explains how appropriate the concerns related to AI are and how businesses can leverage AI technologies to stay relevant. Alex: Hello everyone! Welcome to Infosys Podcast, this is Alex speaking, your host, and I have Mr. Sudhir Jha with us today. He is the Senior Vice President and the Head of Product Management and Strategy at Infosys. On this podcast we will be talking about AI (that's short for Artificial Intelligence). So with me I have a list of questions for which our expert will help us find the answers. So let's first start with Sudhir giving us a brief introduction to AI. Specifically, what are the current trends in AI at the moment? Sudhir: So there are a few things. One is AI is still very hard. So it's hard in terms of skill level required —you still need very highly skilled data scientists to create algorithms, you need a set of highly skilled computing of digital linguistics to basically do natural language processing. So the trend right now is to make tools that actually allow AI to be used by lesser skilled people. And this is similar to how programming sort of started. If you remember, 20 to 30 years ago it was very complex — CE programming, assemblers and compilers and all that stuff — now a seven-year-old person can actually do programming using graphical interfaces. AI sort of initially evolved to the same place where anyone can actually use AI tools. So that's one trend that actually is happening. Second is that AI is still somewhat of a black box in the sense that you can create an algorithm and you can basically do predications, but it is hard to explain why the prediction is that way and not the other way. So understanding and explaining AI is another trend that is happening, which basically allows not just algorithm to predict, but also tell you why it is predicting that way or why the results are in the way they are supposed to be. So those are sort of at that level. In terms of technology level, I think there is still some basic research that needs to happen in terms of how to provide the hardware that performs optimally for the AI kind of technologies — some basic research in terms of how to perform better with much less data. So today most of the accuracy of the algorithms is dependent on how much data you have and how many labeled data you have. That is harder to get in certain circumstances, so how do you actually do that better without having that much data? Those are at that level the technology trends that are also there. Alex: You see the fear that people have, that lay people have, about AI is quite simply, you see, [that] in

the wrong hands AI could be used like an instrument of destruction whereby the AI can take over to such an extent that it could actually be self-sustaining and have such an intelligence of its own form that it can then deem human beings as inefficient and redundant. And human beings can see the other human beings as redundant as well because that workforce is no longer needed when you have an intelligent system to basically run that. What would you add to that? Sudhir: So there is always a fear. I mean to some extent there is always a fear with every technology. If you go back to going from rocks to hammer and things like that, there's fear to that. You have cars and accidents and people getting killed, you have Web and you have all these Internet crimes that are there as well. So there is always fear with technology. Any technology in the wrong hands can do much more harm, so that's always there. I think the responsibility is for the innovators to make sure that they are actually being conscious of that. And this is what I feel, that with every technology that is being developed, there has to be equal sort of effort in trying to create very consciously things that would prevent people from using technology in the bad way. And so already there is that conversation happening, which is good, and there is equal sort of effort being created. I think that because of the fear you can't sort of stop using any new technology. So, saying that don't do AI because there is a fear, that's not the right thing. The thing is how do you sort of ensure it doesn't get to that. I think getting to a place where robots will take over the world is much, much, much distant in the future. We are not even close to where robots can think on their own today, right? Even with all the conversation about self-learning, most of it is what has been taught to the robots or what has been taught to the machines. So, it's much far distant in the future. Then you have this trend of how to use AI to provide better human-machine interaction or, in general, better interfaces. People don't necessarily like to type as much, so how do you do a voice-enabled stuff, how do you do your facial recognition and use emotional intelligence and things like that. So, the whole interaction of humans with the computers and systems is changing and that has to be much better, hopefully in the future. Alex: That's how it would benefit a lay person, like myself, but then why do enterprises need AI? Sudhir: Enterprise[s], in my view, need AI for both staying competitive and staying relevant. To me it seems like companies that didn't get into Internet or the Web sort of thing, many of them became obsolete. People who didn't sort of get into mobile bandwagon, many of them have lost market share. So in my mind, you almost 'have to' use AI today because otherwise you are not going to be relevant in the future. It can also be used to differentiate yourself from other people because any tool, any technology gives you that platform to use it in a better way than your competition. And so if you use AI in terms of its full potential, you can better serve your customers, you can improve all your business metrics including sales and margins, and profit, and all kinds of stuff. It allows you to be more efficient, it allows you to scale better so you don't have to hire 20,000 people if you really want to grow. So in every dimension you can actually do something very different from your competition and create differentiation. Also, I think it's almost inevitable that everybody has to use it for that. And it can be used because AI allows you many different technologies and not just one thing — it has machine learning, then it has speech recognition, it has different tools to do different things for the organization that you can leverage across the board for all those benefits.

Alex: So in essence, what you are saying is, if you don't move with the trends, then you are going to miss the boat... Sudhir: Exactly. Alex: ...and you would be standing on the harbor wondering where everyone else is going. Sudhir: Yes, precisely. I mean you most probably are not going to be relevant in 10 years. Alex: And it's interesting you say that because I remember the dot com boom. And going back to the industrial revolution, there were these groups who were the laggards who basically went and broke up all the machinery because they didn't believe in the development of this machinery and the evolution of the machinery, and people thought that of the dot com era as well. That itself is a challenge because there is a lot of people that you have to convince and that, I guess, is a job in itself. So other than that, what are the challenges in adopting AI? Sudhir: For an enterprise, the challenges are, in my mind, less about technology and more about the human aspects to it. Technologies are there and there are various tools that you can actually leverage that. The human aspect is one. There will always be naysayers and how do you sort of get them to adopt and change their mind about using a new sort of technology? Similar to, again going back to, the dot com [and] Internet revolution, there were many companies that didn't go there because they thought it was a very small fad, [and that] nobody is going to buy things on Internet, right? I mean that was the thing, 15 years ago, people were saying. Walmart is still catching up to Amazon because of that. So there would be that sort of stakeholders, some of them will not be convinced that this is the way to go and some people will also not come to the realization and not want to join the party [because] they think it will be impacting them personally. If their job is something that can be eliminated using the AI technologies, then that resistance is also going to be there. So that is one big challenge that needs to be solved, because ultimately organizations are built with people and if the people are not convinced then you are not going to be successful. The second aspect after that is — do you actually have the right skills in your organization to adopt something new and make it successful? That is again a challenge. As I was saying before, with the new trend there is going to be more tools and more help for people to use AI without a lot of skill. But then the third level comes, which is basically, are you trying to solve the right problem in the first place, because there are certain problems that can be solved today using AI technology and there are certain problems that most probably [are] not the right ones to solve today because the technology is immature and there is still sort of more work to be done. Selecting the right problem becomes also a challenge and, again, the more experienced you are in AI technologies, the better the chances are that you are selecting the right problem. But if you are just going by the hype, then you might try to solve something that actually is further away than you think. Alex: You talk about problems and solutions, but then do you look for the gaps, gaps where technologies don't exist? Does Infosys actually look to fill those particular gaps as well? Sudhir: The AI and automation platform Infosys NIA, that we launched this year, precisely does that. It takes most of the existing technology, lot of open source technology and it slowly adopts that and then builds things that are sort of missing. So, one is just hardening the open source technology in terms of [being] skill agnostic. But, as I was saying before, there is huge gap in terms of automating things. So, how do you automate the whole data science process where you can have the machine itself learn, basically pick the right algorithms, pick the right features, and

do the prediction all by itself and, therefore, you don't need very high skilled people doing that? Those kind of gaps. Or how do you make it so that it's very easy to prove why this is working or not working? How do you do automatic calculation of impact that the AI technology is giving you? Those are the things that are missing in most of the technology outside and that's kind of where Infosys focuses on and built this platform that allows you to do those things in a much more streamlined fashion. Alex: Okay so you have the next gen platform, the next gen AI platforms. How do next gen AI platforms address these challenges? Sudhir: So one thing is creating, tooling on these platforms that allow it to be used by folks who are normal business analysts or engineers. They don't have to be data scientists or don't have to be computer scientist or something like that. There is a much faster rate of innovation in AI, every six months there are new tools being built and put in open source and things like that. So building a platform that actually can absorb those innovations much more quickly, [and] having a very flexible platform. AI is not a single tool. As I was saying before, it basically has natural language processing, natural language understanding generation, machine learning, deep learning, all these different kinds of things. How do you have a single platform that actually has all these tools, because different tools are appropriate for different problems in the enterprise? You don't want to have the enterprise using 20 different tools from 20 different vendors. How do you create a single platform, a single comprehensive platform, that actually can do all those things? Our focus is on flexibility, comprehensiveness, and then low cost, which is sort of built into our gene – Infosys always wants to be a provider where you are not asking for very large investment from the enterprise. And again, using open source allows us to keep the cost low not only of the platform itself, but also the delivery work of it and also the usage of it. Because a lot of things are automated in the platform, it is much easier to use and it's much faster to get results – you don't need a two-year process to implement a particular system or solve a problem. You can do that in three months and that reduces the cost as well. Alex: You are not looking at a small platform, a small stage. You are looking to address the whole world in that respect and take as many enterprises, businesses like large conglomerate companies, under your umbrella so to speak. Infosys is not necessarily, as you said, a commercial company where you are interested in what the lay person or the consumers intend, but [more about] how you can benefit other enterprises to do that job for you. In the sense, you are just consulting the larger firms, so to speak. Is that something that Infosys is going to consider for the future? Or like Amazon, you know how they have grown or like how they started by selling books and now they have got a TV channel, is there anything that, you can lead on that, Infosys is planning for the future? Sudhir: So I think that Infosys at least in the near future is not geared to go direct to the consumers. I think the entire DNA of the company is sort of built in understanding the enterprises' domain, understanding their needs, and serving their needs in the most efficient manner. And I think that is what we do really well, but that doesn't mean that we will be restricted to just solving the problem they are telling us to solve. We can always find problems for the enterprise. In fact, one of the things that we have done recently is this Zero Distance initiative where our employees, when they are working with the company, they are trying to understand the different problems that the enterprise might have that they have not actually hired us to do. But we sort of surface that and then we

actually solve that. So we definitely are increasing domain that way. We are also moving more into the products area — using products to do innovation and solve even more complex problems. But I think the domain still remains to be the enterprise. I don't think that direct to consumers is something that, I mean you can never say no, but in the near future we are not geared towards that. Alex: In a grand scheme of things, how will enterprises be impacted by AI? Sudhir: The first step is always the efficiency and cost saving. That's sort of where the enterprise[s] always start. Because that's the easiest way to start. So if something was costing us US$100 [and] if I use AI technology/any other technology to save US$20 [then] that is one easy metric that enterprises do. Even for AI, if you look at it, a lot of enterprises are starting to use AI to automate and to save cost. That's one metric. I think where we are sort of helping the enterprise change, and they are also moving towards, is figuring out how AI can actually address the other business metrics like your sales, and your marketing, and your reach to the consumers. Now, how do you actually launch new products more efficiently? How do you actually expand into different markets more efficiently which then gets not just into the cost savings, but actually in terms of increased revenue, increase profit, increase margin, those kind of things? And that change is happening now where people are sort of starting to measure that as well. So, if you are serving the customer better, are you increasing the customer's lifetime spent with you? And how do you sort of measure that and use that to fund the AI investment? I think [that] is a positive sign and hopefully will fuel even more growth in the AI field than it is right now. Alex: How do enterprises get started on their journey with AI? Sudhir: It always starts with the right problem. And that is the hardest thing. How do you start your journey to solve the right problem for the enterprise? In my view, the problem should invariably be a problem that the company is already solving, but not solving in the most optimal way. Because if you try to solve a completely new problem, it is going to be harder to explain why AI is doing the better job than something else. If you already are solving a problem for a while, and it is somewhat suboptimal — so what I mean by that is, if you are using rules-based engine to do predictions or doing fraud management using that or you are using humans to enter data from spreadsheets or documents, which you know are inefficient ways of doing things — you can use AI to do it better. Then it is very easy to prove that you actually did something. Like [this] was earlier and this is now, and there is AI between the two, and it is very easy to prove that. So I think, having a problem that is being solved sub-optimally and then using AI to then solve it [in a] slightly more optimal way and then measuring the impact of that is an easy way to get acceptance in the organization, and that's where you should start. The other thing important in the problem also is to make sure that you're using an AI technology to solve the problem that is somewhat mature. So, for example, supervised machine learning is something that has been used for many years, and it's quite mature. Something like a speech recognition is still sort of getting more mature but maybe [it's] not as mature. So you don't want to take a problem where your interface is completely human with lots of accents and you have to get [it] perfect to really make a difference. You use something that actually is somewhat [a] mature technology to start with because it is very important to be successful in the first project that you are doing. And be extremely sensitive to people's reaction to it, so that culturally there is no big

resistance. You have to involve them in the process, making sure that if this new paradigm is going to have some people lose their job [then] you make it very certain that they will have something else to do. So you reskill them and have already a path for them to have opportunity in the future, so that they don't resist this change. Then you want to make sure that there is stakeholder buy-in for [both] the technology option, but also for the people management and how their future is going to be tied to that. Alex: How do you look at the future? Not only for yourself, but for Infosys as well? Sudhir: The thing that motivates me is the opportunity that Infosys has and I have, and everybody else has, to shape the future in the way that we think is going to be the best for our next generation. So, I have a kid, 16-year-old, and my thing is, 'Okay, what are we doing to make sure that the next generation inherits the world in a better way than what we inherited from our parents and grandparents'. Alex: Thank you so much, Sudhir, for sharing your knowledge today. Thank you all for listening. I hope it was a fun-filled session. And for more information on AI, please visit Infosys.com. And we look forward to you tuning in next time. Thank you! Good bye!
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Living with Ambient Intelligence: So at Home with Technology

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/ambient-intelligence.html ----- Insights AI/Automation "The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it."- Late Mark Weiser, who was the chief scientist at Xerox PARC. Redefining Human-Computer Interaction True to Mark Weiser's words, technology today has become all pervasive to the point of being 'taken for granted'. Take for example our smart phones. They have become a ubiquitous part of our lives. Virtual personal assistants and Bluetooth speakers have become a subtle part of our background. While our lives have changed for the better with these technological innovations, we are poised for a much more dramatic disruption in our daily lives with what is known as ambient intelligence. The upcoming disruption is driven by our quest to lead better lives, particularly if you consider that by 2050, the world's population aged 60 years and more will most likely cross 2Bn. In the US, there will be 75% increase in the number of senior citizens needing assisted living. Imagine a digital home that proactively but sensibly supports people in their daily lives and provides the needed care for the elderly through human centric technology. We are poised for such a dramatic disruption in the way we live in our homes through ambient Intelligence. Understanding Ambient Intelligence Ambient intelligence (AmI) represents the future vision of intelligent computing where explicit input and output devices will not be required; instead sensors and processors will be embedded into everyday devices and the environment will adapt to the user's needs and desires seamlessly. AmI systems, will use the contextual information gathered through these embedded sensors and apply Artificial Intelligence (AI) techniques to interpret and anticipate the users' needs. The technology will be designed to be human centric and easy

to use. The ability of technology to take decisions and act on our behalf taking into consideration our preferences based on the data available to it from all the connected sensors and systems surrounding the user can be defined as Ambient Intelligence or AmI. AmI is intelligent, pervasive, and intuitive. It does not ask the user but understands the user context. It does not make its presence felt but takes action that is tailored to the user's preference. AmI is an emerging technology that is set to radically change the way we interact with machines and devices around us. How Does Ambient Intelligence Work? AmI is multi-disciplinary and works at the intersection of several technologies including Artificial Intelligence, Big Data, Internet of Things (IoT), Pervasive-Ubiquitous Computing, Networks and Human Computer Interaction (HCI). AmI senses the environment and user context through various intelligent digital systems installed in our homes or workplaces, utilizing different IoT sensors and devices. After that, the AmI system processes the data collected from these systems. Once data is processed and analyzed, the AmI system interprets it to understand user proximity, state, intent, and behavior. It then intuits through insights derived from the current data, prior learnings and pattern identification. It then decides the next best action and responds back to the user through an intuitively designed natural interface of a smart device. The Possibilities of AmI Ambient intelligence throws open immense possibilities for making our lives easier and better. Whether we are in our living room or kitchen or at our workplace. Whether we are at the store, driving, or in the hospital, technology will act as our assistant in the background. From warning us not to pick that ice-cream because it can read our blood sugar levels from our health monitoring wearables to asking us to take a different route to work because it knows there was an accident on the usual route. It will switch on the air conditioner to cool our homes before we return from work on hot summer evenings. To get a better understanding of how it will make a difference to our daily lives, let's consider a scenario where Steve, an IT engineer, comes home after a stressful day and AmI systems help him relax. Preserving Privacy While the promise of AmI is exciting, it is important to recognize that privacy will be a huge concern. AmI systems will know almost everything about the lives of the people they track and if intercepted by unauthorized parties, could lead to all kinds of harm. Questions on data usage, privacy and overall security need to be answered more extensively and the systems designed with trust as a foundational layer. AmI has huge potential AmI has huge potential for improving the quality of living, comfort, and safety of people. AmI homes with human centric technologies will make daily chores very easy. This will play a significant role in providing quality care for the elderly particularly as the population ages. Even outside our homes, AmI will find applications in several domains including retail, healthcare, manufacturing, smart cities and more.
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What's Cooking? Ambient Technology in the Kitchen

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/ambient-technology.html ----- Insights AI/Automation With vast research and development in Artificial Intelligence (AI) and Machine Learning (ML), we are entering into a new era of human and machine interactions. As processing and analytical capabilities become more robust, several new intelligent systems and applications are being designed. These intelligent applications along with sensors, multiple wearable devices and other examples of computer efficacies are leading towards yet another technological era of Ambient Intelligence (AMI). The article "Living with Ambient Intelligence: So at Home with Technology" gives an introduction to AMI and explains how it will impact our daily lives. Mark Weiser, widely considered to be the father of ubiquitous computing, once said, "The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it". Ambient Intelligence is highly appreciable for its easy and interactive capabilities. It uses Human Computer Interaction (HCI) as one of its building blocks, in which people use their voice, gestures, body movements, facial expressions, location etc. in order to interact with the technology. One of the most important aspects of AMI is it understands the context of surroundings. The ability to 'sense' interactions between humans and technology plays a key role. AMI aggregates inputs like data, images, videos etc. from sensors and other devices, interprets according to the context and draws intuitive conclusions that are personalized to the user. A kitchen provides great opportunity for ambient technology. With the help of integrated gadgets like smart refrigerators, smart ovens and more, an AMI system could give it a complete makeover. Let's consider a scenario from an AMI enabled kitchen where our host Alice wants to celebrate her father's birthday. She interacts with the AMI system and it starts working in the background to come up with the best suited intelligent options for Alice. Scenario Let's look at the sequence of the above events in a pictorial way, AMI in the kitchen is a simple example of how it can facilitate us in our day to day life. The applications can vary from surprising our loved ones in an informal environment to creating a great driving experience on the roads, to a smooth check out in a retail store, to a stress free assistance being provided to your elderly parents. From building smart offices, cities and schools and hospitals, the possibilities of AMI are immense and very promising. ======================

Amplifying Human Potential With Robotic Automation

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/amplifying-human-potential.html ----- Insights AI/Automation Industry 4.0 is the holy grail of manufacturing. As we brace ourselves for an impending

revolution, Nampuraja Enose, Principal Consultant – Industry 4.0 at Infosys, reached out to Michael Haag, Senior Vice President, Research and Development, KUKA Roboter GmbH, for insights into the future of manufacturing, the paradigm of digital services, and the role of robotics automation in bringing about the next industrial revolution. Q (Nampuraja): Welcome, Michael. Let me begin by shining a light on how business-to-consumer (B2C) industries such as media, retail, and financial services have been transformed by digital technologies in the last decade. How do you see core engineering industries being influenced by digital technologies, more so in the context of Industry 4.0, over the next 10 years? A (Michael): Very true. Let me first set the B2B context in the light of the B2C landscape. We have seen disruption in the areas of music, movies, and books by digital transformations. Let me, for a moment, shift your attention to the music industry. It has been turned on its head — across recording, storing, sharing, and commercialization — music is a stellar example of innovation via digital. The manufacturing industry, on the other hand, operates in a parallel universe; except that the physical product itself cannot be completely digitized like music, but can be 'enhanced'. With a digital underpinning, manufacturing enterprises can streamline processes, ensure flexible operations, incorporate automation to deliver unmatched quality, and boost productivity on the edges of the supply chain. Digital technology will therefore determine the trajectory of Industry 4.0 in a profound manner. A digital thrust will influence how machine intelligence and automation shape the assembly line. Only manufacturers with robust digital capabilities will be able to sustain their competitiveness and ensure that production is flexible as well as cost-effective. If I have to contextualize this ecosystem, we see an interesting scenario where technologies unveil production paradigms in a milieu of digital services. Take, for instance, robots. Mobile and sensitive robots interact directly with humans to ensure smart and flexible production. This human-machine interaction and collaboration provides a stimulus for a nimble assembly line, which is an imperative in industries such as mobile phone manufacturing, where new phones have a shelf life of barely six months. Now, add a digital layer and it accelerates the journey towards lean and smart manufacturing. Q (Nampuraja): Michael, you therefore allude to OEMs having an important role to play in industrial digitalization. Do you also see a new business model emerging, characterized by a shift from 'product innovation' to 'service innovation?' A (Michael): I foresee new business models emerging with the confluence of technology, smart production, and digital services. Let me explore this paradigm by charting the evolution of industrial robotics. On the surface, a robot manufacturer provides systems to ensure modular, predictable, and sustainable manufacturing. However, fundamentally, a robotics major continues to be a key stakeholder in ensuring productivity of the factory floor. Technically, a robotics enterprise can easily manage the production facility of an automotive company, end-to-end. But rather than selling a commoditized product, the robotics manufacturer can now adopt a business model where it is paid for each automotive component and part of the vehicle that is produced. You can go further and explore another model, wherein the robotics company is tasked with driving efficiency and productivity on the factory floor. In this business model, the automotive major continues to own the manufacturing side of the business. The robotics company, on the other hand, is a stakeholder with a mandate to enhance

quality and boost productivity. It is an opportunity to alter the dynamics of manufacturing by incorporating automation and machine learning into the assembly line. This would essentially be similar to how cyber systems enable systematic innovation, from products to services to outcomes. Q (Nampuraja): It is a fascinating premise where OEMs gravitate towards selling uptime, availability, and performance! In this context, what is the role of technology, and more specifically, what is the role of software platforms? A (Michael): True, platforms provide us with an opportunity to create ecosystems. Software platforms will better facilitate data capture, aggregation, and exchange across an ecosystem. We can develop interfaces on the platform that allow stakeholders to join and enhance the platform's capabilities. However, let me temper my enthusiasm for platforms with a word of caution: You need a stable and scalable platform — Apple iTunes comes to mind — that is architected in a robust manner and is agile enough for partners to build on a strong foundation. There are several dimensions to the enormous amounts of data collected through such platforms. You can use machine learning and artificial intelligence to solve very complex problems which you otherwise cannot model in an explicit way. In many cases today, 'production' is so complex that the relationships between all the variables require dimensions of statistics, so that they can learn from 'behavior' instead of explicitly 'modelling.' Q (Nampuraja): Indeed, software platforms are better placed to facilitate the capture, aggregation, and exchange of data. In a sense, this marks a shift towards open source. What are your thoughts on the adoption of open source? A (Michael): I believe that the adoption of open source is becoming more widespread because technology is evolving at a fast clip. If I invest in a technology today, it may become a hindrance for my enterprise in a matter of months because the technology might become obsolete. Therefore, even if I need to leverage a new technology, I should be able to incorporate it by making changes to the platform. This way, it spares the enterprise from having to make course corrections and saves it significant effort, as well as the cost of migrating to new systems and technologies. Additionally, the efficacy of platforms lies in the fact that they provide open interfaces that can help develop complete ecosystems. There is not one company that can solve all of the industry's problems on its own. However, companies can rely on various partners, who can together address extreme complexity on the production floor, where there are several moving parts and inter-relationships today. Q (Nampuraja): You touched upon a broad range of topics: Artificial intelligence, machine learning, robots interfacing with human beings, and more. Does it all open up a new paradigm where 'pure play' engineering enterprises will be able to deliver a new genre of products from a digital marketplace? A (Michael): Let me address your queries by making two points: Firstly, we need to adroitly manage the interface between the physical and digital spheres. In the digital universe, you have ample flexibility in the methodology of the software program and its outcome. The physical domain, however, is more complex. You need the right tools to manage a process. For instance, you need a welding gun to perform welding. Similarly, you require a host of tools and machines to accomplish diverse engineering tasks. Therein lies the efficacy of the robot. It is a versatile machine that can perform multiple tasks. You only need to attach the right tool to the robot for it to undertake one task after another. The robot offers you the flexibility to serve as the interface between the physical and digital worlds. Now, let me address the crux of

your question: If the robot is expected to perform tasks that are beyond its capability, it needs to learn new skills. How about the ability to download these skills from a digital marketplace to enhance the functionalities of a robot? A digital marketplace can address a broad spectrum of requirements. For example, clients can seek critical support in diagnostics and maintenance of industrial equipment. When systems are malfunctioning, they can access an expert database that offers a solution to mitigate issues based on historical events. Similarly, a digital marketplace can enhance availability when production is on a downward spiral. Clients can access an expert database to arrest downtime and resume production at the earliest. This service can also facilitate predictive maintenance and condition monitoring. Q (Nampuraja): Interesting perspective. You are making a case for the software platform offering value-added services that go beyond the plain vanilla service that is the norm. A (Michael): Yes, there will be a distinct shift from engineering services to a knowledge-based engineering services model. Remember, a machine builder possesses a rich repository of knowledge about production. The domain knowledge can be exploited to optimize production and enhance process integrity, and all of it can be delivered as a digital offering in order to create customer value. Q (Nampuraja): So, will product development become increasingly digital-centric? How do mechanical, electronics, and software engineering fit into this digital landscape? A (Michael): I believe that mechanical engineering will never lose its importance. Let me use the example of a robot to illustrate my point. A robot has an inherent capacity to operate without interruption, in a safe manner, while consuming minimal energy. It embraces a mechatronic philosophy, which blends mechanics, electronics, and software. At the same time, product development cannot operate in silos. You need robust mechanics, electronics, and smart software working together. Significantly, you need engineers in these disciplines to collaborate for the development of a successful product. Q (Nampuraja): In such a services revolution, what and when is the next inflection point? A (Michael): Looking at the industry from the inside out, I reckon that it is still evolving. It is a continuum of subtle as well as seismic shifts that are transforming the manufacturing landscape. In the previous industrial revolutions, there have been key technologies that boosted productivity to the next level; technologies like steam power, electrical power, and the computer. In retrospect, it turned out that these technologies really caused the industrial revolutions. In my view, as compared to the previous industrial revolutions, Industry 4.0 with cyber-physical production systems as the key technology is predicted a priori, which means that the potential use cases and the future archetypes are just evolving. This provides various opportunities for innovative companies and research institutes to actively shape the future. Q (Nampuraja): How should clients and OEMs respond to this services revolution? A (Michael): Machine builders should capitalize on the opportunities that data provides them. They should unlock the value of data and extract insights from machines embedded with sensors. Being data custodians, machine builders should also capture and digitize the knowledge of professionals across the enterprise. Clients, on the other hand, will become more digital-centric enterprises when they experience the productivity gains from this services journey. Q (Nampuraja): We are also seeing robotic applications extending beyond the factory floor. How do you see the union between robots and humans evolving? A (Michael): A robotics

company should realize that humans have a central role to play alongside robots, in manufacturing. When professionals work with robots, both partners bring in complementary skills and capabilities that amplify the potential of this human-robot dynamic. A human being brings creativity and problem-solving skills to the production environment, while a robot can achieve precision and automate tasks that are repetitive and unergonomic. Q (Nampuraja): You discussed how robotics automation can deliver the promise of Industry 4.0. On the flip side, what are the gray areas and challenges in realizing this vision? A (Michael): I think the lack of uniform standards is a barrier to realizing the potential of Industry 4.0. Let me provide an example, in the context of the interface between cyber and physical systems. Multiple devices can interface with each other, only when communication protocols are aligned with each other at protocol as well as semantic levels. It is imperative for engineers to design devices so that they integrate with the ecosystem. The industry also needs to evolve standards that are global in terms of application. Remember, the telecom industry touches billions of lives today because telephony protocols have been standardized globally, since the invention of the humble telephone. Nampuraja Enose: Michael, thank you for your time and insights. Learn more about the Infosys IIoT offering >> =====================

Are Autonomous Vehicles Going Places Anytime Soon?

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/are-autonomous-vehicles-going-places-anytime-soon.html ----- Insights AI/ Automation (This blog post has been written with inputs from Saraswathi Thippaiah, Principal Consultant - Advanced Engineering & Sreekanta Guptha BP, Principal Consultant - Advanced Engineering, Infosys) In the foreseeable future, autonomous vehicles (AV) - drones and self-driving cars- will be the major mode of transportation, and facilitate access to a number of allied services. For instance, imagine receiving your products within minutes of placing the order. The AV industry is expected to grow to $126.8 billion by 2027. Autonomous vehicles drive with the aid of the Internet or a wireless network, using in-vehicle technologies such as sensors, radar, LIDAR (light radar), lasers, cameras, and GPS, to steer, navigate and brake. Data generated or accessed by the AVs is usually stored on a cloud platform. As technology gets smarter, autonomous vehicles will play an increasingly important role in industries such as logistics, where they will simplify fleet management, optimize delivery routes and enable asset tracking. One will also find AVs in industries such as mining, retail, healthcare, and hospitality. Technology is making autonomous vehicles safer While we have come close to perfecting the hardware of cars - for efficiency, speed, and safety - the software to power them with no human intervention is still evolving. Self-driving cars are yet to become intelligent and responsive to their environment, and ensure safety of passengers. Working on this challenge is Lvl5, a mapping and localization startup that has developed a way to convert enormous amounts of video footage into high-definition 3D maps of road conditions. These maps will be constantly refreshed to reflect the latest road

conditions, providing self-driving cars with the information they need to detect and plan their route safely. While drones and self-driving cars have been developed to sense the presence of humans and other vehicles, they have hit a bump in the road when it comes to detecting large animals like kangaroos, moose, deer, and others. For instance, in the US, 200 people die each year in animal-related accidents. This led Volvo Cars to study the behavior of different animals and develop an animal detection and collision avoidance system. Human drivers are responsible for 94% of car accidents worldwide, and in the U.S. 35,200 people lost their lives in 2015. To address this situation, Nauto, a Silicon Valley startup is developing software for self-driving vehicles to collect data on driver behavior and is using computer vision and deep learning techniques to improve driver performance and safety. This data is especially relevant as manned vehicles will share the road with AVs for at least another couple of decades, and both will have to learn each other's behavior to ensure safety. Will AVs be on the road sooner than later? Autonomous vehicles recently received a shot in the arm when on July 19, 2017, US lawmakers voted to allow automakers to introduce 100,000 vehicles on the road. However, the assumption is that a licensed driver will be at the wheel and the vehicle will have inbuilt fail-safe features. While aspiring car owners are excited about the possibilities of AVs (including drones) and self-driving cars, truckers are concerned about their jobs. I think Level 4 and 5 AVs - where in driver attention is either not required to ensure safety, or the driver is redundant - are still very much in the distant future. Some predict as much as a couple of decades away. Much data, technology and testing is needed before AVs are built to be responsive to their constantly changing external environment in real-time. For instance, how to respond to debris on the road, changing traffic rules, read blurred road signs, a sudden flat tire, a brake failure, or bad weather. These are events a human driver would be able to respond to intuitively. Level 1, 2 and 3 AVs, which offer varying degrees of driver assistance, are likely to be on the road soon. The Infosys engineering services is actively engaged in making AVs a reality in the near future, by developing solutions that can be immediately used by our customers. We also incubate, develop and mature advanced engineering technologies to renew our existing service lines and create new next-gen ones. Our areas of focus include Robotics and Autonomous Vehicles, Industrial IoT, Machine Learning and Artificial Intelligence, Virtual Reality and Augmented Reality and Additive Manufacturing. All these technologies are evolving continuously and converging towards the Fourth Industrial revolution i.e. Industry 4.0. To know more contact our engineering services >>
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How Artificial Intelligence Can Deliver Sustainable Advantage

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/artificial-intelligence.html ----- Insights AI/Automation Artificial Intelligence or AI is becoming mainstream. The adoption of AI technologies by industries such as financial services, hi-tech and communications and healthcare is

gathering momentum.1 AI and automation which includes a plethora of technologies from robotic process automation to deep learning, speech-to-text to computer vision, and big data to analytics, is making maximum impact on functions like marketing, sales and supply chain management.2 Currently, Google, IBM, Microsoft, Amazon and Infosys are the leading vendors of AI products and platforms. Blue Prism, UiPath, Infosys and Automation Anywhere are the leading vendors of robotic process automation. These vendors also provide a wide range of products and services. Significant investments are being made by organizations to build capabilities either by developing them internally or through acquisitions. While most of the above technologies offer benefits, enterprises need to make clear choices and investments in relevant technologies to gain both short-term and long-term business benefits. The challenge for business leaders and technologists is to look beyond the maze of products and develop AI-enabled capabilities that are aligned to the long-term business strategies. Based on the current AI product and service offerings in the industry and the way organizations are adapting AI capabilities, four possible patterns have emerged for AI adoption. Implementing each pattern offers some benefits and paves the path towards building better business capabilities. Based on the nature of benefits, the above patterns are broadly divided into two categories: Adopting AI to enhance productivity and enable superior user experiences requires relatively lower effort compared to core capabilities and can be rolled out reasonably quickly with small budgets. Building these capabilities help an organization achieve operational effectiveness, which is desirable but not sufficient. As Michael Porter said, "operational effectiveness is not strategy"; it is not sufficient to achieve sustainable advantage. Investing in business (siloed) solutions improves productivity in the short run along with building some level of differentiation. However, building enterprise-wide core capabilities, which demand realignment of the organization's operating model, leadership commitment and continued investment, promises a higher level of differentiation over a longer period of time. Hence, these intelligent capabilities provide a sustainable strategic position against the competition. Embedding intelligence into core capabilities is critical for mature businesses. These businesses have already made significant investments into existing business capabilities and currently, enjoy superior market position by delivering the expected value to their customers. However, these enterprises need to adopt changes to their operating model, leadership thinking and the existing system landscape to maintain their current market position in the future. The urgency to change is more important for larger, mature businesses with a system landscape that is highly fragmented and strewn with point solutions. Such businesses need to take drastic measures and build a necessary strategic foundation to compete with newer, smaller and more agile enterprises that are well prepared for the AI-enabled future. Business leaders, along with technology leaders, must realign their business strategy and define an appropriate strategic architectural foundation to deliver enterprise-wide intelligent capabilities. Building intelligent capabilities to deliver sustainable advantage requires significant leadership commitment and resources. This topic was discussed in detail in the white paper 'Building Intelligent Capabilities for Sustainable Advantage'3. The paper provides insights into emerging patterns in AI adoption, discusses various patterns for better competitive position, and recommends an

approach to build intelligent capabilities, through strategic architecture, to gain sustainable advantage. You can access the full paper here. Building Intelligent Capabilities for Sustainable Advantage >> 1What AI can and can't do yet for your business, McKinsey 2Roundup of machine learning forecasts and market estimates 2019, Forbes 3The paper was originally published in Journal of Enterprise Architecture.
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How Automated Asset Tracking Can Help Airports Function More Efficiently

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/automated-asset-tracking.html ----- Insights AI/Automation Air traffic is set to double in the next two decades and it will bring new challenges in the management of the large number of assets, like the Unit Load Devices (ULDs), tractors, Maintenance, Repairs, and Overhaul (MRO) spare parts, etc., that are typically required at an airport for each departure. Currently each set of assets is tracked either manually or by its own stand-alone software e.g. ULD tracking is done by the software supplied by the ULD vendor; similarly, wheelchairs required in a flight may be tracked manually or through its own tracking software. Several airports are already super congested with complex slot sharing and swapping arrangements. Moving, tracking, planning, and managing assets in a seamless way can help airlines, airports and service providers to be more effective. A Single Missing Ladder Could Have Major Consequences It is difficult to have a single view of the critical assets for a particular flight to see if there is any risk in departure or any risk in customer service because of unavailability of an asset. For instance, portable step ladders for aircrafts need to be available during both takeoff and landing. A delay in sourcing a ladder could mean a delay in the flight's operation. Similarly, there are several other moveable assets including luggage trolleys, wheelchairs, dollies, fuel trucks, catering trucks etc. Tracking these assets can not only help avoid delays, but it can also optimize assets. Eventually, these add up towards faster gate turnarounds thus delivering a superior customer experience. The operations executives and customer service executives need to have a full view of each asset, it's location and when it can be made available at the right gate or stand. Challenges around Moving Assets The major challenges in tracking airport or airline assets are: We believe that operations personnel should be able to see real-time view of movable assets and people, on digital displays, that are synched with the planning and scheduling software, so that any deviations from plan (delayed ULD movement, fuel truck taking extra time, cargo temperature in the cold store, shortage in ground handling manpower) are all available on a single pane of glass that can be viewed at every gate. A Single Real-time View of Assets Our solution is a combination of Infosys' Location-Based Service (LBS) platform, RFID, IoT and iECP (Infosys Enterprise Cognitive Platofrm) with existing tracking technologies such as IoT based sensors/beacons or GPS for asset monitoring and tracking in

airports. Once an asset is configured, it can be viewed as a graphic on the airport map, irrespective of the technology used for tracking it. Analytics can help determine if there is any danger of the asset's location causing a delay in the departure or arrival of an aircraft. There are also provisions for a dashboard view and for automatic tracking and alerts. Our solution is built on open source microservices architecture making it highly configurable, cloud-ready, and, flexible and which can be integrated with leading commercial planning systems. It also works with industry leading IoT sensors and beacons. We have developed airport plans using Mapbox (an open source mapping platform to create customizable maps) for some of the leading US airports and use overlay projections in real time to visualize assets on the ground. This can help track unavailable or misrouted assets and provide a single real-time view of all assets. There's a great opportunity for airlines to optimize the number of assets through better planning. Automated asset tracking/smart asset monitoring can go a long way in improving the efficiency of an airport, eventually leading to more satisfied customers and greater revenue. For more details visit Infosys.com
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Automation Singularity: Collaboration of Humans and Bots

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/automation-singularity.html ----- Insights AI/Automation The singularity is almost here. But it's not the one that has scared everyone from science fiction fans to physicist Stephen Hawking. The technological singularity, which futurist Ray Kurzweil predicts will happen by 2045, is when computer intelligence overtakes human intellect. However, the approaching "automation singularity" will allow humans and robots to work together and create hyperproductivity not possible separately. The result will be seamless collaboration rather than a battle for dominance. Organizations have effectively used automation for decades. However, this technology's constant evolution is creating a new landscape that stretches far beyond bots performing the simplest tasks. The emergence of robotic process automation (RPA) adds a new dimension — and new workforce — to the automation journey of many organizations. RPA is creating the foundation for a digital workforce capable of understanding processes and replicating them. The digital worker can comprehend a defined process, go to the relevant systems, find the right information, read and analyze it, and then essentially start executing the process with little human intervention. Given that so many business processes are defined largely by well-entrenched enterprise software, automating deterministic processes using bots is fairly simple. So, it's not surprising that automation first caught on when it was applied to a host of back-office processes that are well-defined and repetitive. Of course, even with those advantages, most organizations have managed to automate only about 60% to 70% — at most. This is because most processes have exceptions that require more complex thinking or human intervention. At the same time, we're seeing the convergence of automation and artificial intelligence (AI) moving from a deterministic to intelligent automation

model. While it is still early, we are seeing automated algorithms with higher order capabilities that are able to handle very complex scenarios. The evolution of the digital worker is on an accelerated path as RPA embraces various facets of AI. In many ways, RPA functions like the heart, ticking along and keeping things going. AI, on the other hand, is like the brain and sensory system. The future of human empowered automation The future isn't about machines replacing humans. Rather, we're moving toward human-empowered automation. This essentially means that digital workers will help humans to understand and perform higher orders of work. Digital workers will complement human intelligence and allow many people to realize their maximum cognitive potential. One potential downside is that the total number of jobs shifted by automation might not necessarily balance. Research from Forrester shows that automation will result in a 29% reduction in existing jobs. At the same time, we will see a 13% increase in new jobs created as a result of the technological change.1 Other research, including a World Economic Forum report, has projected a net gain of jobs attributed to automation in the next few years. Daron Acemoglu and Pascual Restrepo, U.S. economics professors who have researched the effects of automation on the labor market, argue that automation "increases the size of the pie, but labor gets a smaller slice." However, they wrote that not all technology is equal.2 The combined capability of human worker creativity and empathy, along with digital worker productivity and consistency, will unleash a powerful force. The result can transform enterprises and will lead to the creation of a new class of knowledge workers empowered by their digital partners. This undoubtedly will have many wide-ranging ramifications for all facets of an organization, from recruitment to training to operations to performance management. If we look at the future enterprise a decade from now, we will see a very different workforce. Organizations of the future will embrace "automation singularity," or the concept of seamless collaboration between human and digital workers. Automation singularity moves enterprises from a parallel workforce to unified workforce, deterministic operations to contextual operations. This can break down functional process silos to connected customer journeys and generate rich process-level data to power the future AI. This can result in a hyperoptimized enterprise that will seed disruption in the way products and services are conceptualized, manufactured, marketed and delivered. New disciplines for the future As the automation singularity arrives, organizations must focus intently on the following disciplines in order to capitalize on its potential. Human reskilling, governance and structure As the nature of work changes, organizations will have a chance to achieve unprecedented agility, speed, personalization, etc. However, the organizational structures and policies will need to evolve to facilitate the change. In 2019, EdgeVerve commissioned a study called the Evolution of the Enterprise Workforce in the Age of Automation. That online survey questioned 300 business and IT decision-makers from mature markets and who were responsible for their organizations' RPA strategies and initiatives. The study demonstrated that organizations across the globe want to expand and scale their automation efforts, believing it will not only help with their business outcomes but benefit their human workforces. With technological progress as a given, the roadblocks that an organization faces will be a result of human limitations. CXOs must start reviewing their current organizational processes, policies and strategies with that changing

workforce in mind. The technological singularity is still decades away — if it ever happens. The automation singularity, however, has reached our doorstep. How well are you prepared? 1 https://go.forrester.com/press-newsroom/future-of-work/ 2 https://pubs.aeaweb.org/doi/pdfplus/10.1257/jep.33.2.3 3 EdgeVerve, Infosys ======================

Autonomous Technologies to Power Tomorrow's Enterprises

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/autonomous-technologies.html ----- Insights AI/Automation A very simple example of automation are traffic signals. Earlier policemen controlled the flow of traffic, now we have automated traffic lights that change colors at regular intervals to do the same. If we add cameras to these lights, so that they could 'see' the real-time traffic conditions and change colors based on the volume of vehicular movement, it would become autonomous. Automation is about using technology to monitor, control and/or operate any process or function with accuracy and efficiency without human intervention. Autonomous technology is about enriching automated systems with sensors, Artificial Intelligence (AI) and analytical capabilities so that they could make independent decisions based on the data they collect. Let's understand what impact this technology will have on industries and our daily lives? At present, enterprises in sectors such as automotive, manufacturing, mining and utilities, have been especially effective at using autonomous technologies to achieve greater efficiency, safety and to achieve sustainability. Several factors have contributed to the rise of autonomous technologies. First, the role of technology itself has evolved. It is no longer seen merely as a tool to do things faster, better and more efficiently. Instead, it has disrupted and transformed everything that we do. Also, the rise of allied technologies, whether advanced sensor, communication, Machine Learning (ML), AI, or cloud, has given impetus to autonomous technologies. Let's take mining as an example. Given the inherently risky nature of the industry, it has been using technologies to connect mining assets to a central location for automation, control and remote operation even in the past. Today, we're seeing the growing prevalence of fully integrated and highly automated mining operations. Autonomous technologies can significantly increase productivity at enterprises by substantially improving Overall Equipment Effectiveness (OEE), reduce costs, improve overall safety and drive environmental sustainability in the mining industry. Therefore, we can expect to see smart autonomous and cognitive systems supported by other digital technologies like digital twins, Virtual Reality (VR) and Augmented Reality (AR) applications in the mining industry. Not surprisingly, the mining automation market is expected to grow from USD 2.22 Billion in 2017 to USD 3.29 Billion by 2023 according to a distinguished market research company. Enterprises in the automotive industry are expected to be one of the biggest beneficiaries of autonomous technologies. The applications in automotive are varied, ranging from automating basic testing functions to reduce defects and streamline processes to implementing detection and decision systems that imitate natural human reflex with intelligent

telematics to help address concerns around human error and reaction times. Autonomous vehicles can better use information generated by the vehicle to vehicle/infrastructure (V2X) infrastructure in the vehicle to bring greater situation awareness and decision making. Fleets of autonomous vehicles can eliminate the need for car ownership while reducing idle time. In manufacturing too, automotive technologies have the potential to accelerate manufacturers' journey towards Industry 4.0. They can address the challenge of short product lead times and competitive costing through digitization. Visual analytics blended with AI and IoT can automate the supply chain and make it more effective. Autonomous technologies can help address safety challenges due to human error through industrial collaborative robots. They allow for greater product personalization at scale, by making small batch manufacturing more economical, using AI for dynamically reconfigurable and self-correcting systems. Similarly, there are several use cases in other industry sectors too like utilities, power, oil & gas etc. Robots and drones are being used in these industries which collect huge amounts of visuals and other sensor data to understand and automate processes, predict the future and adapt to complex environments. Evaluating Advantages and Roadblocks Before rushing headlong into implementing autonomous technologies, it is important that organizations first evaluate the solutions to understand where and how they can be implemented and how they can be beneficial. They need to also define the future roadmap and evaluate feasibility in terms of cost, scalability, interoperability of solutions etc. Here are some points that organizations must consider when they implement autonomous technologies. Take a Strategic Approach Organizations often take a very narrow view and seek quick-fix tactical solutions when it comes to adoption of autonomous technologies. To derive optimum benefit from these technologies, however, they need to be viewed through the lens of overall organizational strategy. Taking an end-to-end approach can help create certain process synergies that simply cannot materialize through point solutions. Identify Your Unique Challenges Each organization has some unique challenges that respond well to autonomous technologies. These are governed by factors such as organizational readiness, competitive landscape and nature of operations. Trying to force-fit a ready solution to address these challenges can be counterproductive. Therefore, it often makes sense for an organization to design and implement a unique solution that is tailored to address its needs. Find the Right Partner Given the highly specialized and often complex nature of autonomous technologies, finding a good partner for implementation is highly recommended. Organizations should look for a good engineering partner with proven technology and sector expertise, extensive experience and demonstrable case studies and Proofs of Concept (POCs). These can play a big role in determining the success of the implementation. Keep Moving Technology is always in a state of flux. Autonomous technologies, especially, have been evolving rapidly in recent years. Therefore, it is impossible to ever consider an implementation as complete, because the goal post is shifting constantly. Constant evaluation of the technological as well as competitive landscape is important in order to maintain differentiation. Besides, organizations also need to be on top of ever-changing compliance and regulatory requirements. In today's dynamic technology landscape, it is the companies that make the right technology investments that have the edge. Autonomous technologies have the potential

to bring massive transformation and benefits across industries, given the rate at which they are developing. If organizations are really serious about staying at the top, embracing autonomous technologies, along with other blockbusters such as IoT, ML, AI , AR, VR etc. is extremely critical. The technologies are here to stay, but how one chooses to engage with them will determine future success. ======================

Blockchain Adoption Journey and Impact on Financial Services Industry

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/blockchain-adoption-journey.html ----- Insights AI/Automation Blockchain is increasingly viewed as a ground-breaking technology with potential to disrupt industries by enabling process efficiencies, cost optimization, and building new operating and revenue models. Everest Group research suggests that almost 60% of all blockchain use cases are focused on the financial services industry since the genesis of this technology from the cryptocurrency bitcoin. Some of the use cases of blockchain in financial services are FX settlement, real-time payments, OTC derivatives clearing, P2P lending, cross-border lending, compliance reporting/audit, securities Issuance, P2P insurance, trade finance, KYC as a shared service, event-driven insurance, and core banking. While blockchain does offer significant benefits, it is not a silver bullet. Currently, there are several roadblocks to its adoption and thus financial services institutions need to evaluate and strategize carefully where and how blockchain can be best utilized. Let us explore the potential benefits and challenges of blockchain adoption in different areas of banking and also at the enterprise level besides looking at the future roadmap of the technology. Challenges and Benefits of Blockchain in Banking The current process for KYC, syndicated loans, and corporate action is complex and inefficient because of the number of parties/intermediaries involved and non-standardized, manual processes that also have some digital processes wrapped around them. For example, centralized agencies, such as the Society for Worldwide Interbank Financial Telecommunication (SWIFT), can help reduce banks' workload and create a standardized format for documents required for KYC processes. However, the centralized nature of such an agency itself is an issue because of the time required to process the various KYC requirements of different banks'. Broadly, the challenges can be divided into three areas. On the other hand, blockchain adoption can drive several benefits within banking: Efficiency improvement Blockchain, due to its decentralized nature, can help improve process efficiency once the process is standardized. For example, once a customer's KYC process is done, the information can be made accessible to all nodes with the customer's permission, eliminating the need to repeat the KYC process for customers who have multiple accounts. Operational cost reduction From an operational lens, blockchain can drive significant headcount efficiencies by streamlining the manual onboarding process. The use of blockchain in syndicated loans can also reduce reliance on

intermediaries for processing the loans, thus reducing operational costs and risks. Data security Blockchain also ensures the security of stored data due to its immutable nature. Centralized databases are more prone to attack; blockchain, on the other hand, publishes the information on multiple nodes that must reach a consensus to validate a transaction, reducing the risk of attack. Story of Enterprise Grade Blockchain Adoption Journey The enterprise blockchain adoption story between 2009 and 2018 has been promising with financial services witnessing the highest rate of adoption. There have been major investments around developing PoCs and building consortia which have laid the foundation for scaling adoption of blockchain. 2018 witnessed considerable progress from PoCs to live deployments of blockchain particularly in financial services, where more than 22% of the PoCs moved into the live deployment stage. Offerings such as Blockchain-as-a-Service from leading technology firms have further prepared the industry participants for adoption. Though adoption is on the rise (as shown in the diagram below), there are challenges that enterprises need to address when adopting the technology. Challenges to Enterprise Blockchain Adoption It is evident that blockchain holds a lot of potential especially in the financial services industry. However, like any new technology, it needs to overcome the challenges to adoption. Some of the key issues/challenges that need to be resolved to accelerate blockchain adoption are: Structured Approach to Blockchain Adoption While it is true that blockchain can help solve some of the inefficiencies in the various processes of financial institutions, financial services enterprises need to take a structured approach to blockchain adoption which will help to address the challenges and maximize the benefits. Blockchain adoption should not end up as a theoretical exercise divorced from the real business environment. And thus, enterprises need to take an objective approach to the ways blockchain can solve business problems and rank opportunities based on potential business use cases and their impact and ease of adoption. Ease of adoption of a use case is driven by process criticality, data confidentiality, process reengineering needs, existing technology investments, and current data standards. Business impact of adoption of use case is driven by the potential for cycle time reduction, effort elimination, and new business. Blockchain use cases that are high on both ease of adoption and business impact are among the ideal ones to adopt. Enterprises need to define data structures, standards, and actors before taking the plunge. It would be imperative to identify the data producers, owners, processors, regulators, consumers, and authorizers. There is a need to align incentives for each participant and create governance for shared value creation. For example, in a KYC use case, data is being curated by the banks, owned by individuals, governed by regulatory bodies, and processed by banks and third parties. To enable a KYC process on a blockchain-based platform, all these entities will need to collaborate and will share the benefit of using an industry platform through cost mutualization, better customer experience, and reduction in frauds. KYC is also a good example of ecosystem thinking, which is vital to maximizing value from blockchain adoption which needs a network effect for scaling value. The future of blockchain adoption will require reimagining current business models that will include prosumers connected in a networked economy and have code-driven alignment on business incentives across ecosystem participants to ensure governance, standards, and eventually accelerated and scaled adoption. =====================

Intelligent Automation for Brand Trust and Transparency

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/brand-trust-transparency.html ----- Insights AI/Automation Granting customers easy access to product information, via digital initiatives such as SmartLabel™, goes a long way in strengthening customer trust in a brand. But it also means expending several man-hours of effort processing unstructured data and exposure to human error. Intelligent automation can help save effort and time, with virtually error-free results. A consumer products conglomerate wanted a smart solution to implement SmartLabel™ compliance. See how Infosys helped and the five key takeaways from the project. =======================

The 3 Zeros: How to Reap Greater Business Value from AI and Automation

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/business-value.html ----- Insights AI/Automation Enterprises have clearly embraced Artificial Intelligence (AI) and automation. Manufacturers rely on embedded sensors and data analytics to predict when equipment is most likely to require maintenance, repair or replacement. Financial institutions use AI to flag suspicious activity and anticipate delinquent accounts, and many of today's top retailers are replacing human agents with bots in order to boost customer service and sales. Yet it's still early days for AI. We recently produced a research report titled "Leadership in the Age of AI," which revealed that 79% of enterprises have experimented with AI technologies in order to identify potential benefits to their businesses. But many organizations are implementing technologies incrementally rather than fully, preventing AI and automation from becoming mainstream. You can't inch toward disruption. For AI and automation solutions to be truly transformational, they must be part of a large-scale strategy that focuses on delivering business benefits. For example, a financial services client recently automated its loan origination processes. While the primary goal was to improve loan quality and decision-making speed, they used an Infosys-developed AI and automation platform that also enabled them to transform the customer experience and reduce fraud. However, to seize these bigger opportunities, enterprises need a new way of looking at how AI and automation can solve critical business problems. Enter the concept of the three zeros. By viewing AI and automation through these three lenses, organizations can reap greater business value from their technology investments in the form of happier customers, a more productive digital workforce and new business models. A Litmus Test for Transformation Zero Distance to Information As organizations compete to meet customer demands faster than ever, the ability to retrieve information and insights in

real time has become a critical competitive differentiator. An AI-powered predictive analytics platform can analyze past outcomes and project future ones by using sophisticated computer models and complex algorithms. There are many applications for this capability, from predicting customer churn and forecasting cash flow to flagging delinquent accounts and creating segmentation models. Below are some real examples of customer success stories. But an AI platform is only as good as its algorithms. And it can take time to discover which algorithms are best suited to which tasks. One of our clients, a telecommunications company, adopted an interesting approach to this dilemma. It implemented a collaborative and continuous machine learning modeling process that allows the company's data scientists, data engineers and business analysts to set up challenges, compete and collaborate across the organization. By pitting humans against robots, the telco creates the best model possible and discovers new algorithms quickly, enabling users to obtain better, faster predictions. Since introducing this approach, the company has cut the time to select an analytical model in half. Further, the machine learning tools ensure the algorithms are always improving. And the ability to share the models across the organization as part of its model catalog allows for benefits across the enterprise. Zero Disruption to Business Operations In today's capital-intensive and tightly integrated supply chains, downtime can be costly. According to an ITIC survey, more than 98% of large enterprises say that on average, a single hour of downtime per year costs their company over $100,000, while 81% report that the cost exceeds $300,000. Disruptions to business operations can also lead to legal fines, regulatory violations, disgruntled customers and a damaged reputation. An AI platform delivering predictive and prescriptive analytics enables service technicians to administer preventive maintenance just when it's needed. This not only prevents downtime and unnecessary checks and services, but also minimizes confusion when issues arise. One large U.S.-based fashion retailer had poorly monitored servers that required IT teams to continually respond to alerts and notifications. A single problem could take an hour to resolve, resulting in lost productivity, revenue and customer trust. The retailer worked with our experts to build a predictive model, and the AI platform enabled scale and accelerated impact. Today, the platform parses historical data to accurately assess anomalies and alert staff to exactly where they are occurring. By using regression and dynamic threshold techniques, the platform also suppresses false alarms, ensuring that only relevant, real-time information is delivered – via tools such as Splunk, Elasticsearch and Grafana – through a dashboard to the monitoring team. Since deploying AI as a platform, the retailer has reduced the time to fix server problems from an hour to just five minutes. This has saved $1.5 million each year in diminished downtime. Just as important, by eliminating interruptions, the company has increased consumer trust and strengthened its brand reputation. Zero Latency to Processes Companies from fast-food chains to Facebook are redefining business processes with chatbots – smartly designed AI-enabled computer programs that can simulate or mimic conversation with human beings over the internet. Customers can converse with these round-the-clock agents, getting answers to their most pressing questions, such as when a product will ship or whether an item is in stock. Many B2C companies are deploying chatbots to offer a more personalized customer experience. A leading analyst predicts that chatbots will power

85% of all customer service interactions by the year 2020. Retailers, for example, can integrate chatbots with sensors and message notifications that allow the retailer to know when a customer is entering its store and to reach out to the customer with targeted offers via a smartphone app. Other applications include generating qualified leads for sales teams and empowering users to take advantage of self-service tools. However, B2B businesses stand to gain the most from these digital workhorses. If properly deployed, bots can reshape the way these companies do business by recasting time-consuming manual activities on an enterprise scale. For example, a large telecommunications client recently deployed a wide array of bots across multiple functions, including: By handling critical operations automatically, the bots not only eliminated latencies inherent in manual task handling but also created a digital workforce for greater order-to-cash visibility. Together, these advantages reduced cost by $2 million a year and increased productivity by 85%. The Outlook for AI and automation AI and automation will be two of the most important technologies in the next decade. From manufacturing to retail, they will upend age-old business models, turbocharge productivity and enrich customer experiences. However, for AI and automation to truly transform an organization, they must extend beyond select applications and processes, and tackle opportunities on an enterprise scale. By looking for opportunities through the lens of the 3 zeros – zero distance to information, zero disruption to business operations and zero latency to processes – organizations can discover the full potential of AI and automation.
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Cautious Optimism Marks the Adoption of AI at Proximus

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/cautious-optimism-marks.html ----- Insights AI/Automation Dominique Leroy, CEO and Member of the Board, Proximus in conversation with Rajesh Krishnamurthy, President and Head of Energy, Utilities, Telecommunications and Services, Infosys. Q (Rajesh Krishnamurthy): Automation and artificial intelligence are seen as the next game-changers for organizations. They are already reshaping industries such a manufacturing, healthcare, transportation, among others. How do you envision AI transforming telecom – an industry that is already in the midst of transformation? A (Dominique Leroy): Automation, both of processes and decision-making, has always been a way to optimize our operations. Whether we talk about the correlation of incident-tickets to detect general outages, the automation of our provisioning flow, to the zero-touch configuration of a modem at the moment it is connects to our network. So automation is not a new topic. However, we see today that the ecosystem enabling Artificial Intelligence is evolving rapidly based on the availability of cheap and massive computing power, IoT gathering massive amount of data, often real time, and new possibilities in analytics. Like with all new technologies, it is important to keep the objective in mind. We don't have the ambition to implement Artificial Intelligence in all of our processes, just for the sake of doing so. Nonetheless

I'm convinced that we will need the capabilities of automation and AI to further increase our efficiency and agility, as well as to offer a very high degree of personalized customer interaction. Next to that, AI will need to help us deal with the growing complexity coming from exactly the transformations you mentioned. So, I look at technological innovation in general as an opportunity. The telecommunications industry should embrace the future, and by being early – and we could play an important role. Proximus is well placed to be a key enabler of AI itself for other industries as well – offering virtualized infrastructure with our LoRa IoT network, and anonymized datasets through our brokering platform, EnCo (Enabling Company). Q Accuracy, speed, process and cost efficiencies, and scalability are some of the immediate benefits of AI (Automation, RPA, Machine Learning techniques) that industries are beginning to experience. What are the new kinds of AI-driven services in telecom that you see emerging? A There are three major application areas where we believe Artificial Intelligence could play a beneficial role. First, AI can help solve business challenges by reducing complexity and giving people better information and insights to take better decisions faster. We see a lot of opportunities on internal optimization and operational efficiency, like you mention. This concerns the maintenance and optimization of our networks and platforms or IT helpdesk automation. In our customer operations division, we're investigating machine learning and prescriptive analytics for field interventions with a 'First Time Right' objective. Secondly, we also look at AI as an enabler of a better and more personalized customer experience. Concepts like voice-driven IVR and virtual customer assistants are being analyzed for simple customer interactions. It's essential here that AI is fully integrated into enterprise's systems, such as CRM tools, knowledge management, and billing and ordering systems in order to offer a single customer experience through all channels. And finally, we look at AI as an enabler for new revenue streams. As said before, we want to build on our assets, such as our EnCo (Enabling Company) platform, to support our corporate customers in their own transformation and to leverage new business. Q One principle of Proximus' Fit for Growth (Good to Gold) strategy is "simplifying at all levels". What has been the role of automation and AI in this organizational renewal? A One of the pillars of our Fit for Growth strategy is to become a fitter organization and bring down our operating costs while increasing customer and employee satisfaction. To this end, we are driving simplification and efficiency at all levels in the organization. So far we've been simplifying our network and platforms, for example by means of virtualization; our product offerings for our customers and our internal processes. AI can support us in all these domains. Typically we have been automating simple, repetitive tasks, freeing up time for people to invest in more value added interactions. We will certainly continue to do so, now that AI expands the scope of what is 'simple' for a computer. This is not only done in the typical domain of operations or back offices but also in other customer-facing departments such as Sales, Marketing, Customer Services and supporting functions where we are investigating different use-cases. Besides reviewing our existing processes we will also introduce new processes, technologies or infrastructure. We must then consider automation and AI from the start. For example, making sure that the architecture allows the extraction of the needed data, as well as challenging the needed human intervention present in new processes versus the cost of

automation. But simplification through AI is certainly not a given, as the technology behind AI is quite advanced. We must be cautious that AI will not become a complexity layer on top of all the other ongoing technology evolutions. There is a careful trade-off to be made – on the one hand, we want to remove complexity from our employees by means of AI, but on the other hand, we want to remain in control and not blindly depend on a chain of black boxes. This trade-off will vary depending on the application, and we will have to learn the optimal balance on the go. Q Proximus is looking to transform itself into a "digital services provider". AI will be obviously playing a significant role in every phase of this journey. Could you share some developments, insights, and even learning around this? A The journey of becoming a Digital Service Provider is threefold. First, it is about digitizing our current business and delivering a superior digital-first customer experience. Secondly, we are transforming our core networks and IT systems to deliver more and more services from the Cloud through virtual network functions and automating what can be. Lastly, we will develop new digital services, for both our residential and professional customers. In particular for our enterprise customers, we want to create a new digital eco-system, open to partnerships and collaboration with new emerging players, and offer our customers new application-led and service-oriented solutions, like a smart home, smart cities, smart mobility, new ways of working, smart retail. This transformation to become a digital services provider brings about a number of challenges. I'd like to highlight just two major ones. At the technological level, we are investing in strict data-architecture and governance throughout the company in order to become a data-driven organization. But the biggest challenge is adoption. Adoption of new digital tools by our customers, where it is our job to ensure superior customer experience through intuitive design, as well as adoption by our employees – they must be convinced about the capabilities of AI and how it will improve the quality of their work. We should definitely not underestimate the change management journey, involving changes in our ways of working, thinking, and doing. The success of becoming a data-driven company will depend on change managers just as much as it will on data scientists. Q There is widespread angst about loss of jobs due to automation. Adoption of robotics and AI itself will create new kinds of roles, especially in the area of robotic maintenance. On the other hand, with resources freed up from mundane jobs, there will be opportunity to enhance human talent to improve services, for example. What is your view on repurposing talent through re-training and up-skilling vis-à-vis the telecom industry? A Automation and AI will mainly impact people that today do repetitive jobs, typically prone for automation. Just remember that a little more than 20 years ago, most of our revenues were coming from fixed voice. In a sector that is evolving so fast, re-training and up-skilling is a constant. On the other hand, AI will augment what humans are doing. Machines excel in speed, cost and consistency. But humans have capabilities that machines do not have: to handle very complex tasks in a very broad area, and superior social ability. Embracing the full capabilities of working with AI will certainly bring a competitive advantage as it will allow our employees to focus on human interactions. I strongly believe that human-to-human interactions are key in our lives and it will remain so – and no robot or machine can compete with human creativity, social ability, and empathy. This means we need to keep building strong emotional links with our customers – enabling great human interactions that

bring value to our customers – if we want Proximus to remain a strong and relevant brand in people's lives. Read more articles on artificial intelligence and automation >> =======================

Digitally Enabled and Collaborative Workspace of the Future

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/collaborative-workspace.html ----- Insights AI/Automation "It is the long history of humankind that those who learned to collaborate and improvise most effectively have prevailed" – Charles Darwin With the onset of activity based/ agile working and the sudden boom in the start-up industry, flexible work-spaces have emerged as one of the key growth drivers in the history of workplace evolution. Co-working has now become a feasible and an economical alternative to the conventional employer's office with the real-estate industry witnessing an exponential increase in the renting and leasing of shared workspaces. The future of workplace – shared, flexible and reliable The latest global statistics by leading global market watchers give us a view about the rapid proliferation and expansion of the flexible market space. According to Global Co-working Unconference Conference (GCUC) , 2017 forecast for co-working spaces, the year-end projection for 2019 touches at 21, 306 co-working spaces which in itself is a big leap from 7,805 co-working spaces back in 2015 (GCUC, 2017). Adding to this exponential rise is the prediction of this market further growing by 43% between 2019 – 2022.1 It is interesting to note that the co-working space sector is generally made up of new spaces (brand-new businesses), expansions (companies opening their second location or more) and chains (large co-working chains and franchises). A study from a leading co-working research publication indicates nearly 65% of all new co-working spaces every year is attributable to new businesses (CoWorking Resources, 2019).2 This suggests that the key driving factor for growth is from first time market entrants. With over 50% of millennials joining the work-force by 2020 (pwc)3, constituting almost half the workforce, demand for more immersive, accessible, interactive and automated work-space is inevitable. Technology turns co-working into smart spaces Smart Space, is an innovative model, that caters to the increase in demand of shared workplace by leveraging technology to build and deliver cutting-edge solutions for users working across virtual, physical and connected environments. Co-working and smart spaces are two sides of the same coin. Smart spaces encompass of people, processes, services and things strongly integrated with technologies like, artificial intelligence, Internet of Things (IoT) to co-exist in a flexible workplace across the globe. According to the latest market reports published by Markets and Markets, the expected market growth for Smart Spaces is forecasted at a CAGR of 18.5% leading to USD 19,802 million by 2024 from USD 8,465 million in 2019.4 Smart spaces is expanding beyond the traditional office building into smart offices in airports, cafes, sports stadiums, shopping complexes and malls to name a few. With major IT

services companies offering digital capabilities to this rapidly growing smart space sector, let us understand how technology is a key enabler in the co-working space: IoT and green building initiatives are major contributors to the smart space revolution. Environmental concerns, are becoming the corner stone for creating differentiation in the related services and offerings. IoT is transforming every aspect of an office building/ space spanning from its construction, habitation to its management. Projections from a recent research department (Statista, 2016)shows a five-fold increase in the global base of installed IoT devices amounting to 75.44 billion devices by 2025 from 15.4 billion in 2015.5 It is quintessential for any organization opting for co-working spaces, to make their workplaces IoT-enabled. This would essentially cover technological amenities such as – access control, augmented workplace environment, telepresence, to name a few. The IT solutions in the co-working space aim to create customer value, provide branding of space and increase attractiveness of commercial assets and can be categorized as per the basic amenities shown in the figure. Security & access control Providing a secured environment to customers brings one of the highest customer value. A less cumbersome system with more convenience, scalability and minimalistic intervention can now be attained with various service providers, for e.g., Kisi (Modern Cloud-Based Access Control System, n.d.), a key-less access control system on cloud which enables direct communication between entry and exit doors using smart biometrics with an access control panel accessible over mobile phones, delivers a bird's-eye view of the complete workspace. Smart energy & waste management Energy utilization and conservation are universal concerns. Smart space builders and service providers have well adopted energy conserving methods using smart technologies (Motion sensor technology, remote dashboard control with real-time alerts to detect faulty electrical equipment, etc.), to achieve cost saving goals and positive ROI on IoT investments. There are many service providers who are actively contributing in smart energy technology implementation in smart-spaces, such as Smartoes (How it Works, n.d.)6 with its patented products providing simple solutions in identifying potential sources of energy waste and enabling automatic shut-off for idle devices and during least productive and occupied durations along with inculcating energy-saving etiquettes amongst its customers. Space management & automation controls Automated dashboard controls are now available to address the challenges faced by facility managers when it comes to operations and serviceability, that eases their job by helping them analyze performance and improve their reflexes while interacting with buildings. One such solution is designed by 75F system (75F How it Works, n.d.)7 which aims in increasing operational efficiency and enhance occupant experience. Their products like 75F Facilisight, 75F Smart Stat proactively predict anomalies which might go undetected and help in saving time and effort in maintaining all possible facilities within the workspace. Flexible leasing and procurement services Property owners can make use of smarter technology with complete flexibility of accessing multiple payment methods from any mobile device, which makes the process of leasing and renting out spaces convenient and less time consuming. Various software solutions are available to provide seamless rental solutions catering specifically to the co-working spaces leasing requirements. Domuso (Domuso Technology Forward, n.d.)8 provides rent payment and management technology platform with 100% electronic capture of

property's all receivables. Customer care and recreational services With this current surge in co-working space utilization, it becomes imperative to recognize the need for including recreational services for its customers. Providing customized mobile applications and connected devices to push online notifications to stay connected with co-working community and access various services being offered in these spaces is a smart approach to maintaining and attracting more business. Various organizations are now rendering services such as flexible booking system, food and beverage ordering systems and outlets, subscription for office supplies, recreational classes and events along with its smart spaces for customers to enjoy an end-to-end experience at their workplace. Infosys' role in the future of smart space Infosys has realized the significance of IoT in building the future of smart spaces at the outset, and has embarked on providing comprehensive end-to-end solutions to our customers with physical spaces and assets, and to facility operation organizations. We cover a vast span of services ranging from consulting and advisory to cloud/on-premise data center infrastructure with collaboration from IoT expertise from our existing service lines. At Infosys, our Enterprise Asset Management practice has provided holistic solutions towards every stage of optimal life cycle management of physical assets in client organizations with implementation services in Facilities & Real Estate Management. The next phase is to adopt Natural Language processing (NLP) integrated with IoT solutions in order to help our customers with industry specific assessment for such implementations. With our strong partner eco-system in place, we look forward to driving the smart asset management space across industries in terms of creating new business models, industry disruptions and providing smarter opportunities to our customers to excel in this digital world. 1 GCUC. (2017) 2 CoWorking Resources. (2019). 3 pwc. (n.d.). Millennials at work Reshaping the workplace. 4 Market Watch. (2019). 5 Statista. (2016). 6 How it Works. (n.d.). 7 75F How it Works. (n.d.). 8 Domuso Technology Forward. (n.d.). =====================

Is Your Business Prepared for Conversational Commerce?

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/ conversational-commerce.html ----- Insights AI/Automation Who hasn't heard of the popular comic strip and television show 'Dennis the Menace,' in which an obnoxious little boy would confound and annoy his neighbor, the unwitting Mr. Wilson? That old show perfectly describes the state of consumer-focused chat bots up until very recently. For example, you might purchase a home security system that hooks up to your smartphone only to have the teenager next door hack into it and set off the alarm in the middle of the night. A funny prank to the teenager - but not funny to you and your family! And haven't we all had some amount of fun asking Siri or Google Voice questions in such a way that they would elicit funny responses? But this is changing. Have you noticed that bots are now becoming smart enough to know that people are playing around with them? Instead of trying to answer a question, they simply stay silent. The goofiness involved with

baiting a chat bot is changing quickly, as human beings begin to respect machines for what they are. For instance, I have a smart house - I spent $600 to make it smart. I get alerts, I can set an alarm, unlock doors remotely, drive up to my house and turn on the lights from my car and I can use a voice-activated speaker at the front door. I can look into my fridge from the grocery store to see how much milk we have. Why? Because I installed cameras inside my fridge. The ease of operating anything from anywhere is getting seamless. On the road, my Honda has a lane detection warning system - essentially cameras that identify the line on the road. With time the lane detection warning system will mature and I will stop goofing around by swerving the car out of the lane in order to make the alarm go off. I used to think that A.I. would become ubiquitous when we embraced technology. Instead, what I realize is that A.I. is already embracing us, whether in fridges, TVs or phones. True, these may seem small steps, but this is intelligence that helps us make decisions faster. We're almost to the point at which we won't need to program devices because they will update and teach themselves. While A.I. powered bots and digital assistants continue making progress, their presence is still a bit knotty in the retail industry. Bots that have mastered 'conversational commerce' are still to work out a few glitches related to language before retailers can use them to improve customer service. But these new and improved bots will be ready sooner than you think and find their place as an integral part of 'conversational commerce', a term coined by an Uber executive to describe what he saw as the potential for retailers to utilize messaging apps to communicate with customers. But first, there's the privacy issue: When Facebook, which owns one of the most popular messaging apps, WhatsApp, decided to revise its privacy policy, a number of privacy and communications advocates lodged official complaints with the U.S. Federal Trade Commission. Not surprisingly, regulatory bodies in the European Union are also hearing similar complaints. What's to complain about? Well, Facebook recently announced that WhatsApp would share data about its users so that Facebook and Instagram could better target its ads. The move could have a direct impact on 'conversational commerce,' where data from a messaging app could provide retailers contact to users through chat bots or other forms of Artificial Intelligence. But let's be realistic: Messaging apps that change privacy policies to accommodate the wishes of retailers will happen. It's just a matter of how quickly. In her latest "Internet Trends" presentation, Silicon Valley venture capitalist Mary Meeker pointed to the continually surging growth of advertising via the Internet: It is accelerating up 20 percent vs. up 16 percent year-over-year. Such growth, she said, is thanks in large part to mobile devices, up 66 percent, vs. desktops, up 5 percent. She also pointed to what Baidu's chief scientist, Andrew Ng, said in September, 2014: "In five years' time at least 50 percent of all searches are going to be either through images or speech." So chat bots will become an integral part of customer service. Artificial Intelligence is on the brink of enabling seamless conversation between chat bots and humans. Retailers will soon be creating effective and seamless 'conversational commerce'. They will have come a long way in a very short time. My message to you is that in the very near future, new iterations of conversational commerce will be potent and offer effective ways for retailers to boost their customer service levels and strengthen ties with their consumer bases. However, they need to make sure the technology is at a level that makes 'conversational commerce' seamless

and fun to use - not a public relations nightmare.
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Cracking the Artificial Intelligence (AI) Conundrum

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/ cracking-ai-conundrum.html ----- Insights AI/Automation The various techniques of AI, or what Minsky calls 'agents' are by themselves of little use. But when used together, with a clear objective, they have the potential to create great outcomes. This is what enterprises have to aim for, as they undertake the AI journey. In his seminal book The Society of Mind, cognitive scientist and Artificial Intelligence (AI) guru Marvin Minsky constructs a model of human intelligence step by step, built up from interactions of simple parts called 'agents' that are themselves mindless. These agents are akin to the various AI techniques which have matured today, such as machine learning, deep learning, natural language processing (NLP), and artificial neural networks. Collectively they hold the potential to create great outcomes, but when taken individually, they are pretty 'mindless' and not a patch on the whole. So when enterprises adopt AI, it is essential to have a sense of purpose – to use all the AI techniques needed – not just individual agents. Let's look at a business scenario that illustrates this idea. Let's say, a manufacturing business is under pressure to increase yield. So, it has identified in its 15-step supply chain process, one step that is currently consuming four hours. The organization is excited about applying a certain AI technique to this step and improving the process significantly. Cause for celebration yet? Not really, because the company could instead, create a high-impact solution by taking a comprehensive approach towards increasing yield – by applying a bunch of AI techniques. These could help them identify the known, and the unknown problems surrounding the issue of inadequate yield, make inter-connections among them, read hidden patterns, and gather insights. The true potential of AI is unfathomable. The key is to continually embrace AI by experimenting, learning, and building on successes. Today, two important developments have precipitated an environment for AI techniques to rapidly develop and thrive, empowering organizations to adopt AI: A piecemeal approach to AI amounts to turning the clock back by underutilizing its true power. Kvelling upon the automation-driven scale and cost efficiencies is appreciating only a fraction of the picture − being myopic really. To tap into the true potential of AI, it is important for businesses to change their approach to problem finding and problem solving. There are essentially two kinds of problems that a business needs to solve: Known problems– These have been known to us for years but it is only now that we have the technology to tackle them and achieve tangible results. Some examples are fighting money laundering, financial fraud, ensuring better regulatory compliance, medical diagnostics, analyzing customer sentiments, and so on. Unknown problems – These are problems that have not manifested themselves yet. Problems that we don't even know exist. But these are 'problems' nevertheless. The pervasive technology revolution today compels us to look beyond and push the boundaries, as

technology-led innovations and disruptions are upending business models and creating new paradigms. Often, going after the familiar problems may not lead to the best solutions. On the upside, AI-driven techniques such as predictive analytics and forecasting − of revenues, possible snags, behavior of suppliers, partners, and clients in a certain context, cost of products yet to be built, and so on – are enabling deeper understanding, discovering problems, and creating better solutions for them. A JOURNEY INTO THE UNKNOWN It is important to deal with the known problems first and build credibility, especially among the skeptics in an organization, through early results. AI is never about a piece of technology. Rather it is a new paradigm altogether that needs to be treated thus. There should be dedicated focus and investment in problem finding, an area that is inextricably related to realizing the true potential of AI. At Infosys, we believe that a comprehensive approach to adopting AI – spanning both the known and the unknown problems –albeit in a step-by-step manner, is the way forward. We have adopted Design Thinking across the board to address these two categories of problems and create sustainable solutions for our client ecosystem. True to the principles of Design Thinking that pivots on the end-user, our clients are integral to this journey of problem finding and problem solving. Our next-generation AI platform, Infosys Nia leverages open source and consolidates various AI tools and techniques to create a 'society of mind', if you will. Infosys Nia brings into a single platform, big data/ analytics, machine learning, knowledge management, cognitive automation capabilities, end-to-end RPA capabilities, optical character recognition (OCR), natural language processing (NLP) capabilities and infrastructure management services. It enables a wide set of industry- and function-specific solutions and allows customers to build bespoke experiences to suit their business needs. While automation and AI are transforming bottom-line-focused, data-rich industries such as retail, manufacturing, telecom, as well as touching others such as healthcare, insurance and financial services, these technologies are also enabling massive collaborations across organizations and industries. Some of these are the result of new business models and disruptions, and others are driven by the need for the greater good. Many technology leaders and visionaries believe that AI has the power to address some of the biggest problems facing us – as humans, on planet Earth. Google DeepMind focuses on trailblazing work in machine learning with the aim of bringing about an 'artificial general intelligence', to harness AI for grand challenges. CEO of DeepMind, Demis Hassabis, says: "If we can solve intelligence in a general enough way, then we can apply it to all sorts of things to make the world a better place." OpenAI, a non-profit AI research company, backed by Tesla and SpaceX founder Elon Musk, is aimed at 'advancing digital intelligence in the way that is most likely to benefit humanity as a whole.' Although concerns around machines overtaking humans may exist, human creativity and imagination will triumph. AI will relieve us from the mundane and the cumbersome, liberating us to focus on finding the most relevant problems to solve. To achieve our true human potential. We live in extraordinary times, where technology empowers us to envision a future where we can sync our brains with artificial neural networks, yet at the same time ponder upon the possibility of job loss and AI systems going rouge. It is a time when all enterprises will embark upon the AI journey and learn along the way. The more we iterate and the more we learn, the better the results will be. So as we take the initial steps, it is

important to acknowledge the potential of AI and build a deliberate platform for it. Read more articles on artificial intelligence and automation >> ======================

A Bold but Crucial IT Move for the Connected Age

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/crucial-it-move.html ----- Insights AI/Automation Insights on a new Enterprise IT model from the CEO of Everest Group A keystone is the wedge-shaped stone placed in the middle of an arch. The other elements in an arch depend on this architectural foundation as it connects the sides together and distributes the weight down the sides. Without the keystone, the arch would collapse. We're now entering the marvelous future we currently refer to as the Connected Age. It will change everything about the way we communicate, accomplish tasks, and conduct business processes. You're the new Chief of Value Creation (CVC) at a company called Turning Analytics. The company's solutions leverage in-house technology and predictive modeling capabilities to help businesses turn their innovative ideas to realities. You proposed a new line of business to your company where your solutions help clients rediscover innovative ideas they had in the past, but which did not work, because they were ahead of their time or because the enabling / supporting technologies were unavailable. You just returned from a trip to a cancer center where you learned good news. Before cognitive computing technologies, your routine blood test that indicated melanoma, leukemia, or any one of the more than fifty kinds of lymphoma, would have caused weeks of dreadful anxiety and expense as you underwent invasive biopsies and nuclear scanning tests. Although these procedures were necessary as they enabled the oncologist to identify the type of cancer, assess its stage of growth, and determine treatment possibilities, they would have resulted in absences and low performance on your new job. With cognitive computing, your oncologist was able to quickly narrow down your condition to one variety of lymphoma, assess the stage, and begin one of the new treatments through pills! No damaging side effects of chemotherapy, you escaped biopsies, scans, and weeks of anxiety, and in just three days, you had the diagnosis and treatment protocol. As you deplane from your flight, a sensor device on your briefcase lights up and directs you to your luggage. As you walk towards your car, your smartwatch enables you to talk to your colleagues and alert them on your arrival time for a discussion with Infosys representatives on collaboration opportunities on two aspects of your new line of business. As you leave the airport, you rely on your car's smart seatbelt to transfer data about your heartbeat, blood pressure, and temperature directly to your electronic medical record, so your doctor is alerted on any conditions he needs to address. When you arrive at the office, your assistant uses the smart shirt embedded with sensors that you are wearing, to detect your emotions. The shirt alerts you when your stress level or management style borders on behavior that could result in disgruntled employees. Possibilities such as those in the above scenarios are conceivable due to digital transformation. As exciting as they

are, they are also volatile and disruptive. With its new technologies and the 'things' in the Internet of Things, the Connected Age is an environment rich with opportunities for your business to create innovative, highly differentiating products and services. But it's a fast-changing world; so, regardless of the industry, business success in this environment requires eliminating barriers, such as data trapped in silos and thus available only in fragments to decision-makers, lack of alignment and collaboration across the enterprise, and slow time-to-market. To accomplish these success criteria, your company first needs to position the keystone that enables holding up the weight. Although it may not be evident, the fact is that without this keystone, your company actually cannot move from where it is today to its future vision in the Connected Age. Digital technologies supporting the Connected Age connect people, resources, data, knowledge, and ideas. These connections change us in two ways: the way we communicate with others, and the way we do 'work'. Everything – including interactions and decisions – becomes more immediate, more informed, more precise, and more anticipatory. The keystone is to radically rethink and reorganize your company's IT to an 'Enterprise IT-as-a-Service' model so that it achieves faster response times and is aligned with the value your service lines present to the business. Borrowing from the Infosys 'Renew-New' strategy, embracing new ideas requires renewing your business capabilities. The digital revolution, Internet of Things, and connections everywhere force companies to act faster to achieve new value and share decision rights with a variety of business stakeholders. However, centralized enterprise IT is unable to meet these needs. This is because, from the ground up, the layers of centralized IT (data center infrastructure, application development, security) are designed to be as efficient, robust, and cost-effective as possible – which does not fit with speed and shared decisions. Some organizations have attempted to address this dilemma with business stakeholders purchasing 'rogue' IT – individual point solutions that meet their separate needs. But this solution gives rise to the same problems that distributed computing did, years ago. These independent decisions and purchases end up creating 'islands' of automation that cannot be integrated or scaled later, and also expose the organization to compliance and security risks. Therefore, this solution is not sustainable. Centralized enterprise IT can't create or seize opportunities in the Connected Age because its functional approach doesn't work. Neither can the bolt-on technology approach of stakeholders, that results in automation islands with siloed data. What will work is a new, reconceived IT service delivery. In essence, rather than IT being aligned functionally, you must align it as a series of service lines. Each service line needs to be designed; first, for the value it provides to the business and second, for speed. IT must be anchored in, and measured on its relevance to business value, rather than efficiencies and cost-effectiveness per technology function. In addition, it must be architected in a way that significant components are moved to the cloud and DevOps capabilities are leveraged so that IT services are far more agile and available at a lower cycle time. However, shifting centralized, functional enterprise IT to an as-a-service model is not a trivial task. First, it requires defining IT differently with the user-perspective metrics on business value that the service provides. Next, it requires taking a supply-chain view of IT, reorganizing each component along service lines rather than function lines. Paradoxically, your organization will also achieve significant efficiency gains

by reorganizing into an as-a-service model. This is because the centralized IT model based on functions necessitates paying for over-capacity in the data center, server, and middleware layers. When you reorganize IT along the as-a-service line, you will cut through those over-capacitation inefficiencies and deliver IT more efficiently and cost effectively. The mosaic of devices and business models in the Connected Age change the way we communicate with clients / customers, employees, partners, and colleagues, allowing us to anticipate their need for action before the action is required. In the area of machines, for instance, communications from sensors enable replacing parts before they break down. No downtime! Additionally, technology changes the ways in which we interact with others. The days of unwanted emails to customers are over, as are situations where we deluge them with information at the wrong time, thus contributing to noise. New technologies enable personalized interactions that are truly useful and delight customers. It changes our ability to target and reach new market segments and involve ourselves deeper in helping our customers succeed. Digital technologies also change the nature of work. We can use cognitive computing (like IBM's Watson) and analytics as thinking companions to dramatically enhance our knowledge, make decisions faster, and be more effective at work. Then there's robotics and service delivery automation that change the way we perform back-office functions by speeding up cycle time, improving accuracy, and reducing costs. At Everest Group, we conducted research on how automation impacts tasks in the finance and accounting process. We found that on average, fairly simple automation tools can eliminate 40 percent of resources performing repetitive functions. In one particular case, automation eliminated almost 80 percent of resources. The same scenario and outcome apply to other business processes. Besides cost savings and user / customer satisfaction, automation eliminates mundane tasks that frustrate employees. Once freed from these repetitive tasks, they can be retrained to perform more fulfilling knowledge-based tasks. Creating all of these advantages and many marvelous opportunities for your business requires rethinking and shifting to a new enterprise IT model. It is a radical departure to fundamentally align IT to an Enterprise IT-as-a-Service model, and it is not easy. But businesses that accomplish this shift have the keystone and the path to success with compelling technology that is far more responsive to business needs, compliant, scalable, and sustainable over time. =====================

AI in the Data-Driven Enterprise

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/data-driven-enterprise.html ----- Insights AI/Automation The character of the digital enterprise is distinctly different from one that is not. Where the traditional organization employs technology mainly within its operational core, the digital one takes it to its outer frontiers with the primary aim of creating consumer delight. It does this by maximizing the potential of its data by discovering nascent opportunities, hidden risks, emerging customer expectations and competitive moves. These insights are gathered with agility and ease, and within context, thereby enabling the enterprise to respond quickly and on target. As the digital organization is increasingly

driven by data, so are its decisions and actions. If data is the lifeblood of the digital enterprise, Artificial Intelligence (AI) technology is its pumping heart. AI, especially its subsets including machine learning, deep learning and advanced analytics, can automate much of the insight gathering and decision making in a data-driven enterprise, and amplify the value of data many times over. But merely bolting on the latest AI solutions does not make a data-driven enterprise. Most incumbents need to take several measures before they are ready for transformation. Unfortunately, they face many obstacles, including, but not limited to, an inflexible core trapped in legacy technology, outmoded processes, and shortage of digital skills. However, given the right approach and partner, successful transformation is within the grasp of every organization. Infosys has helped many clients traverse this journey using the following strategy: With a goal of shifting the client away from a conventional use case or point solution-led approach towards enabling them to monetize data on an industrialized scale, we start by drawing up an opportunity blueprint for creating value through data. From there, we chart a roadmap for building the capabilities required to realize the opportunities listed in the blueprint. Broadly, the roadmap calls for: Here is a quick explanation of each: Modernizing the enterprise core: There is a wealth of data and insight trapped in silos within the organization's legacy core that must be freed to create a flexible suite of foundational services. This foundation can be broken into several components, dynamically organized, and automated to deliver against an evolving context. But to do that, the legacy systems at the enterprise core must first be modernized or divested. This is what we did in a retail mortgage bank to enable them to generate credit scores for prospects, and process applications in real-time. Specifically, we reengineered the bank's credit acquisition decision engine and transformed their legacy mainframe to build agility, after which they could generate applicant credit scores in under 50 milliseconds. Establishing intelligent, cognitive systems: Once the data is freed from the legacy core, it is on to digitizing the data supply chain for cognitive interpretation and for making data-driven decisions throughout the organization. We have helped many retailing businesses make sense of their vast structured and unstructured data pertaining to consumer actions, market response to campaigns, customer requirements, pricing considerations and so on. Here, machine learning models were key to evolving recommendation logic to promote products in real-time. Employing AI technologies: This step involves leveraging a number of AI models to almost entirely automate the resolution of business problems. This allows for continuous learning and continuous improvement to be factored into both validated and new models. A financial services client is experiencing this in real life. The organization uses AI techniques to detect inconsistencies and other issues in data values and transaction volumes that might be an indication of suspicious activity, and alerts decision makers if need be. It also studies these data patterns to predict and prevent unfavorable events. The above approach helps organizations weave a critical data fabric that informs and drives decisions, as well as provides information access to all parts of the enterprise. Armed with the right data, as and when they need it, employees become empowered to achieve unprecedented results. Data allows them to see insights that were hitherto invisible, discover new problems, build innovative solutions and take their innate creativity to new highs. =====================

Rebooting the Operating System for Digital Financial Services

Conventional structures and business models are being upended by pulls and pressures in the financial services industry. On one hand, parallel currencies, crowdfunding, peer-to-peer lending, and shadow banking systems are altering market dynamics, while on the other, millennial customers seek to seize control and participate in the creation of financial products and services. Significantly, another constituent is demanding course correction: regulatory bodies are making a case for more enhanced consumer choice in addition to better systemic security and customer protection. Benjamin M. Lawsky, Superintendent of Financial Services at the New York State Department of Financial Services, released the BitLicense framework at the BITS Emerging Payments Forum in Washington DC in June 2015. He discussed the potential of digital currency to drive changes in the payments landscape. "It generally takes you longer to transfer money electronically than it would to physically transport that cash to another state or country," noted Lawsky. Digital technology has transformed banking and financial services. At the same time, it provides convenience, more engaging experiences amid stiffer competition and stringent regulations. Financial service enterprises need a 'Renew-New' strategy that capitalizes on technology to achieve operational efficiency and drive innovation. The technology infrastructure of financial service enterprises needs to be upgraded continuously to address the dynamic landscape – online banking, mobile banking, digital displays and signages, IP-based video services, biometric protection systems, and a near real-time data network. IT teams should plan the infrastructure taking into account the sensitivity of mission-critical operations, the complexity of applications, projected computing demand, regulatory compliance, and the user experience. Migrating the computing infrastructure to the cloud makes business sense in the context of demanding business requirements and shrinking margins. Cloud-hosted Infrastructure-as-a- Service (IaaS) and Platform-as-a-Service (PaaS) models, combine flexibility and scalability with on-demand availability while rationalizing investment. An enterprise view of platforms, processes, and applications, optimizes the cloud environment and streamlines the create-adopt-manage life cycle. Financial service enterprises require an ultra low-latency data network for accelerated execution. The network should ensure reliability of a large volume of data across the ecosystem. In addition, the data and network of banks, capital market companies, and financial intermediaries, need to be safeguarded with robust authentication and authorization mechanisms. A centralized security framework enables regulatory compliance, including the Sarbanes-Oxley Act and Gramm-Leach-Bliley Act, for protection of customer data and reporting data leakage or loss. Moreover, centralized control mitigates risks in the event of a security breach. Typically, rules-based automated systems cover only 70% to 80% of a business process. Systemic issues and the 'subjective layer' of a business process demand human intervention to complete automated tasks. Robotic Process Automation (RPA) or rapid automation combines algorithms with

artificial intelligence and machine learning to automate end-to-end business processes. 'Robots' in RPA software manipulate data, and identify, as well as interpret, actions of specific processes. Smart algorithms adapt to dynamic requirements, trigger responses, and initiate predictive actions. Since the software interacts directly with enterprise systems, RPA is useful for processes involving large volumes of transactions and data from multiple sources. RPA can be applied in back, middle, and front office processes and functions in shared services or captive process centers at financial institutions. It supports remote management of IT infrastructure, IT support and service desk operations, and network management. RPA improves the accuracy of invoice processing, reconciliation, and application processing. Significantly, robotic process automation facilitates execution of subjective tasks and exceptions management through rules-based decision support. RPA does not require process reengineering. Software robots access systems through the graphical user interface with a login ID and password – in the same manner as users. Automatic tracking of tasks performed by the robot provides an audit trail and ensures better operations management. RPA technology minimizes costs significantly, accelerates cycle times, ensures scalability, and boosts productivity. Moreover, robotic agents are notable for their consistent performance, 24x7 availability, and operational excellence. Centralized systems for risk and compliance management are a business imperative for omnichannel financial services. Digital wallet interfaces for mobile payments and a digital ecosystem increase reputational and operational risks. An enterprise-wide, multi-entity system, should be combined with responsive tools to safeguard customer data and digital assets, prevent fraud, and mitigate credit, market, and regulatory risks. The risk management system needs to aggregate data across products and locations for comprehensive reporting and disclosures. Automated risk management monitors risk factors and compliance parameters across applications and business processes. A unified platform helps identify, measure, and control risks. Integrated risk management boosts productivity and enhances responsiveness to events. It provides a transparent system that inspires confidence while addressing regulatory requirements such as Basel III, Foreign Account Tax Compliance Act (FATCA), and the Dodd-Frank Act. Financial institutions can explore cash and credit management strategies to reduce risk exposure supported by visibility into the risk management life cycle. Predictive models and robust audit processes detect unusual behavioral patterns and activities, thereby preventing fraud. Modeling facilitates stress tests based on large volumes of transaction data from internal and external sources as well as simulation of market conditions. Dashboards and reporting templates aggregate risk elements and offer real-time visibility into enterprise risks. Early diagnosis of likely issues and accurate analysis help risk managers take informed decisions to manage liquidity, credit, and operations. Digital technologies are transforming financial services – from business models, infrastructure and processes to products, services, channels, and the customer experience. Digital transformation empowers banks and financial intermediaries in three strategic areas – personalization, straight through processing, and omnichannel experience. The millennial customer seeks personalized products and services. Unified digital marketing platforms help financial service providers share comprehensive information that allows customers to make informed choices. In addition, it offers a consistent experience across

banking channels. At the same time, unified marketing platforms provide a holistic view of customers by combining data from structured data sources as well as social media. Analytical tools support marketing by predicting behavior and value across the customer's lifetime. Straight through processing is the holy grail of financial services. An end-to-end digital workflow – from deal capturing to final settlement – accelerates transaction processing across financial instruments. STP minimizes errors, fraud, and risks, by eliminating human intervention and ensuring near real-time capturing, processing, and reporting. STP of payments and receivables improves transparency across the financial enterprise. Quality of service influences customer behavior in the future. Context-aware products and services deliver a rich, omnichannel experience, while reducing the cost of operations. A mobility strategy benefits customers and agents of financial service providers. It allows customers to consult financial advisers anytime. Mobile devices help customers contact agents of providers, address queries by accessing customer / product data, as well as sales / marketing information. Financial intermediaries and banks need to capitalize on opportunities and deliver outcomes across the value chain while simultaneously minimizing costs and mitigating threats. Sophisticated data and analytical capabilities help financial enterprises grow in the dynamic environment by migrating from react-and-remedy to predict-and-prevent operations. Predictive analytics helps banks, insurance companies, and capital market firms transcend budgeting, forecasting, and reporting. It offers actionable insights to boost productivity and efficiency, increase profitability, drive revenue, and mitigate risks more effectively. However, a prerequisite for next-generation analytics is a robust data management system that can manage petabytes of data and support emerging analytical techniques. Enterprise systems should discover data in real-time across sources, structures, and formats, and seamlessly integrate new data sources with the analytical framework. Data mining and analytics deliver compelling value across the customer life cycle. Insights into customer behavior and accurate micro-segmentation improve campaign management, marketing, and sales processes through cross-selling, upselling, and loyalty initiatives. Customer analytics improves strategies to acquire and retain customers. It helps increase the wallet share in the most profitable segments and cultivate relationships with high-net-worth individuals through personalized engagement, niche products, and flexible pricing. Risk analysis enables banks and financial service providers to make risk-aware decisions, improve credit management, and streamline collections as well as recovery. Transaction pattern analysis identifies and manages applications as well as transaction fraud. Credit scoring models mine unstructured data to support credit-related services. Collaboration is increasingly shaping the growth and profitability of companies across industries. Wikipedia, the co-created repository of information, sounded the death knell of the encyclopedia business. Banks, insurance companies, and investment management firms should collaborate with customers, peer enterprises, and even competitors to remain relevant in the digital age. Collaboration should transcend dissemination of data on online forums or blogs. Its potential can be realized by generating ideas to drive innovation, and create new products, services, and experiences. It should help employees connect within and beyond the enterprise, and actively participate in knowledge sharing. Gamification-oriented social collaboration accelerates innovation, while enriching the

experience of delivering services for employees. Financial institutions need to collaborate with third-party service providers or create consortiums to develop utilities as a shared service, rationalize costs, and address business challenges. Six leading banks – Bank of America Merrill Lynch, Citigroup Inc., Commerzbank, JPMorgan & Co., Société Générale, and Standard Chartered – are collaborating with SWIFT to develop an industry utility for compliance with Know Your Customer (KYC) norms. The Bank Innovators Council is a consortium of banks to facilitate and support innovation. It was established to help financial institutions benefit from shared expertise. Financial enterprises can streamline the payment process for customers by partnering with technology providers. Several multinational banks, credit card providers, and money transfer agencies leverage Apple Pay for mobile payments. Plaid, a tech start-up, is developing a unified application program interface for banks by accessing their data. Plaid applications will help banks deliver contextual data of every customer transaction. Financial service enterprises can achieve faster time-to-market and improved regulatory compliance through digital transformation. Banks, insurance companies, and capital market firms can attract and retain digital customers by assimilating new technologies, reorienting processes, and renewing core operating systems. More about our renew-new offerings for the financial services industry >> ======================

Consulting in the Time of Digital Transformation

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/ digital-transformation.html ----- Insights AI/Automation "If you don't know where you're going, any road will get you there." - paraphrased from Alice in Wonderland. Unlikely as it seems, this piece of Carrollian wisdom continues to guide much of enterprise IT strategy even today. By adopting new technology in bits and pieces ad hoc, or based on instinct, enterprises have created a highly complex landscape over the years. This landscape comprises intricate systems and applications, which pose several challenges related to scalability, agility, and risk, to name just a few. As organizations battle these legacy challenges on the one hand, while dealing with a number of externalities such as disruptive competition, technology evolution, and regulatory strictures, on the other, they need to take a comprehensive, long-term view of their businesses. At the same time, they must take stock of technologies that can enable a future vision. In short, they would need to create a master technology blueprint that would enable them to transform into successful organizations in a world that is being irrevocably digitized. At Infosys, we are leveraging our extensive consulting knowledge, IP, and delivery experience to help a number of clients around the globe to create and realize their master technology blueprint - a transformational roadmap. This is an ongoing journey in which enterprises revisit and renew their existing technology landscapes and capabilities while exploring entirely new ones. Since the renew and new imperatives are primarily directed by external realities, enterprises should start their journey introspecting on the biggest environmental factors driving their business. They should then use

that insight to prioritize what to renew in their existing construct of business processes and supporting technologies, as well as how to acquire (or design, define, and execute) a new construct of capabilities. This is necessarily a dual pursuit – when a business acquires a new capability, it has to connect it back into the existing landscape to reap the benefits at full scale; most times, this calls for renewing the systems that the capability is being connected to. At other times, a new capability, such as Design Thinking, enables an organization to devise an alternative solution to a 'standard' renewal problem or extract higher value from existing strategies. As we delve deeper into these issues, the mutual reinforcement of the renewed and exploring the new will become self-evident. The technology landscape at most enterprises consists of a core ERP solution, numerous applications, and underlying infrastructure powering it all. It is complex and expensive, to say the least. Hence, one very obvious goal of renewal is to simplify the landscape to make it both cost-efficient and tractable. But while efficiency is important, most enterprises would desire a lot more from a renewal initiative. For instance, they would expect their systems to become flexible and responsive enough to integrate new capabilities, once these are developed, into the ecosystem in a short time. We believe that every renewal must essentially fulfill one or more of the following three needs: Renewal, as mentioned at the outset, is also deeply linked with the successful adoption of new capabilities. Hence, along with extracting knowledge, reducing support, and accelerating releases, facilitating the development, creation, and interfacing of new capabilities with the existing technology landscape is integral to the renewal agenda. This is achieved by 'fire-laning' or isolating the complex core to prevent it from impinging on the enterprise's new capability requirements of speed and agility. Using APIs, it is possible to create a variety of services that can drill into core systems to expose their capabilities or use data, algorithms, and workflows within, without touching current systems or infrastructure. For instance, a retailer can elevate the shopping experience on its ecommerce site by simply modifying the experience layer without tinkering with the underlying system. Another way of building new functionalities is to create bespoke applications, again using new capabilities such as DevOps and automation. We used some of these techniques to create and manage an information platform to analyze customer data of the order of 30 million records per day, for a leading loyalty management company. Yet another way is to integrate with a third-party application based in the cloud. Once again, the Renew- New duality comes into play, as enterprises will be compelled to increase the flexibility and agility of current infrastructure to ensure it can interface with an increasing number of new applications that will originate and operate on the cloud. Our new capabilities framework starts by taking a step into the unknown – an unknown realm in which problems and opportunities, as well as the solutions and capabilities to deal with them, are not known. Using the Design Thinking principles taught in our workshops, client organizations can discover these important, but yet-to-be-articulated problems, as well as the best ways to resolve them. For instance, we helped a leading European home automation company apply Design Thinking to change an 'engineering' product design mindset to one of customer empathy. As a result, they unearthed their customers' true pain points and based on these, designed and tested a prototype solution that will soon hit commercial production. Through Design Thinking principles, we helped a consumer

packaged goods company understand the pain points of different user personas and design its eProcurement platform with the active involvement of its users — requesters and suppliers. Following problem discovery, enterprises take the next step of defining design challenges using Design Thinking principles, before moving on to the final step of creating a pilot and establishing proof of concept (POC). Sometimes, they may not have all the requisite capabilities to build a functioning POC. In such a case, they can easily transcend their limitations by reaching out to alliance partners, third-party vendors, or even innovative startups to put it all together. When a prototype approaches production-readiness, it needs to be integrated back with core systems and processes, or the production-grade environment in the enterprise. In this way, a cycle that began with the articulation of a new idea again ends with a renewal of the enterprise's current landscape. And then it's time to embark on another cycle of renewal, another new initiative. When it comes to Renew and New, the journey is indeed the destination. Aikidō is an East Asian martial art that signifies the way of unifying life energy. And at Infosys, our Ai (Platforms), Ki (Knowledge-based IT) and Do (Design Thinking) services help combine the knowledge and energy in an enterprise towards its strategic path and priorities. When a company has to go through a fundamental transformation – whether it is a big box retailer grappling with digital, an oil major dealing with the reality of a hyper-connected world, or a fairly digitally advanced bank now addressing inclusive banking and next-generation kinds of opportunities – it calls for a change in mindset and attitude, along with acquiring skills higher up the value chain. It is in this context that training, education, and a culture of innovation, trust, and empowerment become instrumental for success. At Infosys, we are steeped in a culture of learning traditionally, and we are further enhancing it by implementing Design Thinking training across the board. We believe that the user-empathetic dT framework will change the way we investigate, innovate, and deliver solutions for our clients. Similarly, idea-generation initiatives, involving crowd-sourcing of innovative ideas among employees, are strengthening our innovation ecosystem. Thought leadership is fundamental to our consulting practice. We continuously invest in building capabilities within the company. This is supported by our primary research as well as collaborations with academic institutions and think tanks. Our collaboration ecosystem includes institutes such as Stanford University, Purdue University, East China Normal University, and over 100 strategic partners globally. With an arsenal of knowledge-driven renewal of technology, Design Thinking principles for problem and solution discovery, and perennial learning, we are aggressively working towards being proactive design partners to our clients, and not merely aggregators of past knowledge. Realize business value with Infosys Consulting >> ======================

Digital Transformation Must Start at the Core

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/ digital-transformation-core.html ----- Insights AI/Automation Over the past

decade, there has been a wave of digital disruption with new, born-digital challengers compelling traditional incumbents to find and harness new ways of delivering great customer experiences in order to survive the new competition. While superior customer experience is an important marker of successful digital transformation for any enterprise, this approach can only be sustained if the organization's underlying infrastructure is equipped to handle the demands of these customer-centric initiatives. Organizations need to focus on modernizing their monolithic legacy infrastructure and reimagining their business processes. However, the volume of change required often discourages companies to make large investments in new technologies or make changes in the organizational culture. Through our work with clients, we have found that by adopting an approach that uses lean processes, Agile development, and a global delivery model, we can ease the digital journeys of our clients considerably. Energizing the Core Organizations cannot easily shrug off their extensive investments in legacy infrastructure. But these legacy systems cannot talk to newer systems that leverage cutting edge technologies like artificial intelligence, machine learning, AR/VR, big data, real time analytics, IOT and blockchain. We cannot bring modernization by merely buying and implementing digital solutions. The digital transformation strategy of any enterprise typically includes renewal of existing systems with new cloud computing capabilities, migration of existing enterprise workloads to the cloud, adoption of platform-led modular architecture built on open source software for application modernization and maintenance, and creation of pathways for microservices and APIs (Application Programming Interfaces). By choosing business priorities wisely and modernizing the core in phases with a systematic plan in place, organizations can successfully navigate their digital journeys. The Infosys approach to energizing the core includes: Cloud and Infrastructure: The cloud is a major enabler of core modernization as it helps to overcome the lack of agility of legacy systems. Adopting cloud technology is not as simple as lifting existing systems and shifting them to the cloud. The first step is to make them cloud-capable. The next step is to get them to work seamlessly with newer technologies, applications and intelligent front-ends. And throughout the journey, the organization needs to take many decisions like which type of cloud to use, which core assets to renew, what processes to re-engineer, and so on. At Infosys, we help the client with a systematic plan to: We have worked closely with enterprises that have large ERP and legacy landscapes, developing a digital enterprise transformation strategy and helping them first simplify their core and run it with digital efficiencies - whether it's spotting opportunities fast, re-engineering processes to respond more spontaneously, reducing cycle times, or delivering new experiences on demand, often by creating new business models. Some of our differentiators in strategic cloud offerings are: Integrated and Modular Platforms: A critical step towards modernization includes moving monolithic, silo-based ERP systems into platform-led, lightly tied components built on open source software. We are also seeing a trend towards modular platforms that are versatile, scalable and simple. These platforms are not only easier to code, but they usually have open standards, which makes integration with third party software simpler. We transformed the three and a half decades old mainframe system based on proprietary technology for an Asian bank into a loosely coupled, extensible architecture. Early indications are very encouraging and point to a 30 percent reduction

in loan processing time, as well as noticeable improvement in customer experience. Modernizing Applications: As I said before, superior customer experience is an important outcome for digital transformation efforts. Therefore, building intuitive, responsive, connected, real-time and device-agnostic applications and upgrading UX interfaces for both new and existing applications is essential. Additionally, creating pathways for APIs in the legacy systems to create microservices can allow the organization to share data both internally, and externally with its ecosystem, making it more amenable to digital transformation. One of our clients, a direct seller of personal care products, is a case in point. The company put together a sound API management strategy and robust microservices architecture that now supports a new website and a social selling platform featuring more than 230 applications that serves markets in more than a hundred countries. At Infosys, mobile first solutions drive all our critical business, learning and collaboration processes. Infusing AI and Automation: Robotics and machine learning are the biggest levers we have to increase automation in IT infrastructure, especially once it has migrated to the cloud. All the leading cloud platform providers offer a variety of AI functionalities and services including machine learning platforms and other AI cloud services. Nia, our next-generation integrated AI platform and AssistEdge, an automation processes software, are indicative of our own efforts in this direction. A non-disruptive, phased approach to core modernization is one of the most effective ways to improve existing operations and reimagine the business of incumbent organizations. The main aim is to renew and optimize the existing technology infrastructure to generate savings that may then be ploughed into next-generation digital capabilities. Deep digital and domain skills, ability to identify technical debt and weakness, as well as the use of modern software development processes, such as DevOps and Agile, can help ensure a smooth transition. A well-thought out approach that focuses on energizing the core infrastructure rather than just skin-deep changes at the customer service layer is imperative for success. =====================

Revolutionizing the Workplace with Technology Integration

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/disrupting-the-workplace-with-technology.html ----- Insights AI/Automation The change that digitization has brought into our lives means that organizations must now deal with the challenge of a world of work that must operate in a context that has radically shifted. Workforce experience journeys, people structures, performance management and work analytics must all be actively redefined as enterprises race to transform their workplace into high-productivity, high-efficiency hubs for collaborating teams. It's all about teams being formed quickly and disbanded just as rapidly to move on to new projects. High-performing companies are learning to nurture and leverage this network of teams. In this episode of Infosys Podcast, Infosys anchor Alex speaks with Chidambaram Ganapathi, Assistant Vice President and head of Digital Workplace Services at Infosys, to demystify workplace transformation. Chidambaram explains how

organizations can accelerate their transformation into a more productive workplace and systematically enable their network of teams to create more value. Alex: Hello, folks! Welcome to Infosys Podcast. This is Alex speaking, your host. And we are honoured to have Chidambaram Ganapathy as our guest. He heads the Digital Workplace Services at Infosys. So, hello Chidu, if you don't mind me calling you that. Chidambaram: Thank you, Alex. Thanks for having me. Alex: My pleasure. So let's get started. You know what, I am going to talk about "Workplace Transformation" as a term, which is like … it's not a generic one. It's something which you have coined at the moment and you are implementing yourselves. Is that correct? Or is it something which is a universal thing? Chidambaram: I think it's not. Well, it's what we want our focus to be on, right? Alex: Okay Chidambaram: It's not a new term, but it's just bringing together the essence of what we are trying to do. People call it 'smart workplace', 'digital workplace', Microsoft calls it 'modern workplace' but as an SI [system integrator] and as Infosys what we bring to the table is about how we leverage these technologies, these workplace technologies, in transforming the workplaces of our clients to their needs of the tomorrow - essentially, the reason we call this the workplace transformation is that's what Infosys brings to our clients. Alex: It's not just a title, it's something that everybody is talking about. Correct? Chidambaram: Yes, absolutely. Alex: Then under that umbrella … I mean, how would you elaborate on that? Chidambaram: Think about workplace transformation. What does it mean? You know, at the end of the day it is about making the workplace of your enterprise clients a very smart and productive workplace. And what I mean by that is making sure you enhance the employee experience through contextual engagement. So that's the first aspect of it.. The second [aspect] is how do you empower them to be more and do more? By building a network of teams that works with intelligence and efficiency to create more value. And what I mean by that is how you enable these collaborations, these seamless experiences for employees, so that they can focus on more creative things, and the mundane tasks are handled seamlessly, and the collaborations are made a little more intelligent. So that is the second aspect of what workplace transformation is. And when we talk about employees we often tend to think about it purely from what we call as 'knowledge workers', you know, who are specialized, niche folks sitting in the back office of [with] great understanding of that industry and bring a lot of value. But there is another sector of people which we often oversee, which what we call as the 'first line workers'. They are usually your mobile workforce on the field or your customer service reps or sales reps who are always on the ground. And in a lot of times we see that they are not usually kept up to date or fully engaged in what their enterprises are doing. In terms of policies and information or in terms of what the new products or services are, they usually are not being the first person to know that. How do you engage them more and make them more productive? I think we see we'll help our enterprise clients digitally transform themselves much quicker. So I think these are the three key things which we are trying to address, and which our clients are trying to address through workplace transformation. Alex: You are talking about a workforce as a team effort. What it sounds like as well is like you are not individualizing people, you are not isolating people. In fact, you are opening up to avenues in which they can work collaboratively. Is that correct? Am I correct in saying that? Chidambaram: Absolutely. In fact, we believe perfect metaphor for that

workplace of tomorrow is a place where we might all aspire to thrive not just as individuals, but as a purposeful network of teams. I think that is very important. And you see this in a lot of the organizations that are successful. Look at it - whether it is the Apples, the Microsoft, the Facebooks, and the Googles of the world - they have been able to achieve a lot of these things because they have that network of teams that is very focussed on a collective goal. And it's not just about individuals working through their tasks and their activities. I think when you make them work purposefully towards that goal and vision, and make them feel part of that, that's when you truly transform your workplaces. Alex: I agree. So then, how is it connected to digital transformation? How would you connect it to that? Chidambaram: You look at workplaces - one of the common trends that we are seeing is complete mobile workforce. All your employees, even your partners and the ecosystem partners, are very mobile and digital. So digital transformation often is looked outwardly, [in the] general sense about how you transform your products and services [for] your end customers. But it is also important for you to be that digital enterprise, that you also transform your workplace which is digital and mobile, to be more collaborative, to [allow your workforce to] have a seamless experience whether they are at their workplace, in front of their laptops and desktops, or they are out in the field. And also [you need] to be able to create a social network within that enterprise. So all these things come. It is about providing that seamless experience to your workforce so that they are digital and they can do more. The other aspect of digital transformation, from a workplace standpoint, is about how to make that employee experience seamless across the various channels. Whether they are in the office or working from home or they are a mobile workforce at their customer's site, to be able to have access to all the relevant information, contextual intelligence, [and] to be able to do their tasks and works more productively, more efficiently, that to me is digital transformation of your workforce. Alex: So what trends are you seeing in opting for transforming workplaces? Chidambaram: In today's world if you look at workplace transformation and the industry trends, there are three [or] four things that come on top - the CIO's top priority. One is about making collaborations more contextual and intelligent. And what we mean by that is being able to understand the persona of who the user is and what role he plays in an organization, and being able to get the relevant information, and being able to have him connected to the relevant group or teams, to be able to collectively do a task and in a very efficient manner. I think that is important. For example, what does a user need when he is on a factory floor, say he is a factory manager? Understanding that persona and understanding his work and needs in the factory floor to being able to understand what he needs when he is back in his office. Or similarly in financial services where you have folks who are managing your customers or your frontline workers to people who manage your wealth management and you're banking stuff. [They all are] different needs but to be able to understand those personas and users, being able to retrieve relevant information across the enterprise, being able to give it to them with that context, and being able to collaborate with the relevant teams effectively with intelligence, I think, that is a very critical ask which is what enterprises are striving to do. The second aspect is about the millennials and the Gen X, which is moving beyond employee engagement which in a lot of sense becomes a one-way communication or an information dissemination to

making it more [of] an employee experience. In fact, we have felt organizations with strong online social networks within the enterprise have been more productive than those without because it just creates that experience - the way they collaborate or interact with family, friends. [It's all about] how do you bring that same experience within your organization so that in a sense you make them feel being part of a network of teams working purposefully towards a collective goal. I think that is a very essential thing. When we talk about teams, the other aspect is, today organizations are moving away from very static team structures to very dynamic teams. We see DevOps and agile mode of development where it is about bringing IT, bringing business, bringing your operations team all together dynamically to deliver new products or services, or to address certain challenges in the market. We saw some surveys where they believe by 2020 significant people/workforce will become freelance consultants and you [will] engage them for a particular need rather than having them full time. In such an environment where you have teams that are being brought together in a very dynamic manner for a period of time, how do you make them collaborate more effectively? That's a very fundamental change because today you have very well-defined team structures within IT, within your sales, within your operations. How do you bring them all together and achieve a collective goal of what you are trying to achieve or build a new capability, new product, or new services? I think that is another key trend that we are seeing in the industry. Alex: Okay, I can see that you have another point that you would like to make and that's the issue of security. So how would you address that? Chidambaram: Great that you brought about that. I think security has consistently been the top concern for a lot of our CIOs because the kind of digital disruption that you are seeing in the industry, security is very important to make sure they have the right controls and access managements in place. What is also important from a workplace transformation perspective is that now security moves from a perimeter discussion to one [that is] role based, context aware and real time. What we mean by that is now you have a very mobile workforce, and the rise of BYOD (bring your own device), where employees bring their own smartphones but then we enable them to access employee e-mails and also a lot of other apps and information that they need, particularly if they are a mobile workforce or people working from home which is a common trend today, so that they continue to be more productive irrespective of whether they are in the office or not. But what this also means is that security is no longer confined to the boundaries of your enterprise and the perimeters that you manage, but also onto these BYOD devices. As you move some of them to cloud, how do you ensure that all this information that is there that people are collaborating on are also protected and that we have the right access management, lot of threat analytics/threat intelligence done? Because, now that you are opening it up, you also need to have the right control and monitoring mechanisms to ensure that the right people are using this information. Alex: Would you look at one channel security, as in a group of people as a network, because I think there would be reluctance to use your own device because of the information which would be personal. Is that correct? Chidambaram: No, so typically in BYOD they are containerized. For example, Infosys would have a set of apps that are deployed within your mobile device and that doesn't get access to information outside and vice versa you cannot take information from these devices or apps and then copy and paste it onto your personal

space. You know, it's an interesting point that you bring - something we sometimes trivialize but it is a very pressing concern in a lot of our enterprise clients, particularly in the financial space because on one end you want your mobile workforce to be productive, enabled digitally with all the relevant information, but at the same time it is also your obligation, in a lot of industries [it] is also a regulatory compliance need, to ensure that you protect the information and it's not something that he can copy it and move it to his personal space. We have various mechanisms on the enterprise security of workplaces which ensure that you have the right access management and controls in place. Alex: This leads one to ask you the next question, which is, what are the challenges an enterprise has to face in opting for transforming a workplace experience for its employees? Chidambaram: When we talk about transforming these workplaces, I think the first thing that comes, that needs to be addressed, is defining what these workplaces of tomorrow should look like. A lot of our clients, they want this collaboration to be seamless, immersive, contextual. But it's important to take a step back and understand what are the different groups of people that you have - what are their different needs, understanding their work styles, their functional needs, understanding what are the challenges employees are facing to be more productive - and how are you going to address that in the workplace of tomorrow. Understanding that problem is very important. The second thing is, we talked about how we make the engagement very contextual, very intelligent. But to really make that you need to do a lot of enablement, which is about digitizing your information so that it is accessible. It is also about ensuring that you have all the policies defined around a lot of these things whether who accesses what, how do they collaborate, what do they use. That is also an important aspect. Once you have these things defined, the other challenge that we see is most of our Fortune 2000 clients have a legacy that they carry - they have technologies that they have invested in and information/data that is there in that which employees and their partners use day in, day out - how do you move all these users, this information, this content to this new workplace that you are transforming to. I think migrating that is a challenge in a lot of our organizations because they would have done a lot of customizations, so being able to understand that and implementing that in your future state workplace I think that is another challenge, but there are solutions for that. The third thing, which I think is often overlooked, is around governance and change management. You have to constantly evolve. You need to have a mechanism to see and ensure that "Hey! There are these new features that are coming in, how do I ensure the right people get access to it? How do I ensure that I deliver a lot more value from these new features?" So it's about training and enablement. It's about putting in place policies around how you introduce new services into your workplace. Technologies that are breaking traditional styles of working together. You see augmented reality around Microsoft HoloLens. It fundamentally changes how you collaborate in real time. And these [technologies] are evolving in such rapid pace, it's important to ensure you have a proper and a strong governance and change management in place that can quickly adapt to this rapidly evolving workplace around you. Alex: Does this involve constant training? Chidambaram: Yes, constant training and enablement. That's an absolute essential today. Alex: So there's no level in which you basically stop learning. You are constantly evolving with that training. So how often are you

training? Chidambaram: One of the key things that we tell our enterprise clients is that training has to become intrinsic in this. We call it the "collaboration continuum". We believe it's a journey. It's not about training in new technologies. In fact, we encourage piloting new ways to collaborate constantly with a select set of users, get their feedback, and roll it out to the larger organization. Alex: It's not necessarily collaborative training and learning, in the sense self-learning falls in that category as well. I assume so because I have seen a generation who are self-taught and are self-learners. I mean would you encourage self-learning as a company? Chidambaram: Absolutely! If you see today's millennials, they would like to learn new things. They want to learn new ways to collaborate. You will see how people are so excited when they have new things rolled out on Facebook. How many people go and train them on how to use that new feature in Facebook? I think in the millennials it's not just about, "Hey! You have a training curriculum and a program". It is about providing them those, say, training videos. In fact, we believe it's going to be less of typical classroom trainings to enabling training resources to them. It could be training videos, it could be pilot programs, where they actually come and try a new way to collaborate and learn from it. The other aspect of learning which I want to bring about is not just employees learning new ways to collaborate and new features that we roll out, it's also about organizations learning to see what is being more effective, what is making my employees more productive. Alex: So, we've discussed the challenges that are faced in the workplace experience, but how can we solve these challenges? What implementations do you have to resolve these? Chidambaram: Yeah, when we talk about defining the workplace of tomorrow - defining that need, understanding the problems in your workplace today - we recommend adopting a Design Thinking based approach, which gets to the root of finding the problems of the workplace so that you define a workplace that not only solves these problems, but makes that experience much more purposeful. When it comes to migrating it, or transforming, once you've defined where you want to go, it is about how you bring automation, how you manage the information architecture. We bring a lot of tools to that and we help organizations do that transformation much quicker. We encourage organizations to do rapid prototyping, pilot it with a select set of users, and then roll out to a larger organization. And it could be different in different regions. There are a lot of regional aspects, not just culturally, as well as about the HR policies in those regions. It could also be regulatory aspects. So bring all those elements [and] make sure you capture that as you transform them. GDPR [General Data Protection Regulation] is an important aspect in the European market - that is something people have to address in the next couple of years. We believe that is very important for a lot of our European clients to understand and make sure, [that] as they are transforming their workplace, they address this regulatory aspect that is rolling out in all the European countries. Alex: So are you creating a culture of your own? Chidambaram: Yes! It is about defining the culture. I think a lot of organizations have that culture. It is about … interesting that you brought that up … I think the workplace of tomorrow defines your culture as well or represents your culture as an organization. Alex: That is an interesting way of leading into the next question, which is, how will transforming the workplace experience help businesses improve their effectiveness in that respect? Chidambaram: I'll answer this by talking through some of the experiences our clients have

had. We've worked with a very large agri manufacturer. Their fundamental problem was first around their intranet portal, which was more about information dissemination. It wasn't really getting their employee experience to a point where they felt it was being productive. And they are a very global organization, spread across multiple countries, multiple geos and continents. By just adopting a Design Thinking based approach with them - we did that over eight to 10 weeks process, understanding the different work styles, different employee needs in their organization - we piloted this new corporate intranet portal which was very dynamic, very contextual to the information these employees need in their different roles. And we were seeing tremendous uptake through their surveys and other things where they have measured their employee experiences grown from their service, which is tremendous. In one quarter, you've been able to see your employee experience increase. That was the experience we have seen there. The other one which I would say is about, in a lot of manufacturing clients, or in a services sector, there is a need of paperless office. You will be amazed at the amount of time and the inefficiencies that are there in the processes today in organizations where they have to actually scan documents, digitally sign it, scan it, and store it in various management systems. And that makes that entire process of managing documents across your organizations very cumbersome. Today with technologies you can make that virtually a paperless office, where you manage these documents on a cloud, digitally sign them, and archive them for auditing and other needs. That has been a tremendous improvement in organization efficiencies that a lot of our clients have seen. The other thing is about the customer care functions, which is the first line. Often we have seen that this is the most disengaged workforce in an organization. They are the last ones who get information about what has changed in an organization, [the] last ones to know about new products and services that are being made. They are the ones who have to go across multiple information repositories in an organization because you have different businesses within your organization, managing different data, but they are [also] the single face of an enterprise to your customer who might be across all products and services that you offer. And we talk about his 360-degrees view of customer. And this is often talked about. It is also important to understand [that] while a lot of emphasis on that first line worker has been about making sure he gets a 360-degrees view of his consumers, what is also important is for the first line worker to know about the latest products and services, the latest information. Also, [it is important to] make his employee experience more seamless by making sure he has one portal where he not only gets to see about all these new products and services, but also about his personal information that he needs to know on a day to day basis - be it latest policies on his finances and other things in a single integrated environment. It makes his experience more seamless, right? When you make your first line workers more effective, you see your brand growing because they in many ways represent your brand to your external customers. They in many ways define the productivity of your organization because whether it's in the factory or whether the sales, they help you grow the brand. They are your first point of connect with your customers. And we have seen [this] in a couple of manufacturing clients where we have been able to transform that first line worker space. Alex: I would like to know, how your clients are transforming their workplaces? Chidambaram: For almost 80% of our enterprise clients,

Office 365 or Microsoft 365 has been their technology of choice. Microsoft 365 has the best of Office 365, Windows 10, and now [it] brings the enterprise mobility and security that we talked about, all in an integrated model. That makes it seamless, it makes it intelligent, and it also makes it an integrated experience for our customers. How we are helping enterprises is [to] move from Microsoft technologies, the various legacy technologies on EUC and UCC they were on, to this Microsoft 365 platform which we believe is one of the leading and predominant solutions in the market on workplace. We help them, understand their needs, envision that workplace of tomorrow, and then we help them enable this transformation by migrating users, groups, information, documents, their real time collaboration technologies, moving it to Office 365 and making that integration seamless. We help clients migrate in their end user computing space to Windows 10 – what it enables is a complete mobile application and device management capability in the end user computing space. It's as simple as you give your new employee, who is joining you, a laptop. He just goes and plugs it into his network and then we can remotely manage, understand who he is and what his role is and deploy applications in his laptop or in his mobile BYOD device and push those things. Today, that's not the case there in a lot of our organizations. We also then put in place, as part of their operations, governance and change management mechanisms. With a lot of these collaboration technologies, moving on to cloud, and where you don't have a level of control that you had before, it is also important to understand, "Hey! What is the level of licence usage, data usage, site usage?" Because you are going to pay for that. We are seeing a lot of our clients moving to a complete user based pricing. And pricing is one element of it but it is about providing these services in a user based construct. In IT [it is more of a] service construct, which is a fully managed services construct, where an organization just leverages that in as-a-service model and pays for it based on the consumption. So we help them set up these workplace operations, providing dashboards, providing change managing capabilities. That's how we are helping a lot of our clients. It's an exciting journey. Alex: Honestly, I think in this industry you have to be visionaries. I think you have to be very strong in predictability as well, which I would say leads me on to my final question, what would the future transformed workplace look like? Chidambaram: Interesting! Future. Well, I'll answer this in two parts. All of us have seen in our days, fictions turning into realities. Speed of that happening is increasing or its becoming more rapid. In the near future where I am seeing - with a lot of this AI and chatbots that have come in, just take examples of Cortana, Pixel, Alexa - all these AI technologies are both in your personal space as well as workplace. In the immediate future, what I would call them is "digital assistants". In some sense, that is what it is called in your mobile phones and spaces. Today, you will see executive assistants in an organization to your top executives. Think about a workplace where every employee of yours has a digital assistant who can take care of scheduling his tasks, scheduling his meetings, and doing a whole set of mundane things that we would love to hand over to somebody else. It is a powerful thing, right? And I think this will make them (employees) more productive, more creative, because now you are empowering them and enabling them with these technologies and digital assistants so that they can focus on tasks that can bring more value to the enterprise and better experiences for themselves in what they are doing. That I see as the

immediate future. What I see may be at a five or 10 year horizon is where collaboration - we are talking about now how we make these collaborations between employees and humans more effective and seamless - is going to be about how you make man and machine collaborate more effectively. With all this artificial intelligence that is going to come into them, how do you leverage that more effectively? How do you collaborate with them to achieve certain tasks, because they are going to be there in the workplace perhaps as an employee itself? How do you make this man-machine collaboration more effective and intelligent? As long as it is we who manage them and not they managing us, I think [that] is going to be the biggest challenge in tomorrow's future workplace. Alex: Does this lead to perfection? Chidambaram: Yes, perfection in certain tasks. But I believe, an organizational efficiency/productivity and other things is not just about the perfection in the tasks you do, it is also about what is your culture, what are the ethics of an organization. Bringing empathy into your workplace, bringing empathy to your customers, and understanding them and being able to deliver that value, I believe that is going to define organizations of the future. Alex: I agree with you because what AI will do is take the clutter out of your lives, and that will alleviate a lot of stress because there is less to think about. Thank you so much Chidu, for spending your valuable time with us. Chidambaram: Thank you, Alex for having me. Alex: It was indeed a very informative session. And thank you all for listening. For more information, please visit Infosys.com. We look forward to you tuning in next time. Thank you! =====================

Driving Automation Value Delivery at Scale

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/ driving-automation-scale.html ----- Insights AI/Automation Over the years, there have been numerous discussions around AI and automation, and their potential impact on the future of business. This has now reached a crescendo with organizations expecting to drive zero latency in business process execution by leveraging the latest automation and AI technologies. While most enterprises have been through a phase of experimentation and have the organization experience of delivering Proof of Concepts (PoCs) or pilot programs the imperative for them now is to scale these projects to drive enterprise wide adoption. Successful organizations that have leveraged automation to drive business transformation have taken a multi-pronged approach to enterprise scaling and are now investing in increasingly sophisticated automation to drive greater business value. However, driving enterprise-wide adoption of automation can be a truly daunting task for organizations. While PoCs and pilots have undoubtedly given them enormous experience in areas such as Robotic Automation, Machine Learning (ML), Deep Learning, and Neuro-Linguistic Programming (NLP) among others, organizations are still unsure of how and where to start an enterprise-wide adoption journey for automation. Given the limited number of successful use cases and presence of considerable legacy infrastructure, adoption of automation at scale remains a challenge for many

organizations. We have always relied heavily on our understanding of our clients' landscape and domain, as well as our strong partner ecosystem to help them make a successful digital transformation journey. Based on our experience, here are some considerations that organizations find useful when they embark on a journey to adopt automation at scale: Asking the Right Questions With most new technologies, there is often a tendency to look at the capabilities and features of the technology and then try to fit it into the organization's digital aspirations. Most questions revolve around what RPA/AI can do for the organization and the pivot tends to be around technology adoption. The right question to ask is not what the technology can do but to ask what is the business problem that we are trying to solve. Once there is a clear definition of the problem, organizations can explore how automation can help solve it efficiently and effectively. One also needs to give some thought to the process of adopting automation. What is the best approach to take while implementing automation? Should you start from task automation and then move to process automation? At what stage should you incorporate automation in the business model? Also, which process should you automate? Not all processes lend themselves to automation. If you pick a bad process to automate, it's unlikely to benefit the organization. Asking the right questions can ensure a smooth implementation. Agile Mode of Delivery for Automation Cycles Given the dynamic nature of automation technologies, program teams within the organization need to move with speed, yet retain flexibility in their implementations. Regular automation cycles are typically long. From identifying the right automation opportunities to going through design, build and development, it can take several months even in very efficient organizations. Therefore, standard software development life cycle (SDLC) methodologies are not well suited to deliver the required results for implementing automation. Most IT managers worry about the agile mode of delivery particularly when they are not ready for it at an enterprise-wide level. An agile approach can get complicated because of the accompanying change management at the organization level. However, to deliver automation in an agile mode, it is important to take cognizance of the fact that automation is non-intrusive and resides as an additional layer on top of the existing enterprise landscape. Our experience tells us that this enables a delivery cycle which can be reasonably independent of the enterprise development and release cycles. Automation cycles can therefore be accelerated by bringing in the necessary digital assets for ideation, opportunity identification and delivery can be fine-tuned to meet the current structure of the organization. Organizational Redesign Considerations Technology alone is not sufficient to give enterprises the competency to disrupt the market. There has to be a deeper change in organizational processes and structure to support the technology implementation. Automation implementation demands for an organizational redesign along three key dimensions. The first is a rethink of business processes and its implications for team structures. The second is enabling the teams to handle the new technology by refactoring skills and providing the necessary training. And last is to reskill employees affected by automation so that they can be redeployed in other functions or roles within the organization. For instance, with automation, there will be job roles that will get released, resulting in unutilized productive time. The organization will have to consider each task that comes under automation under the 'stop', 'continue'

or 'start' model to determine the next best action for employees who are directly impacted by automation. They need to be trained to move into roles that are more cognitive and value adding. Platform Selection When establishing a platform for enterprise-wide adoption of automation, one needs to factor in multiple capabilities across the automation spectrum. These include data ingestion, processing, process automation, machine learning and other similar cognitive capabilities. While these are not mandatory to have at the start of the implementation, they are helpful to foster a more strategic approach. As the organization dives into enterprise-wide adoption, this will ensure smoother scaling of the platform to meet future needs. Enterprise-wide adoption of automation technologies can confer solid competitive advantage and potentially transform business models. However, it requires a strategic approach, careful planning, and deep vertical and horizontal expertise to make it a success.
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Why and How Should Hi-tech Manufacturers Employ More Robots

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/employ-more-robots.html ----- Insights AI/Automation The hi-tech manufacturing industry is exactly that – one that employs a high degree of technology that is often complex, asset heavy with lots of assembly line activities that lends itself well to adopting new and evolving technologies. It is no surprise that it is one of the highly automated industries. In a survey conducted by Infosys titled, 'Leadership in the Age of AI', 77% of the respondents from the manufacturing/hi-tech Industry said they were using AI to automate their business processes. Yet, there is scope for more. To know about the promise of automation in the Industry and where it is headed, read the Infosys Point of View, Machine Learning and AI: The Now and Next in High-tech Manufacturing Landscape What's the Challenge While we have seen dramatic changes on the shop floor with routine jobs like assembling or high-risk jobs like repairs in a hostile environment being taken over by robots, three out of four organizations feel there is a lot more they could automate. 84% of the respondents in a research commissioned by Infosys titled, 'Human Amplification in the Enterprise' did not accomplish their digital transformation goals. What's stopping organizations from achieving the full potential of automation? The hindrances vary from lack of necessary skills and in-house knowledge to drive automation projects, to what is the value proposition of the new technologies. From lack of collaboration between various teams to financial constraints. And lastly, there is the challenge of resistance to change and fear of unemployment. What's More to Automate While routine, repetitive and labor intensive jobs have been hijacked by automation in most hi-tech manufacturing industries, the more aspirational automation opportunities lie in areas of customer support, processing of complex data (both structured and unstructured), creation of simulations for better decision making, creation of systems that

self-learn and take decisions and, lastly in streamlining enterprise knowledge. Automation has evolved over the past few years with a new generation of robots that are powered by AI and Machine Learning. These new age robots can be trained, meaning they are much more flexible than they were earlier and can be used for a variety of purposes. They are smarter. With Machine Learning, they are teaching themselves better ways to do things and address exceptions and anomalies. They are cheaper. Automation is becoming cheaper as technology evolves making it more feasible than the current wage rates. A Successful Approach to Automation Using AI and Machine Learning Considering that technology is ever evolving for the hi-tech industry, one of the primary considerations for adopting automation is the technical feasibility. However, organizations also need to ask questions around – how expensive or complex is the development and deployment of AI based automation, is labor substitution worth the cost, does it meet ethical requirements, is it sustainable, will it increase productivity, reduce errors, improve quality, and save costs? A successful approach to adopting these new technologies includes: Draw a roadmap for the AI based automation at the organizational level and provide guidance to all implementation activities that tie up to it. Define clearly the roles and responsibilities of people who are part of the automation initiative along with training plans for re-skilling and upskilling. The management plays a key role in visualizing the value proposition of adopting technology that results in job losses. Identify roles and skills that need to be reworked. Facilitate and empower employees to move to more value-add or cognitive roles. Establish interoperability and integration between legacy systems and new systems. Implement the required compliance and security measures. Lastly, make sure the automation plan aligns with the larger digital strategy of the business. =====================

The Evolution of Automation from Doing Things Right to Doing the Right Things

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/ evolution-of-automation.html ----- Insights AI/Automation To begin with, for most organizations, automation is almost always about achieving operational efficiencies. It is about performing an activity or a process in the best possible way with minimum time, effort, and cost yielding maximum output. However, as enterprises make progress in their automation projects, business leaders realize that they must evolve from doing things right to doing the right things. Businesses want to free their employees from doing mundane and repetitive tasks such as invoice dispatch, payment processing, or credit card reconciliation so that they can be trained to focus on those areas that bring greater value in terms of strategic input or innovative ideas. Thus, enterprises begin their automation journey by improving rule-based processes, through deterministic applications such as monitoring of processes, or workflow orchestration. As their automation matures to handle the standard enterprise operations, the leaders in the organization begin to

look for more opportunities in automation such as how to identify the right vendor at the right time to make a purchase or how to prevent fraud by detecting patterns in transactions. The focus moves to making use of the available data effectively to proactively minimize business disruptions through predictive analytics. With the help of analytics-driven operations such as predictive models and correlational analysis, anomaly monitoring and diagnostic model-based automation, businesses begin to predict failures in advance. With the evolution of Artificial Intelligence (AI), organizations now look at becoming more smart by adding cognitive capabilities to their automation portfolio. They look at bigger and complex business challenges that automation along with cognitive capabilities could solve such as maintaining zero incidents or reading contracts at speed. Through Machine Learning (ML) and Neuro Linguistic Programming (NLP) and retrospective analysis, an organization could mine processes, build knowledge repositories, and automate actions or provide decision support. When we look at all the organizations that are traversing the automation journey, the view is hardly monolithic with each of them falling at a different stage of automation. The approach varies based on their position on the automation/ AI continuum. Largely, they can be classified as: Companies that Resist Automation At the bottom of the automation pyramid are those companies that have been extremely skeptical or wary of considering automation. This skepticism could be due to any number of reasons ranging from uncertainties over the right technology platform that they need to select to a general reluctance due to the complexity of use cases. To remain competitive, these companies will feel the need to embrace automation, sooner or later. In our experience, companies at this stage often seek support in process discovery to understand concepts such as desktop automation etc. rather than a specific automation solution. At the Deterministic or Predictive stage At the next stage are the companies that have tried different flavors of automation and are now keen to move towards a more predictive and cognitive automation. They have most likely automated their repetitive and rule-based business processes with Robotic Process Automation (RPA) thereby, achieving significant savings in time and effort. The priority moves from process automation to building a smart environment where AI and automation are implemented with analytics-driven operations to predict failures and create a framework that suggests actions and recommendations. There are several examples and use cases. Cisco, for example, was looking to transform its customer service experience. While the company tried a Shared Services model, it found that the customer experience was lacking. Cisco runs massive scale of operations with roughly 2 million transactions in a year across 125 services for its customers, just for order management. With AssistEdge, an automation platform from EdgeVerve (an Infosys company), it was able to simplify and automate these processes, thus, reducing order delivery time from four months to eight weeks. The automation enabled cost reductions of up to 80 percent; and reduced two million hours wait time in a year. Vodafone New Zealand is another example. The company realized that its customer expected a uniform experience irrespective of which Vodafone offering they were dealing with. This was a challenge given that the company had disparate systems for each offering. AssistEdge was able to integrate three separate IT processes into one, enabling a single customer care representative to cater to all three offerings. As a result, Vodafone could

completely transform its customer experience processes. Intelligent Automation Veterans Today, most organizations fall under the previous two stages mentioned. A very small minority, about five percent of organizations, have truly experienced the power of intelligent automation. With data and predictive analytics capabilities in place, such matured organizations move towards gaining insights that determine the direction of their business. They do this by making use of the cognitive abilities of AI, ML, NLP and pattern analysis to build and manage a repository of knowledge over time. This empowers them to derive evolved patterns and aid business decisions. They not only internalize automation and AI in the way they run their businesses, they also make rapid progress towards larger scale adoption and more complex business use cases. One great example is our Infosys Nia Contracts Analysis offering. It uses a ML architecture at its core to read contractual documents the way humans would, that is by keeping its context and semantics intact. The system converts natural language into a computable format to maintain semantics and context. There are pre-trained models to help expedite its usage to real-life scenarios. For instance, our customer needs to periodically verify a high volume of contracts (over 25,000) in just three to four days. The process needs to be exhaustive, and there is zero tolerance to inaccuracy. By automating extraction of contractual information, it achieved a massive saving of over 30,000 person-hours a year. Because contract interpretations are standardized, it also helps in early identification of risks. The Future Ahead As organizations mature in their automation journey, the workforce will undergo major transformation where employees will be increasingly assisted with AI enabled automation. The future workplace will include both humans and bots and the interface between them could have varied dynamics. Bots could be controlling other bots. Humans could have exclusive command over personalized bots. Bots will progressively become mainstream. The focus therefore, will, shift to developing a strategy around the orchestration and management of the entire digital workforce, in order to ensure that the transformed workplace maintains its functionality, security, scalability and responsiveness.
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Seven Essentials That Will Propel AI from Fantasy to Reality

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/fantasy-reality.html ----- Insights AI/Automation Artificial intelligence (AI) has not only captured the imagination of the masses, but also the unflinching attention of enterprises the world over. This article explains why AI is now the go-to technology for businesses and the seven factors crucial for any AI initiative to succeed. Perpetually wary of market disruptions, and in their quest to maintain a competitive advantage, board rooms and CXOs of Market Leader and Fast Follower brands across the world have rushed to artificial intelligence as the next big bet. By virtue of being early adopters of / adapters to disruptive business models and technologies, Market Leader and Fast Follower brands not only command the largest share of the market, but that of profits as well. They are the big boys or leaders of their

segments, categories. — think Apple, Google, or even Tesla. Market leaders tend to adopt a 'go-it-alone' strategy, while Fast Followers are open to coinnovation and co-creation. Fast Followers are also reactive and wait for the market leaders to take a position, before jumping in. According to Constellation Research, though these leader brands are yet to achieve the full potential of mass personalization (market segmentation of one), their next rush is focused on investments in artificial intelligence use cases and pilots, and in establishing 'co-create' or 'co-innovate' partnerships with vendors. Their initiatives in AI's subsets of machine learning, deep learning, natural language processing, and cognitive computing have been steadily moving from science projects to new digital business models powered by smart services. A good example of this shift comes from machine learning services that analyze sentiments or address fraud management patterns in commerce. For an organization betting on AI for digital initiatives, the goal has to be precision decisions. Successful AI projects within enterprises require more than just great algorithms or access to data scientists. What the Market Leaders and Fast Followers have discovered so far are the following seven traits that require nurturing: A large corpus of data: The battle for large data sets has nothing to do with having more data. The ultimate goal is to build the largest graph that maps the connections within the data. More quantity of data will improve the precision of insights and allow for more patterns to emerge. Massive computing power: Winning brands will either own or have access to affordable computing power. The ultimate metric for AI rests not just in 'pricing by computing power,' but potentially, also in 'cost per kilowatt-hour.' Thus, the cheapest rate of computing power may determine the cost structure for AI smart services. Time: There is no substitute for time when it comes to AI. Algorithms need time to improve and gathering data sets requires time for better precision. More interactions in the network depend on time. Hence, early adopters gain the advantage of time. Exceptional math talent: The discovery of patterns, creation of new algorithms, and the ability to apply human intuition to computing requires great math talent. People enable artificial intelligence, and algorithms are only as good as the math talent that build them. Success will require the hiring of 'Digital Artisans' — people who can balance their right brain and left brain expertise. Industry-specific expertise: Vertical industry experience will emerge as the key differentiator in AI smart services. The more advanced and specialized the AI system, the more its relevance to the end users. Natural user interfaces and experiences: Expect AI systems to mimic human interaction going forward. Interfaces for sensory and visualization capabilities, voice, gestures, and more will improve providing natural, human-like capabilities. Intelligent recommendation engines: The output of AI comes to precision decisions. AI systems augment humanity. The recommendation engines that emerge will enable choices, accelerate decision-making, and ultimately provide filters that deliver situational awareness. We feel that the value in AI will come from the smart services that emerge through digital transformation projects. More than just automation, these AI-driven smart services will power future business models that rely on the insights derived from digital technologies, data, and algorithms. The question that will soon make its way into your board room might be: How do we nurture these traits to ensure that our AI investments succeed? =====================

Artificial Intelligence : Focusing On Care, Not Cost

Although Americans spend far more on healthcare than any other high-income country, this spend is incommensurate to the health outcomes they experience. Life expectancy is shorter than desired and chronic conditions are still widely prevalent, among other things. Analyzing this high healthcare spend reveals several underlying reasons: an ageing population, rising use of new expensive technologies in radiology, new procedures, increase in prescription drug costs (e.g. for Hepatitis C), high pharma marketing spend, and a growing number of specialties. In addition, digital and AI-led disruption, which could bring about significant cost and process efficiencies have been relatively slow in this industry, which has also been traditionally slow to adopt new technologies owing to complexities arising out of multiple ecosystem players and intricate regulations. However, consumers are now demanding more from healthcare. As digitization sweeps across industries, consumer technologies have been growing in popularity, especially in retail and banking. These consumers are also increasingly demanding better pricing transparency, connected experience across payors, physicians, hospitals, pharmacies, and other supporting institutions, all of which play an integral role in the care continuum. And the healthcare industry is beginning to respond. In 2014, the market for AI in healthcare was worth over US$ 600 million, and this figure is expected to rise ten times by 2021. Today, healthcare is widely believed to be one of the industries destined for AI-led transformation, which will be an antidote for the high costs, as well as an enabler for better health outcomes and experiences. For some years now, a chatbot at Aetna named Ann has been providing round-the-clock assistance to new members in using its website, guiding them through the registration process, or helping them to recover user names and passwords. Similarly, at Credit Agricole, chatbot Marc responds to product queries in the company's health insurance space and makes relevant offers to customers after analyzing their needs. The potential of robots in superseding humans at the front office is enormous. Deploying Robotic Process Automation (RPA) and AI in Health Technology can help deliver a rich and seamless experience for all participants in the care continuum. Such a model will pivot around the member, enabling her to navigate the healthcare ecosystem to derive the best possible care. In this article, we share our view on the impact of these technologies on business. Choosing wisely, but acting quickly Enthusiasm over RPA and AI has caused a proliferation of solutions in the healthcare space. While the perfect solution might be elusive the best way forward is to choose a solution that is most effective for the organization. This however, invariably leads to the bigger challenge – to secure support, technical and otherwise, for RPA and AI initiatives, especially at the grassroots level, and ensure robust governance around them. It is important to identify the processes best suited for automation, conduct pilots to demonstrate quick wins and then trigger a virtuous cycle where success breeds success. Automating broken processes, however, can not only be inefficient but also dangerous. Processes must be

rationalized, optimized and simplified before automation. The good news is that unlike traditional IT projects, which run for several years, an RPA/ Automation project lifecycle lasts for six to ten weeks – from ideation to implementation. In our view, RPA is the right place to commence an automation journey, laying the foundation for more sophisticated AI deployment. Doing more than just paring down costs RPA and AI will have a far-reaching impact on healthcare, well beyond their potential to save costs or reduce labor, although these two benefits are currently paramount. By eliminating duplicate processes and automating member support processes, RPA will make it much simpler for members to avail of services of healthcare companies, even as it enables them to complete transactions faster, benefiting all stakeholders. For example, leveraging automation through a combination of RPA and AI, a healthcare company could disseminate communications on procedure authorization or claims status faster to patients and doctors. Another important benefit is improvement in quality of compliance, because with RPA, processes become fully documented, traceable, and transparent. AI can ensure accuracy of provider data, which will help healthcare companies avoid steep regulatory penalties imposed in the absence of accurate provider data. In addition, an intelligent system can turn its vast data resources into insights and use that to propose personalized offerings to prospects, or simply offer the most relevant additional product to an existing member. Last but not the least, AI helps healthcare companies take better care of their members. In this business, it is not uncommon to encounter emotional or agitated callers. Companies can train their service staff to deal with them with empathy. There are AI software solutions, which analyze the speech of company associates during calls, and prompt them to soften their tone or slow down, whenever required. Enabling people to accomplish purposeful goals It is estimated that a claim processed with manual intervention costs about US$ 4, which when auto-adjudicated costs about US$ 1 with legacy technology, and even less with automation. A single robot, which can accomplish the work of 2 to 5 claims processors, can deliver over 20X returns on labor costs alone over a 5-year term. The savings for healthcare companies, which have very large service operations with several thousand employees, is clearly enormous. Beyond this cost factor, there is an enticing opportunity to deliver a human-centered design for healthcare; by redeploying freed up staff on work of a higher order, such as member intimacy and member-care. Automating most routine tasks in service operations will make staff available to engage members in proactive, contextual and meaningful conversations, which are also AI-enabled, and help members improve their health, or enjoy more healthy days. An illustration might be useful here: If an AI system alerts an associate about a member who has missed renewing a prescription for diabetes medication and provides a predictive insight in to the member's health disposition based on health history and related attributes, the healthcare associate can promptly arrange a review with the member's healthcare provider. Like in several other industries, AI in healthcare can complement the workforce and amplify their capabilities. Human capital in healthcare needs to be diverted to care at the intersection of caregivers and patients rather than be involved in low-value, back-office operations to support front-line caregivers. AI-led automation is ushering in this great opportunity today. Challenges and concerns Employees are anxious about losing their jobs to automation, and their employers about managing the

change. These concerns can be addressed to a great extent by communicating plans for redeployment and retraining as early as possible. Here, it may be useful to cite the example of the banking industry, which is about a decade ahead of healthcare in terms of technology adoption. Although the teller function in banking was automated decades ago, the people who were serving in those roles continue in the industry, albeit in new roles. An expanding technology landscape around robotics and intelligent operational systems (RIOS) gives rise to several challenges. The proliferation of solutions and vendors in healthcare complicates the decisions around AI adoption. Maintenance of AI solutions, as they scale from a single process to several thousands, is another important concern, followed by their governance and ROI. Welcoming the Chief Robotics Officer RIOS and AI in general will also precipitate new positions within companies and new business models in the market. The Chief Robotics Officer (CRO) will emerge in the next few years, especially in industries such as healthcare where automation is beginning to be embraced rapidly. The CRO will assume a comprehensive role with many responsibilities – from choosing the right technologies, managing change and effective staff communications to managing costs, governance and ensuring ROI. She will eventually become what the CIO is today across businesses, and may even earn a place in the boardroom. 1 Application of organized knowledge and skills in the form of devices, medicines, vaccines, procedures and systems developed to solve a health problem and improve quality of lives. (WHO) Read more articles on artificial intelligence and automation >> =====================

Conversational AI: The Great Leveler

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/ great-leveler.html ----- Insights AI/Automation When the first information technology revolution took place, the advent of the internet created several new opportunities for businesses. It also established the basis for information retrieval with the emergence of search engines from companies such as Yahoo, Google and Microsoft. This was followed by the mobile revolution, which literally put a computer in our hands. The growth of 3G/4G technologies helped in bringing unprecedented access to data. While mobiles and high-speed internet have helped in significantly broadening the adoption of information technology, it has certain limitations. For instance, users need to have a certain amount of comfort with electronic devices, basic literacy, and a rudimentary understanding of how the device works. It also requires some elementary physical input, such as pressing a button or scrolling through a screen. The rise of conversational AI With conversational AI, we are finally breaching the above mentioned barriers and enabling information access to all. Here are some unique features that make it possible: At Infosys, we have developed Nia Chatbot platform to enable quick development of Conversational User Interfaces (CUI) for enterprise applications at multiple channels like web, mobile, messenger and smart speaker. We have also developed solutions for different business processes such as HR, procurement, order management, payment etc. which help in

providing CUI layer for respective business processes and enable easy access to information for users from every demography. An example would be the Cognitive HR Assistant that Infosys developed primarily for the retail and manufacturing industries to help assist blue collar employees. This solution comprises of conversational UI featuring text and voice, for employees to access key details such as leave balance, leave application, transfer policy etc. Infosys has also developed the Nia Procurement Assistant which is a comprehensive AI based conversational assistant built to ease the procurement process by ensuring compliance and improving user efficiency. The application learns over time and provides highly contextualized recommendations to the user. It shows insights via analytics, ensures compliance, enables smart process workflows and provides automated support through a conversational interaction with enterprise business systems (such as ERP), e-procurement, supplier portals etc. Technology that works for all As conversational AI becomes gains popularity, we are seeing the rise of a completely new class of users who were hitherto 'below the radar' as far information technology applications go. Technology has emerged as one of the biggest enablers of our time. By breaking down barriers and truly taking information technology to the masses, conversational user interfaces truly level the playing field and enable a new revolution in the information age. =======================

Taking AI Adoption in High Tech to the Mainstream

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/high-tech-mainstream.html ----- Insights AI/Automation The high-tech industry has been a leading adopter of artificial intelligence (AI), so much so that it influences the digital transformation trends in most other industries. Technology giants are not just building AI solutions, they are acquiring smaller AI companies to build more capabilities and finding new use cases outside the IT department, in our offices, hospitals, and homes. Yet, as per leading research reports these firms are still lagging in the overall AI adoption when compared with other digitization efforts. This paper attempts to find the factors behind the high-tech industry's failure to scale and the best practices the industry can adopt to encourage mainstream adoption. Untapped potential of AI in high-tech It has been almost seven decades since Alan Turing first envisioned a 'thinking' machine that could potentially carry on a conversation with a human that was indistinguishable from a human-to-human interaction. Since then, AI has seen several periods of crests and troughs. The last two decades, since IBM's Deep Blue beat reigning world chess champion, Garry Kasparov, can be considered the beginning of AI's golden age. The Mckinsey Global Institute's report titled 'Artificial Intelligence the next Digital Frontier' points to the lead role of high-tech industries when it comes to AI adoption. The leading tech giants and digital native companies including Google, Apple, etc., have collectively invested several billions of dollars in AI over the years. This includes investments in powerful supercomputers, dedicated teams to build highly sophisticated algorithms, and data technologies to support machine

learning. Not surprisingly, digital native organizations have emerged as the primary providers as well as the biggest consumers of AI technologies. For digital-native organizations, technology is not just an enabler, but the primary driver, irrespective of the sector that they belong to. For example, Tesla is more of a technology company than an auto company. It is the same for companies such as Airbnb, Uber, Netflix, etc. Most of these companies have been consistently adopting AI and automation in their enterprise IT for the last few years, although they are at differing stages of the evolution journey. Yet, when we look at the actual impact of AI today versus its tremendous potential, the progress has been disappointing. AI's failure to scale in high tech Despite this sustained push on AI, we find that its on-ground adoption is not very high, and certainly not proportionate to the hype and investment, in terms of the scale or volume that one might expect. There are several reasons for this discrepancy. One is that a lot of the investment in AI in the high tech industry has been directed to improving internal performance, rather than on the customer or business aspect. The inability to demonstrate business impact has also led to lack of interest from stakeholders in some cases. Most companies are stuck in the first or second phase of evolution and have been unable to move forward. Also, AI cannot flourish in isolation unless it is supported by humongous computing muscle, powerful analytics and plentiful high-quality data. The relatively low uptake of these has impacted AI adoption. The lack of joint business and IT sponsorship for AI projects has been an important impediment to AI adoption. Complex business cases require involvement from multiple stakeholders across multiple function / organizational boundaries. Sometimes, the deterrent isn't really to do with AI technology per se. For instance, people might resist AI adoption since they are not confident in their own ability to make an impact. They might even worry about job loss as a result of AI adoption. In some instances, the lack of cultural alignment can impede adoption. The organization may be ill-equipped to embrace change. Or it may just lack the presence of a visionary leader who is championing innovation. Best practices for a successful AI initiative In general, here are a few considerations that can help run a successful AI initiative for high-tech industries: The right questions Asking the right questions around the automation strategy, technology solution, governance of AI is very important, such as: Timing Clarity on when to implement AI has tremendous influence on the outcome of automation. Change management to ensure that changes to Standard Operating Procedures are done in time and automation is effectively adopted on the ground by the relevant team or department is an important success factor. Clear picture Clearly defining the scope and having a line of sight into costs is crucial. Similarly, having a list of processes to automate, estimates of cost of implementation, and confirmation on metrics such as productivity, error rate reduction, customer experience improvement, regulatory benefits is key to the business case. A thorough understanding of impacted applications, provisioning of robot IDs, policy exceptions for robot access, access to infrastructure in the development, test and proof environment are also crucial. Being future-ready Organizations should have procedures and controls in place to carefully evaluate the changing needs in business processes as a result of automation. Also, the harmonization of processes is needed to facilitate automation. More standardized a process is, the better and higher is the benefit leveraged from automation. Stakeholder buy-in Sometimes, a

process may not yield expected results even if it is completely automated, if process owners and their teams do not embrace it wholeheartedly. Client buy-in is an important part of the process too since certain aspects of automation will need to access ERP and IT systems simulating as end users. In addition, hosting of the solution in the client network can be a challenge unless there is client buy-in. Conclusion Today, chatbots like Siri and Alexa are part of our daily lives. IT automation is becoming an active area of adoption in enterprises to handle security concerns, production management and user technology problems. Natural language, face and speech recognition technologies are emerging as the backbone for many AI applications. As AI gains more acceptance and comfort amongst users, demand for AI-backed offerings will increase and drive more adoption. High-tech companies can find a huge opportunity here to drive new revenue streams and achieve new dimensions in customer experiences. However, unless there is a conscious effort to address the challenges, mainstream adoption at scale will not be a reality for a long time to come.
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How Food Scanners, Talking Vegetables & Blockchain Can Transform An Industry

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/how-food-scanners.html ----- Insights AI/Automation The food industry is in a sweet spot. Consumers are gravitating towards a food culture influenced by quality produce, health awareness and regulations. The demand for sustainable and ethical produce is compelling the industry to go back to basics. Science is replacing low-quality calories with nutritious alternatives, and creating cheese, seafood and meats from plant-based extracts. As technology disrupts food production, distributors need self-diagnostic quality control systems to ensure quality and safety. In 2015, the European Commission instituted The Horizon Prize for a portable food scanner. The winning non-invasive food scanner will use innovative technologies to analyze and disclose food composition, nutritional, and allergen information. It will encourage healthy eating by empowering people to exercise discretion at the point of purchase or consumption. Prototypes of shortlisted solutions are being developed. Once commercialized, this food safety device may upend the food industry. On the one hand, food and beverage enterprises should expand product categories to serve more segments of shoppers. On the other, they need to validate that fresh / ready-to-eat, cooked food is safe for consumption. Supply chain traceability solutions identify the source during outbreaks of food-borne diseases, but do not prevent contamination. A barcode that reveals the backstory of food does not offer complete traceability and transparency. Perhaps, the solution is in 'Talkable Vegetables' developed by Hakuhodo's Suda Lab and HACKist, a digital creative lab. On fetching a vegetable from the shelf, customers hear an audio message about the produce from the farmer who grew it. Insight into the field and farming procedures will inspire confidence among

consumers and enhance reliability of perishable products. A digital ecosystem boosts distribution of fresh produce, which is intrinsically burdened by high variability as well as environmental and socio-economic costs. For example, sourcing managers procuring tea should ensure that the leaves were not plucked by children or dried using firewood. Blockchain technology can come to rescue. The day is not far when blockchain will be leveraged to address concerns of traceability in the supply chain. Imagine having all the stakeholders in the supply chain right from the farm to the end consumer participate in exchanging information using technologies like blockchain, Alexa, Google Home, Siri, Cortana and others. This goes way beyond the information consumers can get from the Talkable Vegetables in their kitchen or dining table. The future of the food industry will be shaped by a sustainable and traceable supply chain. Consumption of food will no longer be determined by fragrance, taste or appearance alone. Speaking of which, does the label on that cheese brand suggest that the goats, cows, buffaloes, or sheep were raised on a diet of organic fodder? Reinvent, Reimagine, #RethinkRetail with Infosys offerings >> =====================

How Technology Is Driving Trucks For The Logistics Industry

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/how-technology-is-driving-trucks-for-the-logistics-industry.html ----- Insights AI/ Automation The global third party logistics (3PL) industry is expanding significantly as pointed out by a recent research report by Global Market Insights, Inc. They project that the industry is set to exceed USD 1,100 billion by 2024 . One hardly need wonder why. Each shipment is critical and intricately linked in the value chain. Manufacturing is getting leaner and inventory, just-in-time. Data is being acknowledged as a key driver. This is leading shippers and 3PL providers to collect, transmit and analyze an increasing amount of information to make data-driven decisions, increase asset utilization, improve efficiency and decrease volatility. This is leading to an increasing amount of technology to be installed on Class 8 trucks (the largest over-the-road equipment). These innovations can improve safety and limit the impact of human error in transportation. Here are the top seven technology solutions making their way to the most common trucks. Adaptive Cruise Control (ACC) with Braking: Trucks can use forward-looking radar that enables them to maintain adequate distance from the vehicle ahead and automatically adjust their speed. The system allows the truck to automatically reduce throttle, cut the engine's driving force and apply up to one-third of the foundation brakes to maintain the gap. Lane Departure Warning: This is a vision-based system powered by a camera that triggers a verbal warning if the driver strays into another lane. Collision-Mitigation System: Radar, lasers and cameras operate in tandem to mark the distances of the vehicles both in front and behind. The system alerts the driver, and even if the driver doesn't slow down, the system has the ability to use up to two-thirds of the foundation brakes' overall power. Right-Side Object Detection Sensor: In countries where truck drivers sit on the left side of the

cab, a radar can set off a combination of audio and visual warnings to let the driver know what is in their blind spot. Electronic Stability Control: All new trucks in the US are mandated to be equipped with stability system that minimizes the instances of vehicle rollover, jackknife or loss of control. If the system detects that a vehicle is reaching its critical stability threshold, the technology intervenes by automatically reducing engine torque, applying the engine brake and activating the necessary wheel end brakes. Telematics Devices: These transmit hundreds of data points as the truck cruises along the highway: drivers' hours-of-service, fuel tax report, health of major mechanical components, behavior of the driver and more. Cumulatively, this data will facilitate decision-making that enhances safety and optimal use of the truck. In-Dash Cameras: Can be used to monitor driver behavior and record what is happening on the road. In addition to helping improve driver performance, the cameras can be used to examine the root cause of a crash. Eventually this data will enable insurance companies to set insurance premiums and even settle claims faster The potential of data collected from hundreds of thousands of trucks crisscrossing the country is tremendous, especially as it could power the evolving field of self-driving technology. According to the 2018 Third-Party Logistics Study - The State of Logistics Outsourcing, companies such as Paccar, Daimler, Volvo, Waymo and Otto are all in various test stages to bring self-driving trucks into circulation. The business potential is enormous as only 2.5 percent of shippers, and less than 2 percent of 3PLs say they currently use autonomous vehicles. In the near-future, however, 27 percent of both shippers and 3PLs say they will be using the technology in some forms. The future will see the introduction of much needed transparency, efficiency and control into transportation equipment. The day may not be far away when the only vehicle driving without an array of technology solutions will be Santa's sleigh!

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Navigating Media Workflows Smartly: Importance of Intelligent Media Platforms

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/intelligent-media-platforms.html ----- Insights AI/Automation Hollywood films are one of the most popular choice of entertainment across the world. In the not so distant past, viewers outside the US had to wait for months to see the new blockbusters in their local theaters. Additionally, non-English speaking movie goers could not enjoy the shows because content was not dubbed or subtitled in the local languages. In contrast, today we have releases on the same day and date, spanning across geographies and available in more than 50 local languages, not just in movie theaters but on several new digital channels like Netflix, Hulu, Amazon Prime, YouTube, etc. The Changing Media Landscape Content anywhere and at any time is the new normal. This means creating a new format for every distribution channel and plethora of devices used to consume that asset. With the exponential increase in content production and increased focus on personalization and localization, the huge

amount of content in the supply chain has challenged the current media processes and systems. The presence of multiple stakeholders and disparate technologies in the media production and distribution network adds further difficulties. The current landscape is mainly composed of small niche players, providing focused solutions in the supply chain that covers both technology as well as services. There is a need for intelligent content management, automated workflows and synchronization between different players in the ecosystem. Today, content creators are engaging directly with end customers (D2C). Most studios are building their own Over-the-Top (OTT) services to provide engaging customer interaction, by delivering context specific and targeted content, merchandize and relevant ads. Since monetization of customer preferences and sticky experiences is a new and compelling focus, there is tremendous emphasis on providing immersive user experiences to promote engagement with the content and brands. There is a need to capture, analyze and monetize data about the end customer and convert them into fans. An Intelligent Media Platform for Smart Digital Workflows Given the federated nature of the content processing ecosystem the current time from script to screen for global content releases in local languages is several months. Intelligent systems that can identify the changes in content between different takes and automate the localization via machine learning algorithms can be a huge enabler. Such intelligent orchestration platforms also link all the players from content production to distribution and hence provide a platform where content can be produced or reused efficiently (reducing overall costs) and monetized optimally (subscriptions, contextual advertising, automatic ad insertions etc.). This could make content releases on a global scale possible within few weeks of production. An intelligent platform can provide a fabric of automation across all the media workflows with the power of AI and machine learning and enable content creators/distributors to adapt to voluminous increases in content while driving efficiencies and lowering costs. Some key capabilities of include an integrated solution include: The Customer Centric Cognitive Future, Leading with Voice The media industry is driving towards cognitive learning to understand, formulate, and monetize not just customer actions but also perceptions and motivations, the first step to providing a more "human like" experience is the evolution of touch enabled text and graphical interfaces used by customers to more Natural Language Processing (NLP) powered voice interfaces. The furious transition from graphical user interfaces to voice enabled assistants and the intelligence from machine learning and AI engines are presenting customers with more personalized, relevant, and contextualized results when they search within the content. Data about customer traits can be used to target them with relevant/related merchandize and ads. Voice activation in the media supply chain supports good customer engagement due to ease of use and preferential results, enables AI enabled smart workflows and reduces production budgets by enabling reuse of content. Many new technologies are working towards automating the generation of metadata from content to provide the foundational structure to activate voice and other advanced cognitive interfaces. Much work is being done in the field of Ontology, of understanding relationships and contexts between objects, humans, locations, etc. within the timeline of the content to present smart responses to customer requests or queries. In summary, an intelligently woven technology framework uses voice activated smart workflows based on Media

Ontologies and incorporates machine learning/AI to automate workflows across different tools used in the M&E space and hence provides the following benefits. =====================

Is Your Enterprise Ready For The Growing AI Opportunity?

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/is-your-enterprise-ready-for-the-growing-ai-opportunity.html ----- Insights AI/ Automation 'Digital' has been pushing enterprises across industries to relook and reinvent themselves. Let's take the example of the launch of Jio, a mobile network operator in India. It has technologically leapfrogged traditional investments in 2G and 3G networks, to create an operating model that offers dramatically different products to customers at a fraction of the cost that it would take traditional telecom companies. So how can enterprises compete in this disruptive marketplace? Artificial intelligence (AI) has come to establish itself as one of the enablers in a number of industries such as banking, retail, healthcare, manufacturing and telecom. It has become a competitive differentiator, and enterprises are now asking if AI can help them go a step further from being 'the solution', to helping them 'identify complex problems worth solving'. Recently, Demis Hassabis, CEO of Google Deepmind, pointed out that "If we can solve intelligence in a general enough way, then we can apply it to all sorts of things to make the world a better place," Consumers are embracing digital and rapidly adopting the large number of products and services being made available. Do enterprises have a choice then but to reinvent themselves to remain relevant in this environment? The opportunity lies in finding the right problem to solve The AI opportunity can be found in where data analytics, machine learning and robotics are heading. According to industry reports, 45% of trading is done electronically. During its peak days in early 2000s, Goldman Sachs had approximately 600 traders in New York buying and selling stock on behalf of the investment bank's large clients. Since then, auto-trading programs have taken over, learning and predicting better with every passing transaction. There are now just two equity traders doing the job. With this, financial institutions are keeping costs down while offering their services to larger numbers of people looking to plan their financial future. The benefits of this are obvious. The demand for energy can't seem to keep pace with supply. Machine learning techniques can be deployed to model the behavior of energy consuming devices and battery storage units. This enables energy grid operators to better anticipate demand and plan their access of renewable energy. Expanding internet connectivity and Internet of Things makes it easier to access data from anywhere, both from the physical and digital worlds. A number of AI techniques have already exited the 'testbed' and made their way into the enterprise world, especially in the healthcare industry. For example, KenSci a Washington-based start-up has created a risk prediction platform powered by machine learning that enables healthcare professionals to uncover various kinds of clinical, financial and operational risks before a patient actually falls ill. This could reduce the cost of healthcare. With AI on a growth trajectory, here are a few examples of

what it will do in the near future, across industries, As technology becomes cost-effective, AI has a stronger business case. In addition to its ability to uncover complex problems from data, the per head cost of some intelligent software robots is as little as one third the price of an offshore full-time employee and a fifth of an onshore full-time employee. As AI is propelled into a larger role in production, one needs to evaluate the implication of reduced human labor on the economy. The most recent debate on this topic was triggered when Bills Gates suggested that robots be taxed just like human workers and this earning be reinvested into reskilling of workers. AI is improving the quality of service, even while keeping it affordable. We are still pushing the boundaries of AI and it definitely presents enterprises an opportunity to serve larger populations but while it solves one problem will AI lead to the emergence of others? This is the new question we need to address. Read more articles on artificial intelligence and automation >> ======================

AI and Automation: Leading the Resurgence of Re-Engineering in the Enterprise

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/leading-the-resurgence-of-re-engineering-in-the-enterprise.html ----- Insights AI/Automation The key to surviving in a highly competitive environment has always been innovation. In the early twenty-first century, this took the form of enterprise-class software, namely ERP, CRM and SCM, which re-engineered the enterprise and led to the radical redesign of processes, structures and culture. Today, the technologies powering innovation are Artificial Intelligence (AI), robotics, Natural Language Processing (NLP), IoT, and more. Unlike the early twenty-first century, innovation is no longer incremental and linear, rather it is rapid, disruptive, and seminal. From smart manufacturing to predictive analytics for legal institutions, and from hedge fund management to advanced digital service providers in telecom, enterprises across industries are turning to today's innovative technologies to create near zero latency, hyper-efficient business models and to stay relevant in the market. As updates on the latest feat by these innovative technologies hit the newsstands, one cannot help but wonder just how smart will AI become? I suppose you wouldn't be surprised if I said, a lot smarter. AI, for instance, will not only be able to do increasingly complex tasks, but also interact with us just like another human would. Making this happen, of course, is data and it comes from you and me. People are increasingly living digitally-intermediated lives – through their digital assistant, smart devices, social media platforms, and even browsers. As AI accesses all this data and integrates it with machine learning capabilities, data lakes, cloud computing, robotic process automation, and mobile and voice interfaces, it becomes not just a toolset to an enterprise, but can also amplify human cognition by potentially taking the form of a friendly avatar or a coworker. Re-engineering of the enterprise The convergence of AI capabilities has the potential to not just push the boundaries of human experience, but to also

enhance human productivity, and even launch new business models. Pricing, speed, and quality are all immediate reputation risks for enterprises in the older world order, but with AI they finally have the tool to put the genie back in the box. For instance, a nerdy data scientist sitting in a dingy corner of an office can answer questions like how an enterprise can drive 20 percent growth in market share by better sensing and shaping customer demand and experience across digital channels, or how an enterprise can improve customer satisfaction by 15-20 percent by leveraging IoT for predictive maintenance, or how it can harness automation to accelerate revenue and cost synergies for an M&A integration. Powering this enterprise level re-engineering are millions of structured and unstructured data points which constantly scale and throw forth intelligent insights and knowledge that inform human and machine actions. The algorithm economy is also capable of extracting knowledge from one part of the enterprise and placing it in another, thus linking sectors and enabling them to learn from each other. To facilitate this re-engineering, cognitive solutions will continue being woven into the very fabric of the enterprise, transforming our ability to engage, experience, and influence our environment like never before. Another big positive: AI will create new jobs that do not exist today As the re-engineering in the enterprise gains momentum, jobs will be impacted and will have to be re-envisioned. This means enterprises will need to retrain their employees for new roles just how they did it at the onset of the industrial revolution. Employees will have to abandon tasks that are repetitive and reskill to do those that require creativity, leadership, critical thinking, and innovation. Here are some of the new jobs employees will have the opportunity to do in the near future. Training AI systems: To understand nuances in speech, such as detect sarcasm, match payments to invoices, or develop an algorithm to be 'fair' even against the backdrop of cultural nuances. Determining the need to deploy AI: Assessing the business impact of using AI algorithms and becoming context designers to enable smart business decisions. Evaluating: The cost of poor machine performance, including non-economic factors as an automation economist. Even as machines are doing increasingly complex tasks, and humans are being called upon to re-envision work, AI is unearthing customer knowledge, assessing scarce resources, and finding profitable adjacencies. As in the case of Amazon which not only leads an exceptionally profitable online business, but much to our surprise, branched out into the store model as well. The enterprise is being re-engineered with AI and automation. The endeavor is to simplify customer experience. The question to every enterprise is, are you ready for this zero latency, hyper-efficient business environment? Read more articles on artificial intelligence and automation >> =====================

Telecommunications: Futureproof OSS/BSS Functions

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/leveraging-technology.html ----- Insights AI/Automation Communication Service providers (CSPs) are faced with a barrage of challenges that include

ever- changing customer needs, commoditized traditional services, non-traditional competitors, need for business agility and new regulatory mandates. On the other hand, there have been technological and architectural evolutions with Cloud, Open Source, Microservices, Open API, Software-Defined Networking (SDN) / Network Function Virtualization (NFV), 5G, AI, Machine learning & Automation, IoT, and Blockchain that provide new opportunities to offer digital service bundles, support new business models, enhance collaboration with partners, bring in operational efficiencies, and find new ways of working to demonstrate agility. To address the challenges, service providers or Digital Service Providers (DSPs) have embarked on a digital journey to bring in agility, enhance customer experience, bring seamless zero touch flow from customer engagement to Operations Support Systems (OSS), Business Support Systems (BSS) and Network Management Systems (NMS) and other digital eco-systems with the mentioned technology levers for innovation, collaboration and new revenue streams. Unfortunately, legacy IT systems for BSS, OSS, NMS in many cases can handle primarily traditional telco services and are not geared up for new age digital services. Let us look at how to evolve existing BSS, OSS and NMS in order to make them future proof. Guiding Principles for BSS, OSS and NMS Evolutions As telecom companies move towards a digital future, building a strong core network and an agile BSS/OSS with the right digital technologies, will revolutionize the industry and the experiences it can deliver to its customers. Click here to know more about how can we build the environment that will help bring automation and AI to BSS & OSS =====================

Linking Customer Experience and the Supply Chain

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/linking-customer-experience.html ----- Insights AI/Automation Retail marketing teams can work hard to build and polish an organization's reputation and create strong relationships with shoppers. But if their promises are not kept by the operations staff, that investment is wasted. Slow delivery or badly-timed shortages can have lasting consequences. That makes speed, accessibility and traceability as critical to success as product design and quality. Retailers increasingly appreciate the competitive advantages provided by new digital supply chains as they connect retail stores with consumers, manufacturers, suppliers, distributors, franchisees and employees. When done correctly, forecasts and actual sales closely match. Further, a supply chain sense-and-respond capability equips retailers to predict demand and influence consumption, while avoiding inventory obsolescence. Modernize the core Omnichannel operations require retail enterprises to develop an intelligent core powered by cognitive technologies such as robotic process automation, machine learning, natural language processing and artificial intelligence (AI). Smart workflows, digital assistants, geofencing, radio frequency identification and blockchain simplify management of dynamic global supply chain networks. Infosys took into account those factors when it developed its Live Enterprise Suite, which

seeks to create an algorithm-driven supply chain that optimizes resource utilization and strives for zero latency across the retail network. The goal is to predict customer orders, delivery time and logistical issues, and recommend a course of action for faster and easier order fulfillment. End-to-end process optimization, automation, and AI-driven logistics and warehouse operations minimize human intervention, ensuring supply chain efficiency at both e-commerce and hybrid stores. In addition, cloud-hosted solutions provide real-time visibility into products, orders and delivery schedules. This allows businesses to better align supply and demand by eliminating bottlenecks causing service delays, expanding the capacity of distribution and fulfillment centers, and optimizing inventory management. Ultimately, that enhances the customer experience, which is an increasingly important goal for organizations. Transform fulfillment An assessment of the supply chain network can uncover opportunities to take advantage of automation and economies of scale, which can rationalize costs and improve service levels. Significantly, it aligns demand and capacity management, and repurpose spare store capacity into warehousing centers. Further, fulfillment transformation programs empower brick-and-mortar retail stores to offer the aggressive delivery timelines demanded by e-commerce enterprises. However, improving fulfillment capacity alone cannot sustain revenue growth. Such programs should integrate the order management system, product item master, and financial solutions. It is also supported by supply chain analytics and data-driven risk mitigation solutions for sustainable business outcomes. Rethink retail A perpetual inventory system lets a retailer like Nordstrom offer a consistent multi-channel shopping experience while realizing top-line growth. It customizes inventory based on customer preferences collated from social apps and campaigns. Omnichannel marketing strategies are integrated with the global inventory management system, which allows customers to verify the stock position prior to ordering. The system ensures prompt fulfillment of orders, whether placed through social media, the Nordstrom website or mobile app. In another part of the retail system, 7-Eleven uses business intelligence dashboards to identify trends in customer demand. The retailer undertakes cloud-based visualization and advanced analysis for accurate supply chain planning and inventory management, which increases sales as well as enhances the store experience. Approaches like these are within the reach of organizations worldwide. Businesses should adopt algorithm-driven supply chains that can optimize resource utilization by accounting for the convergence of marketing channels as well as non-linear demand. New systems can predict customer orders, delivery times and logistical issues and recommend a course of action for faster and easier order fulfillment. These kinds of advances are no longer technological luxuries but business necessities. Join us at NRF 2020, from January 12-14, 2020, in New York City, to understand how we are driving hyper-productivity with a cognitive supply chain. =====================

Leveraging Artificial Intelligence & CE to create machina economicus

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/ machina-economicus.html ----- Insights AI/Automation Dr. Martin Prause on how Computational Economics and AI are changing business Computational economics (CE) is a discipline that uses computer-based economic models to solve analytical and statistical economic problems. In this insightful interview, Dr. Martin Prause explains how CE and Artificial Intelligence can be leveraged to create machina economicus. With real-world examples of the applications of CE in today's business landscape, he also reveals how AI can play an important role in improving business simulations. Q Could you connect the dots for us – artificial intelligence (AI), computational economics (CE) and building 'machina economicus'? A The quick and dirty answer is: CE is the application of AI methods to economics. Computational economics (CE) resides at the intersection of economics and computation. To understand how CE and AI connect with machina economicus, we must first know that the present economic theory is based on a set of assumptions, which are: These assumptions about human behavior create the construct of a species known as homo economicus, the 'economic man'. While these assumptions do not accurately represent how humans behave in the real-world, they are necessary to define an analytical model to work with. AI researchers aim to construct a synthetic homo economicus known as machina economicus, (also described as the perfectly rational machine.) A recent article by Parks and Wellmann explains how AI can mimic the homo economicus if it can align perceptions, outcome preferences, and actions to come to a decision under uncertainty. Now, computational economics has two primary economic applications for businesses today: Example: You wouldn't care if the GPS navigation system in your car calculates a route that takes just one minute longer than the optimal one. A recent article by Parkes and Wellman explains how AI can mimic homo economicus if it can align perceptions, outcome preferences, and actions to come to a decision under uncertainty. SOFT COMPUTING TO SOLVE ECONOMIC PROBLEMS: Soft computing refers to a set of nature-inspired computational methodologies such as evolutionary algorithms, swarm algorithms and artificial neural networks that solve real-world problems where traditional approaches are not efficient. This is because in many cases, it takes an exponentially long time to compute an optimal solution and the margin of benefit between the second and the optimal solution is, quite often, minor. Therefore, we can safely make do with approximations. In the business world, soft computing is used in the iterative process for high-frequency trading markets where trades or investments are done within milliseconds. Here, an optimal solution to determine the best portfolio or to forecast the financial markets cannot be calculated efficiently, hence, an approximation is the next best option. COMPLEX SYSTEM MODELING TO UNDERSTAND BEHAVIOR: A complex adaptive system (CAS) is a system where 'agents' autonomously interact with each other. Simply put, an agent is a unit that senses its environment, follows process rules to react to the environment

and its internal state, and propagates its result to other agents for interaction. The main advantage of CAS over traditional analytical systems is the study of how specific phenomena emerge. As CAS is self-organizing, it allows non-linear behavior to emerge depending upon internal system changes as well as environmental changes. Agent-based modeling (ABM) is a specific type to model a complex adaptive system to study the economic dynamics, i.e., how agents behave, providing a better understanding of the system. It does not focus only on outcomes – rather it focuses on how the outcome materializes. In other words, it is a methodology to study behavior. ABM can be used in social networks to simulate interactions, consumer behavior, word-of-mouth advertising, innovation diffusion, etc. Generally, ABM is used to generate what-if scenarios for companies and governments seeking to establish policies, regulations and forecasts. In the words of Arthur Samuel (1959), artificial intelligence is the "field of study that gives computers the ability to learn without being explicitly programmed." Taking a helicopter perspective, AI consists broadly of three fields: knowledge representation and optimization, automated analysis of data, and learning (i.e., machine learning). What is the link between CE and AI? First, from a theoretical view, CE and AI use the same methods to solve problems. While one is tailored to economic applications (CE), the other is not tailored to any application (AI). Second, from an application perspective, AI can enrich agents in complex adaptive system modelling. Thus, agents gain cognitive abilities to match to increase real-world representation. In summary, thanks to CAS, we can study not only equilibriums or specific outcomes but also how they are formed. Additionally, if the agent's behavior mimics human behavior closely, the micro and macro dynamics can be better understood. Example: There were many publications that tried to assess the impact of Brexit and the recently discontinued Transatlantic Trade and Investment Partnership (TTIP) on foreign direct investment (FDI). Q How can AI be incorporated in business simulations and how can this help companies deal with complexity and uncertainty? A Business simulations are computational simulations that mimic companies and their strategic environments such as internal views, competitors, customers, suppliers, and PEST -– political, economic, social, and technology aspects. In education, such simulations are used to teach how all business elements are connected. In industry, they are used to conduct what-if analyses using appropriate assumptions and simplified models of the real-world. There are many systems in place that give companies different views: ERP systems give an internal view, CRM and digital marketing offer an external view and competitive intelligence systems provide perspectives on the strategic environment. If the information provided by these three systems is aggregated and fed into an appropriate model, it is can be used for scenario analysis and market forecasts to align strategies across all business units. So the key question for business leaders is: Can my company define and execute a strategy consistently and coherently in this environment? A book called 'The Second Machine Age' (2014) by Andrew McAfee und Erik Brynjolfsson talks about how data generation and usage will increase exponentially in the near future, particularly if machines can train themselves to get better instead of just learning from the past. Digital systems move at a faster pace than other systems in society, adding to the complexity and uncertainty. The cognitive and heuristic shortcuts humans use to cope with constraints that are prone to discrepancies with objective reality: Here, AI comes into play when it

leverages the agents of the machina economicus paradigm in a business simulation. First, one can study the dynamics based on more advanced models. For example, instead of using the analytical supply and demand model, consumers and suppliers can be represented as agents with desires, objectives and cognitive capabilities. This could help to demystify the complexity and uncertainty of the company's environment. Second, to conduct a sound what-if study, hundreds of assumptions have to be tested. Therefore, thousands of simulations have to be tested. Thereafter, we must identify patterns and study the outcomes. This is where machine learning comes in to identify patterns of dynamics and correlate them with outcomes. The next step is to relax some of our earlier assumptions in the homo economicus model, thereby making the outcomes closer to reality where human beings are subject to cognitive biases. Human decision making in daily life or professional business is subject to lack of information, processing time, and limited resources. Once models can also account for this systematical error, businesses can achieve a better understanding on how should they approach their suppliers or how should they plan their marketing campaigns, etc. Example: Daniel Kahneman and Amos Tversky (1973) demonstrated that humans use shortcuts to cope with these constraints and that these cognitive representations and heuristics are prone to a systematical discrepancy to objective reality. Q What are the ways in which AI can be used for a company's business model and decision-making process? A Let's move away, at least temporarily, from the idea that AI is a cognitive, super-intelligent, artificial processing unit and instead focus on the AI methods, i.e., knowledge representation, learning and optimization. Today, the market for AI applications is very fragmented and there is a lot of buzz around this approach. However in most cases, AI refers to some form of machine learning or soft computing specific tailored to a particular application. In fact, many companies/startups in the European market are promoting AI methods across the value chain, and they primarily use either optimization techniques or machine learning. In contrast to the tailored use of AI methods, there are also leading players who are already working on a machine with the capacity to learn "the way a baby or an animal does". This is interesting because this machine is actually learning "by observing the world" and not simply by being trained. This approach closes the loop and aggregates the elements of knowledge representation, learning and optimization to support a wider range of applications. Some examples: For each element, there are multiple solutions. Q AI has also precipitated concerns for businesses such as job automation, fooled AI, etc. What are the pitfalls and how can businesses avoid these? A Let me elaborate on some of the basic concerns that hinder the acceptance of AI: FEAR OF LOSING CONTROL ON DECISION-MAKING: Humans are subject to many cognitive biases and machines can easily exploit these. Do you think that we have free will when we navigate a website? No; the components in a well-designed website are placed to achieve a certain goal. There are other fears: Machines can easily use framing or anchoring techniques to influence our behavior or machine-learning systems may use people's digital trails and incorporate undisclosed traits into their own decision-making. NON-TRANSPARENT USE OF DATA: Eric Horvitz and Deirdre Mulligan highlight that Social Network posts can be used to determine if a person has depression. While this is good to help us initiate treatment for that person, groups with vested interest can secretly use such data against this person.

UNCERTAINTY OF THE DECISION-MAKING PROCESS: The use of machine learning is increasing, yet organizations lack understanding of how computers arrive at decisions. Is the machine programmed to be biased towards a specific company goal? How does the machine resolve ethical dilemmas such as the much debated trolley problem UNANSWERED LEGAL QUESTIONS: Who becomes responsible when the outcome of a machine is not aligned with the law or cultural standards? What if an AI-controlled traffic signal learns that it is more efficient to change the light one second earlier than was previously done? While this may be more efficient, perhaps it can lead to greater accidents. Q How do we avoid those pitfalls? A One approach is to establish standards that are accepted by society. Just as car manufacturers have to adhere to specific norms to sell their cars, AI designers and developers should also adhere to specifications and follow norms on how decisions are taken, although this is a difficult approach as there is no one definition of AI. Nevertheless, some organizations such as OpenAI, are already heading in this direction. Even the legal and governmental system should adapt to the rise of AI in daily private and business life to purposefully regulate the use of data.
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Making Automation Intelligent

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/making-automation-intelligent.html ----- Insights AI/Automation Business Challenge A financial services company's applications had a very complex support environment, with over 140,000 emails needing to be analyzed and followed up on every week by a 24*7 team of over 76 people. Infosys View AI-enabled intelligent automation ensures expected outcomes of efficiency while also guaranteeing transformation of common business processes and enabling workforce to focus on higher-value work. Business Outcomes And more... Read about the client benefits and the 5 best practices drawn from this engagement. ======================

The Way to Boost AI Adoption is through Micro Applications

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/micro-applications.html ----- Insights AI/Automation Getting on the AI bandwagon is undoubtedly an aspiration for almost every organization. A prominent research firm has predicted that by 2022, as many as 40 percent of customer facing employees and government employees will consult some form of AI for decision making. While the forecast looks extremely promising, the truth on the ground is that enterprises are dealing with numerous challenges when it comes to AI adoption. Very few enterprises today can claim to be in a mature state of Artificial Intelligence (AI) adoption. In fact, several enterprises are even unsure about how to get started on their AI journey. Understanding the AI Journey – from Deterministic to Predictive to Cognitive Typically, the AI adoption journey

goes through an automation continuum that goes from deterministic functions moving to the predictive and then to the cognitive stage. Deterministic is centered on automation of repetitive processes to improve productivity. This is the gateway to full-fledged AI adoption. As organizations mature in their AI competencies, they consider analytics-driven operations to predict failures and proactively avoid business disruptions. Finally, they move to maturity with the adoption of cognitive abilities to leverage data to derive evolved patterns for making better business decisions. It is important for organizations to understand where they stand in their AI adoption journey as it is the starting point for them to define their AI objectives. This would help them take the next step of understanding their current capabilities, assessing their requirements, finding the right vendor and managing the change. Every organization has a different AI maturity level and every stage requires a different approach with respect to planning, execution and management. Questions around strategy, business, technology, and employees need to be answered, for example, whether a transformative approach is better than an incremental one. What are the problems that the enterprise wants to solve using AI? Should one build or buy? What change is required in the culture of the organization to handle the change? Finding where an organization fits in the continuum thus becomes an important step to creating the right strategy, evaluating and choosing the right solutions, strengthening governance for execution and managing organization change. This also helps to continuously discover new opportunities as the client scales up, provide the right ecosystem and implement contextualized solutions. The AI Journey is not Free of Challenges While most enterprises appreciate the importance of AI adoption, they hesitate due to the perceived complexity, potential disruption, and legitimate hindrances. One primary challenge, for example, is that most organizational systems and processes run in siloes with duplication of data across systems. Organizations don't have a way to derive any compounded advantage from all their data. Secondly, some enterprises simply lack the data, expertise and infrastructure required to build AI functionality. Besides, the pace of change in technology is high and implementation often disrupts the existing foundation of the organization. And after all this, business outcomes are often hard to map since measurement is a challenge. The lack of adequate explainability in AI decision making can also be quite disconcerting. That being said, enterprises do see the power of AI and its potential impact on their organizations. In a recent survey titled 'The Path to AI' that we did at EdgeVerve with AIIA, 37 percent of respondents said they would like to implement AI in operations and customer service. Another study titled 'Leadership in the Age of AI,' conducted by Infosys and a Market Research firm across seven countries, asked organizations about the strategic advantages that AI is producing across industries. 45 percent picked process improvements while 40 percent said they expected productivity gains due to IT time spent on higher value work. Mitigate the Complexities of AI Adoption with Microservices One key way to breach some of the AI adoption challenges is to make it possible for businesses to consume AI without complexity. The answer lies in AI-powered micro-applications. These are point solutions that are plug-and-play and deliver specific business outcomes. The key is that these solutions should be easy to deploy and use and must not require specialized AI skillsets. These need to be designed as over the top (OTT) solutions that can integrate seamlessly

with existing systems while removing data siloes. In general, there are three types of data that need to be analyzed to get useful insights – the first is data from internal systems, the second is external or third-party data, and the third is the vast pool of public data. An AI-powered business app isn't just another system of record; rather, it is a system of innovation that can pull from all these three sources to give credible insights. This approach to AI-powered microservices is something that we follow as well. Our concept of the business app is centered on the Infosys Nia platform. All our apps are built for AI on this platform. It includes a data layer as well as data adapters to hook on to existing systems of record or other data outside the data. It also has an advanced machine learning framework, a natural language processing piece, and advanced analytics. The complexity, however, does not percolate down to the user level since the user can access the service through a specific business app, whether for Sourcing and Procurement, Demand and Fulfilment or Finance. So, the user is not consuming a platform, but rather, just addressing a specific business problem through an app that is powered by AI. EdgeVerve's suite of Business Applications is extensive and integrates easily with existing IT infrastructure. A great example is a large American pharmaceuticals and consumer packaged goods manufacturer that was dealing with issues such as multiple complex systems, a big support staff, high cost of system overheads, and business processes that were not standardized. The organization implemented Nia Guided Buying that encouraged self-service and increased system adoption through a simple and intuitive user experience. The solution sits on top of existing systems and standardizes processes. The solution has helped the company increase catalogue adoption from 35 percent to 77 percent. It also reduced transactional cycle time, improved productivity and increased compliance. As demonstrated, adopting AI-powered micro-applications can be a great way to derive the humungous benefits of AI, while mitigating some of the complexities. =====================

Modernizing for the right price

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/ modernizing-right-price.html ----- Insights AI/Automation Business Challenge An auto manufacturer in North America wanted to modernize the application used to set up the pricing and product configurations of models and accessories. The existing application was complex, difficult to maintain, and heavily dependent on mainframe databases. Infosys View In the absence of bold, net-new investments in technology systems, legacy systems can be optimized and modernized with automation and tools for business rules extraction and migration. Business Outcomes And more… Read about the client benefits and the 5 best practices drawn from this engagement. =====================

Capitalizing on Big Data With AI Models to Renew Logistics

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/moving-goalposts.html ----- Insights AI/Automation Artificial Intelligence (AI) is going mainstream because of two parallel events – unprecedented availability of computing power and business outcomes from analyzing big data. This article explores how AI models capitalize on big data to reinvent logistics. Logistics accelerates the movement of goods and provides a fillip to global trade. Logistics enterprises can ensure the smooth flow of commodities and finished products over land, sea, and air. These enterprises function in a borderless world, connect the dots between the central hub and spokes, streamline processes, and ensure that business users are empowered to make timely and informed decisions for logistics to function with clockwork precision. The catalyst for this synchronicity is the voluminous data harnessed during the journey of goods from origin to destination. However, enterprises face situations such as shipments that are misdirected, stuck in transit, or that cannot be traced. Machine learning can convert this logistical challenge into an opportunity. In fact, the compounding effect of big data and AI can create hyper-efficient logistics enterprises operating in a smart ecosystem. Remote sensing, the Internet of Things (IoT), telematics, and geospatial mapping embed information into products and the vehicles transporting them – the origin, destination, journey, and recipients of goods. So the physical flow of materials across the supply chain leaves a trail of data – which is usually in an unstructured format and scattered across the ecosystem. This is a sweet spot for AI, which depends on large volumes of data to extract knowledge and learn through self-analysis. The logistics industry can use AI tools to integrate data from diverse sources, devices and systems, and distill business insights, letting them evaluate how road, air, rail, and ocean carriers, freight forwarders, third-party logistics (3PL) firms, and logistics enterprises make informed decisions and operate more profitably. Last mile efficiency Route optimization rationalizes the cost of last mile delivery, which is a significant overhead in logistics expenditure. AI algorithms can leverage historical trip sheets and real-time statistics to estimate the delivery time for each shipment. Continuous analysis improves the accuracy of projected delivery. Data-driven operating models are already helping food distributors such as Sysco, retailers such as Wal-Mart and Tesco, and logistics providers such as UPS, DHL and FedEx provide same-day delivery – the Holy Grail in B2C logistics service. Schmitz Cargobull, a German trailer and truck body manufacturer monitors maintenance requirements, cargo transported, and delivery routes of trailers to minimize vehicle breakdown. AI platforms optimize the route of every delivery vehicle in real time. Streams of geographical, environmental, traffic, and shipment data are correlated with designated delivery time windows and vehicle information to sequence delivery and generate the best delivery route for each shipment. The next best point of delivery or a modified route is calculated based on constraints / events, and displayed on a live map. The most optimal delivery route is shared with the driver via the onboard navigation system of the vehicle – during the journey. Data-laden dashboards help logistics facility managers

take informed decisions by monitoring the performance of drivers, specific facilities, and the enterprise networks. Real-time visibility into key performance indicators such as units moved per hour for each category of product / parcel / pallet, average vehicle speed, and total travel time, help benchmark and improve service planning. Network optimization Since omni-channel marketing is a business imperative for enterprises, the location and layout of warehouses need to be reoriented for anytime, anywhere delivery. Big data helps enterprises, government agencies, and lending and economic development institutions determine the location of the distribution infrastructure. The World Bank is using big data optimization methods to develop a multi-modal transport network in India. Open spatial information helped create and validate a pilot model for identifying locations of multi-modal ports. AI-driven analytical tools help logistics providers aggregate customer demand and simplify distribution networks, while managing inventory. Intuitive systems optimize the distribution network and ensure smooth warehouse operations by instantly mapping capacity and availability of equipment as well as manpower with workload, and providing visibility across warehouse and transportation processes. An analytical approach improves stow accuracy and maximizes the usage of assets, including conveyors and rack systems. Logistics companies can improve productivity as well as resource utilization at warehouses and distribution centers by capitalizing on predictive AI algorithms analytics. Predictive maintenance of trucks, conveyors, forklifts, and trailers rationalizes warehousing and distribution costs. Real-time data from automated materials handling systems and equipment in the facility enhances operations of large warehouses. Optimizing the route for clamp trucks and forklifts handling inbound and outbound cargo expedites movement, saves fuel and ensures safety. Amazon uses big data to manage 1.5 million items sold through a complex network of fulfillment centers, redistribution centers, regional sortation centers, delivery stations, and Prime Now Hubs. Freight consolidation AI models offer insights into products, volume and number of shipments – by location, customer, season, mode of freight, preferred delivery timeframes, and transport prerequisites such as ambient temperature or humidity. It helps logistics enterprises consolidate shipments to reduce transit time, control costs and improve customer service. Significantly, it maximizes capacity utilization despite variability in demand for B2B and B2C shipments. Small parcels can be converted into Less-Than-Truckload (LTL) shipments, and LTL freight into minimal stop truckloads. Advanced logistics applications integrate simulation and AI to help logistics service providers implement cost optimization strategies. Damage claims can be analyzed across delivery routes and modes of transport. It supports rate negotiations for high-risk cargo, and enhances damage mitigation approaches. Rules-based AI solutions detect fraud and errors by tracking supply chain events and documents. Avnet, a small-parcel distributor of electronic components, leverages more than 250 million data values from 5 million annual shipping transactions to identify carriers presenting invoices with errors, and analyze spend to defer delivery and save costs. Resource utilization Automated systems track pickup and delivery orders, job schedules and crew availability to assign work, manage the fleet and streamline the logistics network. Machine learning systems deliver long-term value by predicting constraints in the ecosystem and mitigating process bottlenecks in real-time. AI rules evaluate job priority, cargo type,

weather, traffic, and resource capabilities to make business decisions about movement of freight. Load pooling rationalizes pricing as well as the cost of operations. In addition, it helps air, land, and ocean logistics service providers maximize resource utilization, including manpower, cargo handling equipment, transport vehicles, and space. Self-learning systems and AI frameworks will be an integral part of logistics solutions even as autonomous vehicles and drones used in last mile delivery alter the distribution landscape. An AI resource allocation engine optimizes daily schedules and manages engineering as well as maintenance activities for rail lines in Hong Kong. In addition, the Hong Kong Airport Authority deploys an AI scheduling system to allocate parking slots to aircraft based on flight schedules and shifts in operational dynamics. Read more articles on artificial intelligence and automation >> =====================

An Open Source Approach to Maximize the Value of Automation

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/open-source-approach.html ----- Insights AI/Automation As organizations increasingly realize the benefits of automation, adoption is steadily picking up. According to Gartner, the robotic process automation software market is expected to grow by an enormous 41 percent year over year through 2022.1 Yet, for traditional industries that run on legacy or restricted systems, achieving modernization goals via automation is still a challenge. This is because these systems along with customized processes do not support new-age automation frameworks to fully deploy streamlined automations replacing humans with digital workers. This compels these organizations to remain heavily dependent on human workers for repetitive, low-value activities that can potentially be automated. This not only makes the process highly inefficient; it also leads to sub-par operations. For instance, in a fortune 500 company operating in power and heavy electrical equipment, due to lack of modernization, systems were being monitored manually, resulting in potential undetected outages due to human lapses. Similarly, in a leading international courier services company, lack of automated ticket escalation mechanism, was resulting in increased lead time for incident closure. A leading designer and manufacturer of mobility products, was relying on manual testing of their online catalogue, which was time consuming and potentially impacting time to market. In general, failure to automate can cause delays in addressing incidents, leading to reduced customer satisfaction. Lapses in monitoring can result in unplanned outages and hamper productivity. Manual testing adds considerable human dependency and increases time to market for products. Using human workers for repetitive and mundane activities is costly and results in sub-optimal use of human talent. The high reliance on manual processes also leads to scalability issues. Open source RPA framework One way to get digital workers without disrupting the core legacy systems is to opt for an open source RPA software. Open source technology by nature of its openness is highly adaptable to work with customized processes and applications. Additionally, they provide freedom from vendor lock-in, better

security and power of crowd for best-in-industry solutions. iOpsRPA, for instance, is Infosys' robotic process automation framework that is based on open source platforms and hence helps keep the cost to a minimum. At the same time, it uses the latest and popular open technologies to help drive greater customer acceptance. The digital workers created using iOpsRPA can impersonate human actions with great accuracy and repeatability. Such an approach for automation, can help create several benefits: With digital workers, from our experience, it is possible for organizations to achieve 100 percent automation on activities such as infra monitoring, customer ticket assignment and routing, and web testing activities. It can also result in a significant effort reduction in activities such as messaging queue processing and report generation activities for management governance. Additionally, it can streamline service requests and change requests fully via automated ticket creation. Of course, while RPA technology has advanced considerably, it still has its limitations. Digital workers cannot replace humans for complex decision-making activities. They, however, provide immense value by reducing the load on humans and freeing up their time for more complex decisions. For organizations it makes sense to have an open mind towards adoption of open source technologies based automation as part of their modernizing the core strategy. 1https://www.gartner.com/en/documents/ 3891486 ======================

Automation, AI and the Opportunities of Lifelong Learning

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/ opportunities-lifelong-learning.html ----- Insights AI/Automation While debates and discussions across forums are focusing on automation, costs reduction and job loss – the inevitable throes of massive transformation – we at Infosys believe in taking a deeper perspective, and rather look at the future that will be born out of this change. There are significant roles that stakeholders across the spectrum, from government, to academics, to businesses and non-profits, can play in collaborating to shape the skills and competencies needed to be successful. Infosys' strong tradition of learning and education has equipped us to adopt this approach of always looking forward to the innovations and skills of the future, and at the same time, has created a culture of lifelong learning, where every opportunity is new and provides growth. We believe the future need not be an increment of our past or present – and this time around, it could be a significant shift. The exponential rise of computing power at fraction of the cost, as well as rapid miniaturization of hardware that can correspondingly support this, are fundamentally making all of this possible – bringing about the onset of the age of automation and AI. While learning completely new kinds of skills at a faster rate will soon become the norm, it does not end there. The degree and intensity of the current technological advancements are extraordinary, beyond comprehension, and so along with the new skills, we must train our minds and inform our thinking with this possible future, by kindling our imagination, curiosity, and empathy – qualities that make us unique as humans. And through this, we will be able to find a larger purpose in this

brave new world that is being reshaped by technology. As machines progressively are able to do more and more of the mundane and repetitive tasks, our opportunity then becomes to train ourselves to look deeper and find those hidden problems that are relevant to a situation, rather than the ones that might be obvious at first. In addition, we are focused on training leaders for this exciting future. Leaders that learn how to constantly absorb new information and evolve. Leaders that embody and role model the behaviors of inspiration, amplification and synergy creation. Leaders that understand both technology and business but also the art and science of people and of leadership. This combination will enable us to shape a future generation of growth unlike any seen in the past. We are developing many tools to aid in our evolution at Infosys. For example, Design Thinking is a tool that can enable meaningful problem finding and problem solving. At Infosys, more than 130,000 employees have been trained in Design Thinking and their learning and knowledge has been instituted as a constantly evolving training module through our online learning platform as well as at the company's corporate university in Mysore. Our grassroots innovation movement, Zero Distance, integrates the principles of Design Thinking to be closest to our clients' needs and problems, to create purposeful solutions, and nudge ourselves out of the familiar comfort zones to see something that is not yet there – at the individual, project, and organizational levels. The Zero Distance initiative covers the majority of all our client projects today. Through such initiatives, we have been able to effect an organizational journey towards purpose, involving our clients, partners and the larger ecosystem. Businesses today have the unique opportunity to look beyond the topline and the bottom line, look up from their 90-day rhythms, and change the world for the better. Technologies such as automation and AI are a great opportunity to unshackle ourselves and rise up to the call of our times – to be more than our perceived abilities and to be more than what we think we are capable of, amplified by technological progress. Technology, in fact, enables us to be more human today – and that is the core purpose of our being. Whether it be the products and services we are designing, the companies we are building, the countries we are running, it is, and should be about being more – human. The recent launch of the North Carolina Technology and Innovation Hub — the second of four Hubs to be opened by Infosys — is part of our investment in the future of the U.S. tech workforce and will focus on these progressive technologies — artificial intelligence (AI), machine learning, user experience, emerging digital technologies, cloud and big data. The Hub will facilitate greater collaboration in key North Carolinian industries such as financial services, information technology, life sciences, clean technology, advanced manufacturing and more. We are proud to be developing entrepreneurial mindsets and deepening technological knowledge so that the focus of our work can be on building a bright future. This investment reinforces our strong legacy of learning and collaboration with our clients, partners and the larger ecosystem, and which today is helping us navigate some extraordinary times. Read more articles on artificial intelligence and automation >>
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Are People in Your Organization Ready for AI

Insights AI/Automation "I see the movement towards AI and robotics as evolutionary, in large part because it is such a sociological leap. The technology may be ready, but we are not – at least, not yet." – Geoff Livingstone, President of Tenacity5 Media As we adopt Artificial Intelligence (AI) and prepare for extensive automation of our industries, organizations and jobs for better revenue and efficiency, business leaders not only need to comprehend the intricacies of the technology but more importantly prepare well to answer questions around governance, employee engagement and people reskilling in an AI-enabled organization. In a market research commissioned by Infosys, 64% respondents stated that their organization's future growth is dependent on large-scale AI adoption, however, only 10% of them believed that their organization was currently maximizing the benefits of AI. Source: AI Maturity Index study polling 1600 IT and Business Decision Makers across seven countries (USA, France, Australia, India, UK, Germany, and China) in November 2016. Based on our experience with clients and a study of the pioneers, we believe a well-defined AI strategy must include organization change management as an important mechanism to prepare managers and employees both at the project level as well as at the organizational level to unlearn old ways of working and adopt to a more flexible, collaborative work environment through reskilling and upskilling. The three key elements to consider in an organization change management strategy are: Augment Leadership to Prepare for Tomorrow's Management Practices At the organization level: Every enterprise must develop an AI vision that its employees and leaders believe in. Leaders will play an important role in creating the right perception amongst employees about AI. Rather than view it as a threat, it must be seen as a tool that can amplify human potential. They also need to relook and redefine corporate ethics and code of conduct in view of the impact AI has on the various dimensions of an organization that include process, tools, culture and more. The four key management practices that the future managers need to adopt are: At the project level: Design thinking will play a very important role in bringing experimentation, empathy and in building models in a collaborative manner, enabling managers to dirty their hands by prototyping solutions that are built iteratively to discover failures faster in the lifecycle and achieve success with greater speed. Empower Employees to Build Confidence in an AI-powered Enterprise At the organization level: Employee orientation towards AI initiatives needs to begin at the ground level. While everyone realizes going the AI way is the way forward to growth in a digital world, the why and how of an AI strategy needs to be explicitly explained to everyone in the organization in order to align their individual activities with the bigger organizational AI aspirations. This will make employees see value in the work they do in the digital context. Employees should be encouraged to reflect on, define and build their future jobs in an AI-enabled organization by choreographing their own reskilling paths. At the project level: Adopting a scenario-based approach can build employee confidence and ease interactions between machines/

systems and human beings besides enabling testing and learning through pilot projects and proof of concepts. Redefine Jobs & Enterprise Architecture to Enable New Forms of Collaboration At the organization level: AI will flatten the organization and encourage seamless collaboration across functions where members from different business units will come together to solve new customer challenges in a flexible and fluid non-hierarchical set up. At the project level: New roles that can build, train and interact with intelligent systems need to be defined. Training employees to take up these new roles will become an organizational imperative. The Next Steps If you are working on AI projects or considering implementing AI in your organization, prepare yourself well with the following key steps: Are People in Your Organization Ready for AI =====================

CPQ – A Platform Built for Speed

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/platform-built-speed.html ----- Insights AI/Automation "Price is king" could be a truism, except it isn't always true. Working recently with a mobility solutions company, we identified its most important competitive drivers. Our survey of the sales team and distributors produced surprising results: Responsiveness ranked above product availability, competitive price, and strength of client relationship. Conversations with another client, which sells plumbing fixtures, found that turnaround time was the No. 1 driver of competitiveness. Facing greater competition and a challenging business environment, companies must respond quickly to customer requests for price or product information. That's particularly difficult when catalogs are tens of thousands of items deep. Companies increasingly look to configure, price, and quote (CPQ) tools to accelerate their corporate metabolism. These solutions use a guided approach to help a salesperson or partner rapidly identify the right product, configure options to match customer requirements, calculate a price based on those selected options, and create a quote for the customer's review and approval. Everything is presented in a user-friendly format. As a result, organizations can digitize the sales process, provide price consistency, offer cross-sell and upsell recommendations, and improve collaboration among internal and external parties. As CPQ tools become more powerful, they also help companies rethink their business models. CPQ solutions enable subscription-based models, product plus service bundles, and customer self-configuration. The traditional made-to-stock approach optimizes production but strains organizations' sales efficiency, particularly with a large variety of products. In response, many organizations deploy assemble-to-order, make-to-order, and configure-to-order strategies that address customer needs more precisely and improve conversion rates. These models require an application to capture configuration options for salable items, then route that configured item to an enterprise resource planning (ERP) system for manufacturing and fulfillment. This product customization usually is best achieved by a product configurator. As configuration drives pricing, the logic to calculate the price needs to link closely to the configuration logic and data. When the system is successfully implemented, businesses spend less time on manual configuration and also improve engagement and customer

experience. CPQ features While CPQ solutions vary, several core features are standard, including those in Figure 1. Almost all products: Figure 1. Conceptual representation of CPQ capabilities A well-implemented CPQ tool, together with a well-governed workflow, increases revenue and margin, improves sales productivity, reduces working capital, improves customer experience, and provides improved insights. Figure 2. The value a CPQ tool can deliver Infosys has found that these benefits are significant, but as with any IT implementation, there are pitfalls. CPQ challenges Businesses often struggle to implement CPQ tools when they are burdened with an overly complicated IT system. In too many companies, this includes multiple IT stacks, ERP systems, and customer resource management (CRM) systems. Major challenges include: Selecting the right CPQ platform Some of these barriers are overcome simply by choosing the tools best suited for the distinct characteristics of an organization. Companies now have many choices for CPQ platforms, and vendors continually update their features, so identifying the right platform for each company can be tricky. Organizations need to consider a number of factors [see Figure 3 below], including: Figure 3. CPQ integrations Due diligence CPQ tools deliver many benefits to a sales organization, including increased productivity, improved quote accuracy, and better pricing execution. All these improve net margins. However, benefits fail to materialize when there isn't enough consideration given to the user experience, technical architecture, implementation road map, and changes to sales behavior. We have seen clients reimplement solutions after just a few years, when complex process flows or substandard architecture design led to poor user experience. The companies that succeed in CPQ implementation create personas and journey maps; they understand the process key performance indicators and the thousands of available capabilities. That strategic thinking and exhaustive research in advance make the difference between generating new business and wasting effort. Gopalakrishnan Jayaraman and Gus Blessing, both senior consultants at Infosys Consulting, contributed to this report.
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AI/automation

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/ podcasts.html ----- Insights Artificial Intelligence: All That Businesses Need To Know Transforming Service Experience for the Enterprise Disrupting The Workplace, With Technology Insights Insights Insights
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Leveraging AI in Quality Assurance

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/ quality-assurance.html ----- Insights AI/Automation When it comes to digital transformation, most enterprises have a vision around customer experience, efficiency, agility and profitability that involves modernizing infrastructure,

processes and applications. Quality assurance (QA) is often an afterthought. However, every digital program invariably runs on the Agile development framework or on DevOps and translates to shorter release cycles with additional pressure to deliver quality code within much shorter timeframes. To help this, organizations plan for additional controls on the DevOps side and overlook the QA strategy. There is a need for change in the way quality assurance operates in organizations. Broadly there are two driving forces - agility in the way testing is done (continuous quality assurance) and faster time to market. For QA teams to keep pace with the agile mode of development, traditional test automation is no longer adequate, making AI in test automation inevitable. Testing organizations are being compelled to innovate with new and emerging technology solutions around automation. QA Automation for Better Business Automation in quality assurance has existed for years. However, the benefits of automation were not impactful enough for the business to sit up and notice. In the first generation of automation, the focus was largely UI-based and centered on regression. The goal was to build a framework that could accelerate automation using commercial tools. Automation evolved to include keyword-driven, data-driven and later, business process-driven frameworks that brought significant savings to clients. But the savings were limited largely to regression and did not make much difference to the business. The next wave of automation included the functional side of business in the form of API / middleware automation, test data automation and more. This truly brought the value of automation into testing activities, particularly test executions. The focus moved from UI-based automation to multi-tier / multi-stack automation that made an impact on efficiency and time-to-market. This wave of automation is evolving further with an increased focus on continuous testing. Test Driven Design (TDD) and Behavior Driven Design (BDD) are forcing integrated automation solutions to join the mainstream and are not limited to testers alone. Developers at unit test (UT) stage or businesses at the User Acceptance Test (UAT) stage are also using these automated scripts to test functionalities and save time. Testing has also expanded beyond black box (testing of functionality) to white box (testing the internal perspective of the system) resulting in better quality control of the code. Automation in the test execution phase is further evolving with wide adoption of open source automation solutions, Agile and continuous testing, third party system integrations and solutions around digital / mobile testing. Test Automation Trends With the availability of business process models and reusable test assets, automation is also possible in the test planning stage. This not only improves productivity but also helps in uncovering new learnings and experiences beyond. The Infosys Business Assurance Store is one such large 1m+ test case repository helping clients leverage our past experience of working on similar scenarios. Bringing AI into Quality Assurance AI-led cognitive automation solutions (Intelligent Automation) combine the best of automation approaches with AI and help bring superior results. The focus is three dimensional – to eliminate test coverage overlaps, optimize efforts with more predictable testing and lastly to move from defect detection to defect prevention. Today, organizations have better machine learning algorithms for pattern analysis and processing huge volumes of data that result in better run-time decisions. For instance, during a software upgrade, machine learning algorithms can traverse the code to detect key changes in functionality and link them to the requirements in order to

identify test cases. This helps optimize testing and prevents the making of decisions on hot spots that could lead to failure. Infosys PANDIT is one such AI-based testing platform that is helping our clients improve agility and predictability while optimizing efforts in testing by integrating AI in testing. RPA & Robotics solutions (bots) are typically being used for various automation needs that go beyond traditional testing activities. Organizations are building robots as testers to execute testing on physical devices like ATM, mobile etc. These robots can be programmed and controlled from remote locations and reduce the need for co-location. The future lies with solutions that will use deep learning fundamentals to build a true autonomous approach to testing. Like self-driving cars, autonomous technologies will help generate their own scripts for testing by learning through the system. Infosys Deep Assurance is an autonomous testing solution that brings the power of deep learning to QA. This path-breaking solution has the ability to self-learn and test applications without any documented test cases or human intervention, making it truly autonomous and intelligent. We are pioneering a strategy that applies AI to QA beyond test optimization and prediction of failure to prevention through autonomous technologies. This approach would lead to a huge reduction in overall testing effort and also reduce dependency on humans. Its inbuilt intelligence and self-learning capabilities make it a superior solution for identifying critical paths for testing and for increasing testing accuracy. The Autonomous Workflow Typically, most large legacy enterprises have huge investments in their core IT systems that need a significant amount of testing. It is estimated that the cost of testing in a typical enterprise is to the tune of 14% to 22% of the total support cost. The challenge is to strike a balance between the level of spend on testing and failure incidence. With Intelligent Automation solutions, organizations can reenergize their core and make every employee more productive in their day-to-day work driving optimal value and efficiency. =====================

Ubiquitous and Cognitive AI will Redefine our Everyday Experiences

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/ redefine-everyday-experiences.html ----- Insights AI/Automation Enterprises are using Artificial Intelligence (AI) to craft solutions that make smart decisions, amplify human creativity, complete high-precision operations, optimize costs, and much more. This article explores what AI is doing for the world, and how it will transform the future. Is artificial intelligence (AI) finally ready for prime time? I don't see a day go by where I don't hear of AI and its profound impact — part beneficial and part detrimental — to humans. To be sure, AI isn't new — ask anyone who has flown an airplane if they have turned on the 'autopilot' function during long flights. As it exists today, AI detects patterns and guides enterprises in making optimal decisions for workers, management, and shareholders alike. I like to think of AI as the result of a knowledge worker's relentless pursuit of automating

mundane tasks, exponentially improving productivity, and capturing and disseminating knowledge effectively, such that machines can amplify the worker's creativity and sustain competitiveness. Competition is key here. In the Knowledge Economy, we live in a global village where practically everyone can communicate and collaborate with each other. So in every industry, the use and sophistication of AI is what gives an enterprise a distinct advantage to amplify business services and products. In the near future, AI will be available everywhere — even if we're unaware of its existence while performing tasks on the floor of a retail outlet, or in the operating room of a hospital. Predictive analytics, for example, is helping retailers make extremely targeted promotions and advertisements based on a customer's buying behavior. We've all heard of (and maybe used) products like Google Assistant or Siri that constantly learn more about our desires and expectations. Software is learning about human behavior and predicting what our next actions will be. To this end, computers ask for permission sometimes, before making the next move; other times, they don't. Have you heard about a program called 'DeepText' coming out of Facebook's laboratories? It is a type of AI that can detect subtleties in human communication and actually display a level of common sense otherwise thought to be unachievable. For a social network, a platform like DeepText can anticipate what a consumer wants by analyzing their communications. It can perform tasks proactively rather than when told what to do, because it learns 'with near-human accuracy,' according to Facebook. We are now at a point where enterprises are writing algorithms so sophisticated, so advanced, that they can mimic human cognitive tasks. An American company called Agilent Technologies has developed an electrocardiograph that can estimate the probability of a patient experiencing acute cardiac ischemia, using its ability to learn more about the condition after every diagnosis. Better still, this smart device is 'time-insensitive,' meaning it has the power to predict whether the patient could develop ACI down the road and not necessarily during the moment of the test. Also, with nearly one billion people being either diabetic or prone to diabetes, AI-powered mobile devices will monitor glucose levels in the blood, and should they be too high, recommend courses of action with virtual physicians. Another medical breakthrough that is proof of such progress comes from ATL Ultrasound Inc. in Seattle. The company has developed a range of diagnostic ultrasound systems for imaging and monitoring cardiac tissue structures and their activity. How? By leveraging a machine learning algorithm that studies millions of parameters during an examination and eliminates frequencies that the doctor deems irrelevant. The patient's visit is thus far more efficient than it was before ultrasound systems could accumulate data and learn from each parameter. Thanks to strides in the field of artificial intelligence, computers now accumulate data and learn from us. Indeed, the act of building upon each day's accumulated experiences is the key to success in the Knowledge Economy, where growth is now dependent on the quantity, quality, and accessibility of available information. It's an economy in which artificial intelligence helps us leverage all that information in order to amplify whatever product or service an enterprise offers to consumers. AI is a tool that is becoming so useful and ubiquitous that it will soon become a kind of sixth sense. According to the creator of the 'SixthSense' technology — the scientist, Pranav Mistry — this latest incarnation of AI is a wearable, gestural interface that augments the physical world around us with digital

information and lets us use natural hand gestures to interact with that information. "Although the miniaturization of computing devices allows us to carry computers in our pockets, keeping us continually connected to the digital world, there is no link between our digital devices and our interactions with the physical world," writes Professor Mistry, who works out of the Massachusetts Institute of Technology. He observes, "Information is confined traditionally on paper or digitally on a screen. SixthSense bridges this gap, bringing intangible, digital information out into the tangible world, and allowing us to interact with this information via natural hand gestures. SixthSense frees information from its confines by seamlessly integrating it with reality, thus making the entire world your computer." A significant change in how we view AI-enabled devices is evident in how they are now being 'unbolted' from the factory assembly line. Machines equipped with AI software can serve as roving healthcare companions for elderly people, delivering medications in their correct dosages, and reminding them about their daily schedules. As a sixth sense, AI can simplify business processes and amplify the best in the human spirit. From deterministic automation to cognitive machine learning and software code corrections, today's businesses can use AI to identify new experiences as well as new products or services. A closer examination of the world of healthcare and transportation demonstrates just how profoundly AI is transforming the world around us. In both industries, AI is quickly evolving from 'machine learning' to 'deep learning.' Machine learning is the method by which a computer is programmed to detect patterns, and as a result, is able to predict actions. It requires human guidance to help it learn the rules and the information that it is expected to know. However, it is limited by a finite number of possibilities. Remember the computer that took on a chess champion around 20 years ago? Human programmers had the arduous task of programming every possible chess move and consequence into the computer. It couldn't learn chess on its own, and by all accounts, it took the programmers an unbelievable amount of time to prepare the computer. Today, AI is becoming so smart that it even plays a role in decision-making. In the field of image interpretation, a doctor can receive scores of different medical images that can be simultaneously identified by a single AI-enabled scanner. What used to take hours and even days in front of expensive X-ray devices, can now be accomplished within minutes. Think about how useful a complete assessment of a patient can be if a doctor receives everything from angiograms to MRI scans. This is certainly a situation where technology is amplifying human potential. Context-aware intelligence is ubiquitous and getting better with every passing day. A study, cited by Morgan Stanley, reports that 47 percent of jobs in America alone could be automated over the next two decades. It then goes on to state that at 98 percent, bank loan officers have the highest probability of seeing their job automated (which is really ironic, given that Morgan Stanley helped to disseminate the paper). The lowest? Elementary school teachers and doctors — both with a probability of 0.4 percent. Whatever the industry, AI-enabled cognitive machine learning is making its presence known. Just think of a medical school student, studying to be a surgeon. Although the study predicts that there exists only a 0.4 percent chance that AI-enabled cognitive machine learning will completely replace her job in 20 years, my opinion is that there is a 100 percent chance that the technology will amplify her professional talent. Even for a student, AI can anticipate the progression of skills a

would-be surgeon needs. That's what we call 'deterministic automation' — technology that learns from (in this case) a medical student's academic progress and helps with both the physical and mental aspects of the training. Surgeons, for instance, must know how to access and repair the human body. There's no reason why they can't be aided by computers that get smarter with every operation — not unlike how a student first becomes a resident in surgery and then advances to become a full-fledged surgeon after years of assisting in the operating room. Just think of the efficiencies gained by a complex operation requiring only one human surgeon instead of a team of four. The other three medical experts can thus be freed up to operate on other patients. The journal, Science Translational Medicine, reported how researchers programmed a robot surgeon to carry out a procedure called 'intestinal anastomosis.' This is a remarkable feat because the robotic arms that we've known for decades typically weld metal together on assembly lines. This medical robot, however, took a piece of intestine that had been cut open and stitched it back together with the utmost precision. Transportation is another industry perfectly suited for machine learning and purposeful automation. Just about every automotive company in recent times has announced a self-driving car development program. While some companies have arranged joint ventures with technology companies, others are confident of their own technological capabilities (alongside knowledge of what car buyers want and their extensive dealer networks) and have decided to go it alone. Google remains one of the non-car companies with longstanding intentions to build and market an AI-powered vehicle, with no steering wheel, accelerator, or brake pedal. The reason that it could build a vehicle with such a spare dashboard is because of its confidence in its deep learning technology — the same technology that helped Google's AlphaGo program beat the world champion in the complex game of Go. That computer never required constant human input when it played the human Go Master, which is vastly different from past computers of other companies, which had to be programmed with information in order to compete in chess or on game shows. The advantage of a neural network is that it's not unlike the human brain — becoming smarter and learning what it needs to as it continues to play a game or drive a car. Other self-driving programs take a different approach, outfitting cars with dozens of sensors that help a human behind the wheel. These are more like advanced cruise control features, rather than deep-learning neural networks. Car makers also know something that technology companies can't seem to grasp — people love getting behind the wheel of their cars and driving. It's a fun activity that allows for independence and escape from an otherwise ultra-connected world. What's certain is that when it comes to AI, everyone seems to be making strategic moves. According to the research firm CB Insights, large companies have purchased 31 AI start-ups since 2011 The consultancy, PricewaterhouseCoopers, has determined in a study with different metrics that companies have bought 29 AI start-ups this year alone, a trend that will eventually eclipse the 37 such deals that took place in 2015. Even Intel is moving away from its decades-long microchip specialty in order to focus its energies more on building data centers. In fact, the company recently acquired an AI start-up called Nervana Systems. The Intel executive who is spearheading its data center development wrote in a corporate blog post: "[Nervana's] IP and expertise in accelerating deep learning algorithms will expand Intel's capabilities in the field of AI." Not to be outmaneuvered,

Apple too has acquired Turi Incorporated — another AI company. In a seminal work by two Oxford University researchers, — a paper titled 'The Future of Employment: How Susceptible are Jobs to Computerisation?' — The very pace of cognitive machine learning's advancement is presented as an issue that all industries must address. For example, the paper cites another study from 2004 that makes the case for the makers of driverless cars having difficulties mimicking human reactions and thought processes. According to the 2004 paper, "A left turn against oncoming traffic involves so many factors that it is hard to imagine discovering the set of rules that can replace a [human] driver's behavior...." Today, however, many companies pursuing driverless cars have developed fully autonomous vehicles that do indeed learn much like how humans learn to drive. When the computer brain of a driverless car is indistinguishable from the actions and reactions of a human, we have the software engineer to thank. In the past, if the computer were a 'contestant' vying against humans on a televised game show, an engineer had to program a mainframe with every potential question and every correct answer. Now, AI itself possesses the cognitive talent of identifying and fixing software code; so, engineers can use their intelligence to identify new experiences and new products or services. AI is, incontrovertibly, on its way to become an incredibly useful tool that will amplify human potential. Finally, let's not forget that AI has serious commercial applications. While the technology is the stuff of Oxford dons, it also helps enterprises of all stripes make money. I can think of nowhere AI has more potential than in the world of retail. In every facet of merchandising — from a pair of jeans in a showroom to a container ship crossing the Pacific Ocean with tons of the latest fashion apparel — AI can see the smallest detail and the biggest picture simultaneously and roll all that data into simple, easy-to-use instructions about how to keep stores filled with just the right amount of merchandise as well as information about what merchandise will sell the best next season. For centuries, merchants have attempted to perfect the supply chain, but it is a complex affair! The world of fashion depends on the ever-changing tastes of consumers, alongside fuel costs to transport the merchandise, labor costs to sew garments together, and raw material costs involved in manufacturing apparel. AI has all these steps covered so that a human can be a warm and helpful greeter in a brick-and-mortar store. When it comes to online commerce, shoppers won't even know that they aren't dealing with humans. 'Life-like' is the goal of every software engineer as well as every retail client There will come a time when cognitive machine learning becomes so advanced that computers will become more than tools — they will, as experts have said, indeed become our sixth sense. They will be a part of us, of our daily existence. That's why, we will see communities coming to a consensus about how AI progresses. After all, humans have had rules for living together in a society for tens of thousands of years. We will, likewise, make regulations that govern the behavior of AI, spelling out what types of consequences there will be if those regulations are broken. The CEO of the Google-owned AI research lab DeepMind, recently said that the global community should have control over AI-powered machines that learn for themselves. I completely agree because setting up protocols for any new and increasingly advanced technology is a smart move for everyone involved. The establishment of guidelines is what we humans do when we want to focus and advance ourselves and our technologies even further. Artificial intelligence is going to amplify our

talents and abilities in ways we haven't even imagined yet — much to the delight of a growing enterprise. Read more articles on artificial intelligence and automation >> =======================

Reducing Audit Risk Through Artificial Intelligence and Automation

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/ reducing-audit-risk.html ----- Insights AI/Automation Publicly listed companies must comply with complex accounting and investor-protection regulations, and that landscape is not static. Governing authorities are continually adding regulations while also updating existing ones. That creates a huge task for organizations managing compliance in a single country. For multinational companies, the work becomes exponentially harder. The challenges of verifying and complying with numerous, complex regulations are ultimately passed on to audit and assurance firms. High stakes Noncompliance can have serious consequences — way beyond the company — as processes become increasingly connected and functions both inside and outside the enterprise become interdependent. This means the responsibility for ensuring compliance is that much greater for auditors. Recently, several audit firms appeared in court to justify nonreporting of client irregularities and failure to detect fraud. To manage these types of liabilities, auditing firms are now deploying software throughout the audit life cycle. This gives auditors additional tools to achieve the following: Optimizing audit and assurance Audit firms are working with technology companies to explore the use of robotic process automation, machine learning, data analytics and artificial intelligence. These technologies automate repetitive manual tasks, identify hidden patterns of fraud and locate scenarios where mandatory processes have been circumvented. Auditors identify risks and controls in their clients' daily operations and then identify control objectives, strategic objectives, and frequency and type of risk. From the foundational stage of data integration and analytics through the advanced stage of cognitive intelligence, technology is helping audit firms in all areas. Technology is optimizing the audit cycle, increasing speed and accuracy, reducing costs, and ensuring efficient deployment of auditors. Some audit processes that can benefit from the new technologies include: Automation risks While AI offers great opportunities, organizations must consider the associated risks. One of these dangers is universal for AI: embedding human biases in the algorithms. Amazon dropped experimental recruiting technology, powered by machine learning, last year when the online giant discovered the tool was biased against women. AI has also led to online image searches that ranged from racially insensitive to outright racist. These problems aren't new. As noted by Harvard Business Review, the UK Commission for Racial Equality concluded that a British medical school's automated system discriminated against applicants who were women or had non-European names. That incident was in 1988. In a report on AI, the Institute of Internal Auditors listed bias as one of the important

risks that must be considered. The association also warned about the risks of embedding human logic errors, inadequate testing and oversight, and possible financial or reputational damage. Organizations must carefully consider the use of AI in auditing, with an appreciation of the technology's limitations. Even with such great advances, human intervention is required to complete an audit. At CFO.com, Brian Peccarelli, co-chief operating officer of Thomson Reuters, pointed to the collectability of accounts receivable and the valuation of goodwill and other intangibles as areas where humans will continue to take center stage. However, digital technology has evolved in a way that significantly reduces reporting risks. Auditing firms can offer better-quality service, optimize resources, expand coverage, detect flaws early in the process and easily track the complete audit process. ========================

Reinventing Capital Investments

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/reinventing-capital-investments.html ----- Insights INFOSYS AND WATERLINE DATA DEMYSTIFY BIG DATA FOR COMPANIES AI/Automation As startups and corporates seek out partnerships that transcend monetary funding, we take an interesting, by the-numbers look at how the investment landscape has evolved over the years to become largely symbiotic. In a recent report, titled 'Finding and Developing Partners of the Future,' Forrester Research had some compelling advice for corporate venture funds. It stated, "Considering the rate at which new tech accelerators keep cropping up — and the fact that small and medium-sized businesses (SMBs) have long been the engines driving economic growth — tech vendors would be remiss not to proactively recruit these new entrants into their partner ecosystems." Still, several tech companies that make this investment, choose to buy an equity stake in a startup with the intent of selling it off, or use the smaller company's technology to gain a competitive advantage in the future. However, another model called 'Partner Venture Capital,' in which the parent company invests in a startup with the intention of using the startup's technology immediately to build out their own stable of offerings and within their existing work, is emerging as a partnership that has long-term benefits. With VC-backed funds slowing, compared to last year, startups in search of greater exposure and momentum with new, established customers are seeking out experienced technology partners that can go beyond funding and offer engagements with clients that can benefit from their solutions. Still, several tech companies that make this investment, choose to buy an equity stake in a startup with the intent of selling it off, or use the smaller company's technology to gain a competitive advantage in the future. However, another model called 'Partner Venture Capital,' in which the parent company invests in a startup with the intention of using the startup's technology immediately to build out their own stable of offerings and within their existing work, is emerging as a partnership that has long-term benefits. With VC-backed funds slowing, compared to last year, startups in search of greater exposure and momentum with new, established customers are seeking out experienced technology partners that can go beyond funding and offer engagements with clients that can benefit from

their solutions. The new VCs The number of new corporate venture capital units has steadily increased over the past five years. Split opinion Investments in startups have slowed from 2015. But corporate money continues to flow into startups. Corporate checkbooks Not since the dotcom era have companies and their investment funds been such big participants in funding startups. Source: https://www.bloomberg.com/ "As evidence of this shifting IPO climate, the total number of new stock debuts this year remains the lowest since 2009, according to data from the Wall Street Journal and Dealogic. Just 63 companies had gone public as of late August, raising a cumulative $12.9 billion. That's a 50% drop from the year-todate volume in 2015 and a 73% drop over the first eight months of 2014. In fact, there have only been two slower years for IPOs since 1995 – in 2003 following the dot-com crash, and in 2009 right after the Great Recession." Source: http://venturebeat.com/ "While many startups used to rely exclusively on venture capital firms to providing funding, the amount of VC firms in existence today has dropped substantially in recent years. In fact, according to the study, private venture capital firms have fallen over the last decade, representing the only type of investor that has seen a decrease in that time." Most investor types have seen growth in numbers Change in the number of investor startup companies from 2004-20131, % 1Developed markets includes the US, Canada, Europe, Australia, and New Zealand Source: http://tech.co/ Annual global financing trends to VC-backed companies 2012-2016 YTD (Q2 '16) Source: CB Insights What's in a data lake? Lots of data, to be sure, and lots of potential to make better decisions, increase sales, improve efficiency, and reduce risk. Big data is only getting richer, which means enterprise data lakes are getting deeper and becoming more complex. Yet, if you ask a Chief Data Officer how easy it is to find a data set in a data lake, you may not get a satisfactory answer. That's because, while big data assets are growing and are tremendously valuable, most organizations haven't spent enough time or resources figuring out how to effectively catalog that data in order to make it easier to discover and analyze. There's a hard truth facing organizations: As data lakes grow, it gets harder to find, share, and trust the data they own. Companies don't know their own data. We recognized that this would be a growing pain point within enterprises when we formed our company, Waterline Data, based on a technology that helps companies to automate the cataloging and governance of their data. Our Smart Data Catalog automatically scans and categorizes millions of fields of data in the data lake, making it accessible so that any user can find the right data set to use for their analytics. This problem of finding a data set has existed in enterprises for years. It often takes new analysts months, or even years, to understand whom to ask about what data, much less to know and understand all the data themselves. There is simply no way to remember what millions of fields of data mean or to manually classify and document them. At Waterline Data, we believe applying automation and machine learning to the problem is the only viable solution. Instead of leveraging 'tribal knowledge' and finding people to ask, Waterline Data's Smart Data Catalog provides people a way to 'shop' for data, mirroring an online shopping experience. Despite recognizing that automating and categorizing big data assets and bringing selfservice to data lakes is a critical need, many enterprises are simply not prepared to take on this challenge all by themselves. They look for trusted partners like Infosys for guidance, methodology, and implementation help. There is simply no way for Waterline

Data to scale up quickly enough to provide this support to customers. This represents a void between need and innovation. I believe Infosys is ahead of the curve, in that it has identified this gap and is partnering with us to introduce our innovative data science solution to its clients. Infosys' mature relationships and domain knowledge mean that the company has the ability and the trust to recognize when Waterline Data could help. Our partnership means that Infosys clients themselves aren't forced to search the vast data technology landscape for something that might fit their company's requirements. Rather, they can rely on Infosys to integrate Waterline into their existing work and begin solving real problems immediately. Working together, we help companies understand what's possible in empowering their use of metadata and ushering in self-service to big data. While Infosys brings the value of experience in deploying the methodology, Waterline provides the unique, cutting-edge technology. The end result of the relationship is a client that is much more capable of accessing and browsing big data for insights, alongside the elimination of the time and-resource gap between a need and the solution. About the Author Alex Gorelik Founder and CEO, Waterline Alex has worked with data for more than 30 years, helping companies around the world figure out where their data is and what it can tell them. His goal is to help companies understand that they don't truly know their data, and then help solve that problem. At Waterline Data, he's bringing automation of cataloging and governance to big data, which means companies can locate the data they need faster and spend time on bigger problems. Alex has spent his career building and bringing to market innovative data-related technologies and starting successful companies. =======================

Adapting to a Dynamic World through Responsive Intelligence

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/responsive-intelligence.html ----- Insights Adaptive Systems are multi-agent systems with advanced algorithms that optimally sense, reason and respond to changes in their environment in such a way that performance improves through continuous interaction with the surroundings. AI/Automation Going forward, software will need to be increasingly and inherently adaptive to cater to the intelligent systems of the future. With a number of applications across industries, Adaptive Systems are poised to revolutionize the business and IT landscape in the near future. 'Intelligence is the ability to adapt to change' – Stephen Hawking In today's world, change is not only constant but constantly accelerating. There is a dire need for advanced intelligent systems and processes that can adapt not only to the growing dynamism in the world but also to the ever increasing expectations of technology consumers. Systems of the future will need to know, understand and respond in real-time to real-world conditions. We strongly believe that software will need to be inherently adaptive to cater to these new and modern requirements. The ability to adapt to dynamic conditions would allow a complete rethink and redesign of the physical-digital realm across sectors including Retail, Healthcare, Education, Urban Management,

Surveillance and many others. For example, in a retail store, adaptive capabilities would assist the retailer to enhance both customer engagement and operations. It would help to identify customers, track them throughout their shopping journey, monitor their behavior, provide relevant customized offers based on their buying intent & purchase history and offer contextualized assistance. This would enable the retail store to provide hyper-personalized experiences, wherein the experiences for a 13-year-old in the store would be different from those for a 50-year-old, without any changes to the IT systems. These intelligent systems would encompass back-end processes as well, ranging from fulfillment, warehouse management and other processes across the supply chain to the point where the manufacturers could dynamically alter production based on real-world cues. How is it different from cognitive systems? Cognitive computing involves self-learning systems that use data mining, pattern recognition and natural language processing to mimic the way the human brain works. A cognitive system would leverage cognitive computing to enable machines and humans to interact more naturally. For example, the Infosys NIA Chatbot leverages machine learning, natural language processing and an intelligent conversation engine to provide contextual, natural engagement with users. An adaptive system on the other hand, would consist of multiple agents that communicate with each other (be it autonomous agents, smart devices, sensors etc.) and leverage numerous technologies (such as Edge computing, Cognition, Sensor fusion, Cloud, Robotics etc.) to enable it to learn and respond to a dynamic environment. The retail scenario that was explained earlier would consist of various cognitive systems, autonomous agents, smart devices and sensors that work together and communicate with each other to provide a seamless personalized experience for each customer. This system on the whole is intelligent and adaptive to the needs of the customer. Making systems adaptive Adaptive systems leverage sensor fusion, advanced multi-agent algorithms and event based architectures to learn, reason and respond in real-time to dynamic real-world conditions. As these architectures extend into the physical realm, Edge Computing infrastructure, Sensor Fusion capabilities and Robotic Systems will become more prevalent. These systems, while adapting to changes in their environment, will have to be compliant with the high-level policies of the organization. To illustrate further, some of the policies or rules would seek to set boundaries and limits for the operation of such systems, such as prohibiting the identification of customers using facial recognition or other means of tracking or using collected data without due consent, limiting a robotic agent to certain physical boundaries, stipulating that a drone should neither fly above 400 feet nor be operated out of the operator's sight, mandating that when an unforeseen event affects the operation of robotic agents, they should gracefully disengage and go back to their base stations, and so on. Adaptive systems promise new business value We can relate to many instances where systems with some level and form of adaptive capabilities are being used across industries. They range from applications in drones, robots and vehicles to surveillance systems and conversational interfaces, to name a few. Autonomous drones today have the capability to continuously adapt to changes in wind, visibility, and air or ground situations, and automatically make changes in flight plans. These are being deployed to find anomalies during inspection routines in mining, oil and gas, and other such industries. As per industry news, they not only perform the

surveys up to 20 times faster but also save around 70-90% of costs. IdeaForge, Skydio, and Boeing are developing solutions around autonomous drones. Intelligent robots also have adaptive capabilities through which they can recognize human emotions, adapt to their behavior and respond accordingly to their interlocutors. They are being widely used in the retail, banking, health & wellness, and hospitality sectors. Pepper, a robot from SoftBank, is a prime example. Self-driving vehicles also showcase adaptive capabilities which are enabled by context-aware systems, allowing them to sense and respond dynamically to their surroundings. They are employed in the supply chain, warehouse, logistics, retail and automotive sectors. Another area where adaptive capabilities are applied is intelligent surveillance systems, such as those developed by NEC. They use multiple data sources such as cameras, sensors and records of public authorities to identify threats and ensure safety. Conversational interfaces also have an adaptive element to them, in that they sense intent, context, and emotion during a conversation. These are being used in customer service and according to a leading IT services company are shown to reduce up to 30% of the costs by eliminating the need for human agents to address repetitive customer concerns, and allocating them for other requirements. Apart from these, adaptive systems are also being applied in other areas such as traffic management (Alibaba), education (Knewton, Fulcrum) and retail traffic management (Percolata). The promise of adaptive systems has triggered a keen interest in academia as well, with the likes of Cornell, UCLA, Boston University and SNN offering courses on adaptive and advanced intelligent systems. Infosys's play in this space Infosys has developed substantial expertise and experience in many of the building blocks that proffer adaptive capabilities to IT systems. The Infosys NIA platform converges Big Data/Analytics, Machine Learning, Knowledge Management, Cognitive Automation capabilities, Optical Character Recognition (OCR) and Natural Language Processing (NLP) to offer a unified, flexible and modular cognitive computing platform. Our Cyber Security services leverage AI, Security Analytics and Machine Learning to combat cyberattacks against digital systems. The IoT and Data management platforms offer solutions that can help collect, manage, monitor, and analyze large amounts of data that is generated by the connected infrastructure and agents. Another critical need is the assurance processes for such systems, which are required to mitigate risks and ensure compliance with regulatory statutes as well as organizational policies. In the past, Infosys has built many infrastructure monitoring solutions and command centers for specific purposes that are coming together to manage the complex Adaptive Systems. With an increasing number of applications across industries, and interest from startups, academia and incumbents alike, Adaptive Systems are gaining traction and are poised to revolutionize the business and IT landscape in the near future. This not only opens up numerous business opportunities but also plays a key role in improving operational efficiency in enterprises, leading to lower costs, better services and growth through innovation. It is clearly a space that calls for attention. Investment in time and resources will surely help enterprises stay ahead of the pack, and reap rewards.
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Automation in Retail: A Do It By Itself Story

Insights AI/Automation Think of the successful retailers you know and what they have in common. Whether it is Costco, which earns about US$ 1,540 per square foot of space – that's more than twice what Walmart nets – despite its low prices, or Trader Joe's, which sells stuff you can't find anywhere else, or Amazon, whose virtues don't need elaboration, the mantra is always low cost, great convenience, speedy response, and memorable experience. While that may seem simple in theory, it is significantly difficult to implement, as the legion of fallen retailers will tell you. And technology has a big play in saving the day. It's critical that technology – especially next-gen technologies like AI and ML - drive the core of business functions, in a culture of deep business-IT alignment, that is then the fertile ground for new experiences, and even new business models to be created and adopted. A simple but powerful first step that can greatly increase the odds of success is pervasive automation that cuts across business processes. Speaking of processes, in the world of retail consumption, a (physical) product or service makes the journey from producer to consumer in five stages - planning, sourcing, producing, distributing and selling. As raw materials convert to physical goods, and physical goods go from factory to warehouse, to store shelf, to home, they leave a trail of data at every phase. The retail industry has largely optimized the onward flow of goods and services, and has learnt to leverage data to improve business. At the same time, there is also a flow of information in the reverse direction, from consumer to producer via intermediaries. Today the retail ecosystem is greatly invested in finding ways to gather, process, and analyze this data, to gain additional insights into things like product performance in real life, user feedback and post purchase behavior, ecosystem bottlenecks, unstated needs, competitive response, and so forth. Retailers are especially focused on getting information on point of purchase and analytics around consumer behavior and product feedback. There is huge scope to automate this insight generation with AI and ML to take the industry even closer to its end goal of "low cost, great convenience, agility of response to needs or memorable experience." With this as context, a comprehensive retail automation plan would look something like this: Automate physical flow of goods and services Here are some examples of how automation of repetitive, transactional supply chain processes is improving cost-related parameters, such as productivity, inventory level, and turnaround time in various retail organizations. Apart from using robots in its warehouses and drones for deliveries, Amazon – the gold standard of supply chain automation – is using autonomous trucks and forklifts to cut down delivery costs. Meanwhile, Alibaba is working with a consortium on a new Blockchain-based food supply chain to reduce fraud. Then there's Adidas where advances in robotics and automation means that they can now afford to bring production back closer to customers to make faster delivery of new styles without the hassles of lengthy shipping times. They are also heavily invested in virtualization for product sampling to create virtual products accurate enough for decision-making before they are brought to

life at scale. In fact, this wave of automation at Adidas flows right into their stores. Visualize walking into an adidas store, running briefly on a treadmill and instantly getting a 3D-printed running shoe that suits you perfectly! Such a flexible, fully breathable carbon copy of the athlete's own footprint, matching exact contours and pressure points, is a clear possibility today. While not quite in the league of these ecommerce giants, the traditional retail industry has also automated parts of its highly complex business over the years. The intensity of automation varies tremendously across markets, product categories and store formats. Consumer Packaged Goods (CPG) companies have been quick to adopt because they need a ruthlessly efficient supply chain to compensate for wafer thin margins. A great example is P&G, now part of Gartner's "Masters" list of supply chain leaders, which has automated workflows to minimize exceptions and execute end-to-end planning. At the second-largest discount store retailer in the US, Target, a "goods-to-person" automated fulfillment system enables staff to pick stocks for instance, for several stores simultaneously from their workstations. Automate data flow and decisions Poor customer service is usually the outcome of an unfulfilled commitment (about lead time, for example), stock-out, wrong or inconsistent communication, and unreliable delivery. It is possible to dramatically improve service levels by leveraging the knowledge trapped within the supply chain. At Walmart, the secret of supply chain success is a collaborative planning, forecasting, and replenishment system that enables vendors, distributors, and others to synchronize forecasted sales. The sharing of information between stores, warehouses, and suppliers has helped the company to optimize its supply chain and take better decisions about inventory to ensure customers find what they need. Luxury department stores chain, Nordstrom has a piece of software, which allows it to do "drop shipping", that is, ship goods directly from the manufacturer to the consumer. When the retailer receives an order on its website, the software sends it to the manufacturer who packs and ships the products to the customer's delivery address. This has not only helped Nordstrom to reduce inventory holding costs and risk, but also improve customer service through data and insights-driven stock allocation and assortment, not to mention fewer stock-outs. Smart digital marketing programs, that create avenues to engage with consumers in innovative ways, help create better outcomes. Popular examples like miadidas and NIKEiD systems have already proven how ordinary consumers now have the opportunity to personalize their products, and disperse hundreds of uniquely designed products across the internet to 'entice' other fans. P&G's direct to consumer subscription business is another effort to create better fulfilment. Dollar Shave Club, now a Unilever company, is a great example of great experiences born out of data monetized. With big data and analytics technologies making great strides, several players are leverage them to automate supply chain planning and other knowledge-based processes. Several CPG companies employ predictive analytics to analyze hundreds of variables, from weather to social trends, to build a significantly more accurate demand forecast. Automate ecosystem from end to end Trader Joe's key to success is its distinctiveness. From its merchandising approach (micro niche products, and a thoughtful but small assortment of items), to its lively atmosphere, to the smell of its samples, to a customer experience that tells a story, everything is uniquely Trader Joe's. For most brands, which don't have the same infallible instinct about what their customers really seek, data-led insight might be the ticket

to better customer experience. Here, capturing post-sale data that flows in reverse – from consumer to manufacturer via all the intermediaries – is especially important. At a minimum, this calls for close integration of all entities within a single supply chain, and eventually, similar connections between supply chains and even ecosystems where both physical goods and data flow seamlessly from end to end. Already, there are instances of supply chain collaboration where the exchange of data has resulted in lower inventories, shorter turnaround time, and faster response to crises and other events. But to see how the automation of data across the ecosystem can elevate experience, look no further than Amazon, which years ago, patented a big data and predictive algorithm-based concept called "anticipatory package shipping" that would allow it to deliver goods even before they were ordered. As the Internet of Things hurtles towards 50 billion connections, give or take, by 2020, it will create stronger links between longer supply chains, leading up to giant ecosystems. At that time, it is entirely possible that a chef researching a certain type of organic cereal will find a delivery drone at the door even before an order has been placed, along with a choice of companion ingredients for the recipes that have magically found their way into his mobile. Payment for the goods is adjusted against a credit the supplier needs to make for a previous order, which the customer didn't return, but reviewed unfavorably on social media. A few days later, an automated messenger enquires about the experience of using those ingredients, and offers to feature the new dish on the restaurant menu in various online forums, as well as send out an alert to regular clientele. With Amazon making its future plans clear (once again) with its acquisition of Whole Foods, the pressure is again on, on the global retail industry. On the marketing side, retailers need to go all out to carve an identity for themselves to keep customers coming. At the operational level, they have to raise efficiencies, service levels and quality of experience. In automation, they will find many answers. Download an exclusive report on benefits of AI to the retail industry >> =====================

Why Robotic Process Automation Makes Sense in the Mining Industry

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/robotic-process-automation.html ----- Insights AI/Automation Worldwide mining operations are 28% less productive today than a decade ago. Declining ore grades, increasing costs, shortage of skilled labor, market volatility and stringent regulatory compliance have been driving the mining industry to look for ways to improve productivity and efficiency. Across multiple functions in the mining industry, business processes span a wide variety of rule based and knowledge based repetitive work which do not add any value to the core business or to the end users doing them. Robotic Process Automation (RPA) offers an approach for automating repetitive and non-value adding tasks using software robots. Further integration of the RPA platform with an AI platform enables robots to progressively take up

decision automation tasks leveraging cognitive computing and machine learning. For the mining industry, a large portion of this work can be automated using RPA to enable and realize touch-less business processes. Software robots can perform repetitive tasks like extracting, uploading, validating or formatting data, performing calculations, etc. with improved speed and accuracy in a repeatable manner 24x7 improving overall efficiency of the process. Things a Mining Company Must Think of Automating The mining industry must identify the key processes and activities that can be brought under the purview of RPA for maximum gain. Some of the areas where RPA has shown benefits related to improvement in efficiency, quality and cycle time reduction include: Leverage chatbot for content search intensive activities like: From our extensive experience working with the mining industry, we can state some of the measurable benefits of implementing RPA as 30 - 80% reduction in manual effort, 50 – 80% reduction in errors, 25 – 50% improvement in productivity and 20 – 50% reduction in cycle time. In addition to this, Infosys has developed solutions to automate complex tasks like blast design using its BlastAID solution which uses AI to automate the blast design process and improve its design capability (optimized usage of explosives, rock fragmentation and fly rock containment) through a continuous learning model. This solution was a semi-finalist at Disrupt Mining 2018. What makes the RPA solution tick? A typical RPA consists of natural language processing capabilities, content analytics, cognitive capabilities and process automation. The Infosys RPA solution components are based on state of the art in-house solutions and third party components that includes: Infosys RPA Platform helped a large gold mining company, improve the productivity in its corporate back office processes related to procurement and finance by 35%. For a large iron ore mining company, Infosys reduced the metals balancing and metals accounting cycle time by 50% and manual effort by 70%. Infosys follows a four step approach to implementing RPA ensuring the client understands each step of the implementation, what it means and how it can help them. The first step involves stabilizing the legacy systems and the processes that need to be automated to ensure zero disruption in the client's business. In the second step, the legacy systems are moved to one edition of the ERP system and the relevant functions are integrated The third step involves standardization of processes to bring uniformity and ensuring better resource allocation The last and the final stage completes the automation of the processes that are transactional or repetitive in nature or that lend itself to improvement. At each stage, Infosys experts guide clients through the change management and provide the necessary support to a smooth implementation of RPA. Check out the case study where we helped a mining company set standards in procurement accuracy and efficiency with robotics. =====================

Infosys Serves an Ace at Roland-Garros with AI

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/serves-ace-ai.html ----- Insights AI/Automation In the end, Rafael Nadal

cruised to a comfortable victory against Dominic Thiem in the French Open on the iconic red clay courts of Roland-Garros in Paris. Although the two players were seeded just two places apart—second and fourth, respectively—the gulf in quality told as the match progressed, with Nadal handsomely winning the third and fourth sets by six games to one. But the ease with which Nadal finished the match disguised the fact that he faced a real challenge at the start. The first two sets were highly competitive, and tennis fans who were on the richly illustrated Infosys MatchCentre on the Roland Garros website, could watch the story unfold as the 11-time champion fought to assert his superiority in the early stages of the match. Be it the point-by-point progression of the match through MatchBeats, or the key statistics that influenced the match's outcome through Stats+ or the insights and patterns on the different serves, returns, unforced errors and winners from the highly instrumented app CourtVision. Thiem was actually the first to draw blood, breaking Nadal's serve in the fifth game of the first set. But he failed to hold his own service in the following game, and eventually lost the set 3-6. In the second set, when Thiem showed unexpected promise, winning by seven games to five, the stats reveal a telling tale. Both players held their service in the first 10 games, and Nadal seemed to be building on the momentum of the first set by only conceding one point. But in the 11th game, Thiem delivered an unexpected counterpunch, producing a stunning ace, with a serve reaching 206 kph/128 mph. Then, in the 12th game, he set up a break point after winning the longest rally of the set, and finally broke Nadal's serve after another long rally to take the set. The details of the tennis tournament, as experienced by the viewers on the ground, were presented in an at-a-glance visual interface, to fans from across the world as part of a new 3-year partnership between Infosys and Roland-Garros, which aims to "re-imagine" the tennis experience. Infosys, which is at the forefront of digital innovation, wanted to find ways to showcase its expertise in technologies such as artificial intelligence (AI), big data and analytics, and virtual and augmented reality. It resolved to reach a worldwide C-suite audience by partnering with a major sport and considered various sports before deciding that tennis had a unique appeal for this first venture. Tennis made a lot of sense as the target audience was relevant for our business, and at the same time, it has global appeal. The new partnership focuses on helping the French Tennis Federation, which organizes the Roland-Garros tournament, deepen its engagement with its most loyal fans. It "will offer tennis fans an even richer experience," said Bernard Giudicelli, the federation's president. The Paris stadium, with its newly upgraded courts, attracts nearly 500,000 spectators during the French Open, as Roland-Garros is known. But the tournament is also broadcast to 224 countries and attracts a vast audience that Infosys hopes to reach with its digital wizardry. An immersive technology Infosys subjects videos of every match to in-depth digital analysis using AI, producing an extraordinary array of data that is then sliced and diced in different ways to engage the most committed tennis super-fan. There are fans who watch a game and move on, right? And then there are fans who watch and obsess about the game. Our products cater to those who watch and obsess because they really want to get into the game. They say, "OK, what happened? Where did this go wrong? Where did he lose points? Where did the match change track?" Infosys developed six separate immersive products—five focused on fans, and one focused on players and coaches.

There is MatchBeats to decode the quality of the play, helping fans identify the winners from the losers. MatchBeats++, a special application offers a set-by-set view of the match. CourtVision offers a bird's eye view of the court and shows where each point was won and lost. Slam Leaderboards rank the top 10 players based on points scored with shots that have a significant bearing on a match's outcome. Stats+ shows all the key statistics ranked according to their disproportionate influence on a match. The core product is MatchBeats, which allows fans to follow the intensity of the match by highlighting hard-fought moments. It spots the crucial points, finding the aces and showing how the momentum shifted at break points. It decodes the quality of play, enabling fans to filter by outright winners, unforced errors and double faults. And for fans wanting to drill down further, there is MatchBeats++, a special application that offers a set-by-set view of the match. A second product, CourtVision, offers fans a bird's-eye view of the court and shows where each point was won and lost. Coming into the match, Nadal and Thiem hit an average of 34 outright winners in the previous rounds—way more than the tournament average of 13.5. But in their head-to-head, Nadal came out on top because he scored 38, compared to Thiem's 31. CourtVision shows the exact location of the winning shots, and whether they were passing shots, volleys, drop or lob shots, or overhead smashes. Figure 1: A snapshot of Courtvision showing where Nadal's winning shots landed Another product is Slam Leaderboards. This ranks the top 10 players based on points scored with shots that have a significant bearing on a match's outcome, including aces, first serve, second serve, net points, break points, receiving points and winners. Over the course of the tournament, Nadal's 535 points placed him way ahead of second-place Novak Djokovic (369 points), who was knocked out by Thiem in the semi-final. Thiem finished third with 337 points. Nadal outscored his rivals in break points and receiving points, although he was the lowest rated of the players in the top 10 when ranked by serve. A fourth data product, Stats+, shows all the key statistics ranked according to their disproportionate influence on a match. For example, while Thiem hit seven aces—compared to Nadal's three—this category only made a 4% contribution to the outcome of the match. By contrast, Nadal's winners made a 19% contribution to the result. Figure 2: Infosys Slam Leaderboard Figure 3: Infosys Stats+ showing statistics with a disproportionate influence on the match In a sense, Infosys is giving fans the kind of data that players and coaches have been able to use to improve their performance. But even players are awed by Infosys' technology. In fact, Infosys has built a dedicated portal for players and coaches, giving them access to more than 1,000 statistical combinations that identify their own and their opponent's strengths and weaknesses. Looking to the future: other sports and Wimbledon Already, Infosys has received positive feedback from fans, players and coaches. Long-term, it plans to take its products to other sports. Tennis is where Infosys is starting , but we expect to go beyond that, take up other sports, and build similar capabilities. But Infosys' immediate plans are to deepen its coverage of tennis. It is planning to "work more closely" with the ATP, the governing body of the men's professional tennis circuit, and develop its relationship with the Australian Open, which piloted some of its AI products in January 2018. =====================

Service Management is All About Delivering Value

Insights AI/Automation The technology onslaught has made for a dynamic, fast-changing environment, impacting the way organizations are running their Enterprise Service Management. In the next decade, we will see all enterprise services delivered by a combination of virtual agents and smart humans assisted by AI. One of our customers, an international fast food giant based in the US, for example, is already using AI at the core to manage its services better by using its interactive features for feedback to help them drive the right conversations for complex cases. It even recommends correct ticket categories. But while AI-powered service management brings literally infinite features and possibilities, the bottom-line for success of any implementation is always the 'value' delivered. In the above mentioned case study, the solution can only be deemed a success because it helped reduce call volume and mean time to resolve tickets. Also, customer satisfaction has improved, and support costs have reduced thanks to users getting recommendations in real time. So, it's not really about the technology, whether AI or anything else. It also isn't about the variety of features. Instead, the question that needs to be asked is: how do we ensure a value driven approach to service management? To understand more about creating effective service management, click here. Move from Technology First to Business First IT Service Management (ITSM) is not about IT alone. The success of any implementation needs to be measured by how best it supports the business overall. Which is why service management needs to go beyond IT and support other business functions effectively whether it is customer services, HR, facilities management, security operations and governance, risk and compliance. There must be a single integrated enterprise platform for enhanced user experience, better control, transparency, and maintenance. For example, when we implemented a service management platform for a leading provider of helicopter services to the worldwide offshore energy industry, we ensured that it doesn't just support IT. Instead, it also supports other parts of the company including facilities management, HR and fleet support. Understanding Sectoral Nuances Each vertical has its own unique structure, nuances, style of working etc. Therefore, the right solution needs to be tailored to fit the unique needs of each vertical. We've done this quite diligently for our Infosys Enterprise Service Management Café. Our service catalog has specific vertical solutions for retail, financial services and manufacturing etc. For instance, we have Restaurant-in-a-Box for hospitality, Enterprise Software library for the manufacturing domain. We also have solutions such as Meet the Expert, Travel Management etc. for businesses to access industry-specific plug-and-play solutions. Measurable Outcomes To quote an often-used cliché, you can't manage what you can't measure. The value that a solution delivers has to be measured based on clearly articulated expected outcomes. For instance, for an American multinational food and beverage corporation, our ITSM and IT operations management solution helped achieve 10 percent fewer interactions to the service desk, 50 percent fewer

events, 60 percent fewer process steps. Besides, we were able to streamline processes by retiring 35 tools. For another American multinational food manufacturing company, we rolled out Global-one processes in just four months, with ServiceNow implementation in 8 languages. There was a 25-30 percent reduction in direct calls to the customer as a result of logging tickets via the service portal and chat. Also, with a persona-based user-friendly self-service portal and catalog, the company reported a 25 percent increase in user satisfaction. Not to mention a 40-50 percent reduction in timelines. When there are clearly stated expected outcomes, it really helps align efforts to meet those outcomes. Technologies will come and go, but by maintaining a laser-sharp focus on the value that we are creating, it helps us deliver with focused efforts. More importantly, it helps create trust and satisfaction for our clients because they know we are driven not just by technological capabilities or business mandates but by a larger vision of providing customer delight. ======================

Seven Essentials That Will Propel AI From Fantasy To Reality

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/seven-essentials-that-will-propel-ai-from-fantasy-to-reality.html ----- Insights AI/Automation Innovation fuelled by research and development is integral to the making of a successful enterprise. This explains why established market leaders and enthusiastic startups alike are investing in the current trending technology – artificial intelligence (AI). Embracing AI implies moving beyond algorithms and data scientists. This section discusses seven essentials that are required to catalyze a new wave of AI-driven smart services. Artificial intelligence (AI) has not only captured the imagination of the masses, but also the unflinching attention of enterprises the world over. This article explains why AI is now the go-to technology for businesses and the seven factors crucial for any AI initiative to succeed. People enable artificial intelligence, and algorithms are only as good as the math talent that build them. Success will require the hiring of 'Digital Artisans' — people who can balance their right brain and left brain expertise. Perpetually wary of market disruptions, and in their quest to maintain a competitive advantage, board rooms and CXOs of Market Leader and Fast Follower brands across the world have rushed to artificial intelligence as the next big bet. By virtue of being early adopters of / adapters to disruptive business models and technologies, Market Leader and Fast Follower brands not only command the largest share of the market, but that of profits as well. They are the big boys or leaders of their segments, categories. — think Apple, Google, or even Tesla. Market leaders tend to adopt a 'go-it-alone' strategy, while Fast Followers are open to coinnovation and co-creation. Fast Followers are also reactive and wait for the market leaders to take a position, before jumping in. According to Constellation Research, though these leader brands are yet to achieve the full potential of mass personalization (market segmentation of one), their next rush is focused on investments in artificial intelligence use cases and pilots, and in establishing 'co-create' or 'co-innovate' partnerships with vendors. Their initiatives in AI's subsets of machine learning, deep

learning, natural language processing, and cognitive computing have been steadily moving from science projects to new digital business models powered by smart services. A good example of this shift comes from machine-learning services that analyze sentiments or address fraud management patterns in commerce. For an organization betting on AI for digital initiatives, the goal has to be precision decisions. Successful AI projects within enterprises require more than just great algorithms or access to data scientists. What the Market Leaders and Fast Followers have discovered so far are the following seven traits that require nurturing: We feel that the value in AI will come from the smart services that emerge through digital transformation projects. More than just automation, these AI-driven smart services will power future business models that rely on the insights derived from digital technologies, data, and algorithms. The question that will soon make its way into your board room might be: How do we nurture these traits to ensure that our AI investments succeed? Read more articles on artificial intelligence and automation>>
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Prediction Puts the Smart in Smart Retail

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/smart-retail-prediction.html ----- Insights AI/Automation The outlook for Retail is sobering. The industry is facing some of the toughest challenges. What was just a means to increase margins or revenues has become a matter of life-or-death – innovation through digital disruption. This need hinges on three basic capabilities delivered by technology: IMMEDIACY: If a truck route is closed, we need to know now! In real time, so we can deliver the required inventory using another truck, via an alternative route. If a plant has to shut down, we need to know immediately, so we can plan accordingly. Data that is even a few days old is worthless. INSIGHTS: The adoption of smart devices has generated large volumes of unstructured data. Using this data to generate insights and drive business decisions is imperative. On top of this, the convergence of Retail and Consumer Packaged Goods (CPG) industries demands the reorientation of processes and business models INNOVATION: AI models are reinventing retail across product cataloguing, merchandising, customer service, replenishment, demand forecasting, pricing, and logistics. 'Fast fashion' retailers such as Zara and Mango integrate AI, machine learning and personalization technologies to better understand consumer behavior. It helps recommend products intuitively, empowering them to influence demand and better manage pricing as well as inventory. The science behind predictive commerce An AI ecosystem helps brick-and-mortar and e-Commerce companies realize compelling value before, during and after a purchase. Retailers can capitalize on the widespread adoption of smart phones and the potential of AI to improve the supply chain and create value for their customers. They can shift from responsive to predictive commerce, and from micro-segmentation to personalization. Besides, an AI backbone connects stakeholders and devices in the ecosystem to blur the line between online

and offline shopping experiences. Real-life example 1: Shoppers swipe interactive windows at the Westfield San Francisco Centre (shopping mall) to learn about various premium brands and order their products using mobile devices. Real-life example 2: The 'store mode' of cosmetics brand Sephora's mobile app integrates the online shopping cart with their Beauty Insider loyalty program, simplifying notifications, real-time updates, and redemption of reward points. AI is not just for e-commerce. It can help brick-and-mortar companies by allowing them to shift from micro-segmentation to personalization. It is common knowledge that personalized content engages shoppers at a deeper level. AI-powered retailing creates immersive shopping experiences by connecting data from diverse sources and matching potential demand with product availability in real time. AI models integrate the browsing histories, Facebook conversations, Pinterest searches, and Instagram followers to provide granular insights into shopping behavior. It creates user profiles, assesses requirements, understands consumers, all of which help recommend complementary products and drive impulse purchases. This is the secret sauce of contextual commerce for retailers. Influencing purchase Recommendation systems powered by machine learning algorithms generate substantial revenue for Amazon and Netflix. The success of recommended purchases has encouraged Amazon to pilot an AI-based 'predictive delivery' program. Delivery trucks are stocked with items that are likely to be ordered by shoppers while the trucks are en route for delivery in the neighborhood! The Sears Auto Center has launched Digital Tire Journey, a service to enhance auto tire shopping. The AI-enabled app uses a set of questions to create a driver profile based on preferences and driving behavior. It recommends tires that match the vehicle and driver's performance as well as the most appropriate marketing channel for purchase. Cognitive technologies provide computing devices with the ability to recognize handwriting and symbols, extract text from images and files, transcribe human speech, identify objects and faces, and understand user intent. An AI ecosystem processes queries in natural language, generates content from partial data, and sequences actions based on set parameters. Further, deep learning systems automatically validate machine-generated action, which ensures accuracy. AI-based processes predict transaction opportunities by getting to know shoppers and recommending personalized offers along the purchase path, without programmed instructions. It prompts shoppers to search for products even before they perceive the need for it.   Driving product discovery Technologies that make sense of visual environments and engage consumers in two-way conversations elevate the shopping experience. The Pinterest Lens helps shoppers who are undecided about their shopping needs or have a limited vocabulary of a product to find it online. Pinterest's visual search algorithms evaluate similarity scores tagged with images to facilitate a user's search for home décor or fashion wear. Machine-to-machine interfaces can be combined with simulation, augmented reality, and other virtual tools to automate complex tasks such as product design, selection of sizes for clothing and footwear, and consultations for skin care. Consumer interactions via the L'Oreal Diagnose My Hair app mimic in-store hair consultations. Adobe's AI image-editing tool adopts photorealism to help handbag manufacturers convert rudimentary sketches into images. A detailed taxonomy of products is critical for online discovery since product imagery alone cannot define the content, promotions and marketing in retail. Inconsistent product tags,

incorrect metadata or incomplete attributes adversely affect product recommendations. Deep learning algorithms create a product catalog by extracting attributes, and classify products for intuitive search. Accurate classification of products enables artificially intelligent entities to transform retail operations.   Providing personal assistance Speech and facial recognition capabilities provide virtual shopping assistants with a personal touch. It converts apps into experienced concierge teams that can interact with shoppers, take orders, and share product information. Virtual assistants incorporate insights from diverse sources to make relevant recommendations, and deliver an omnichannel experience Macy's On Call app combines cognitive computing and natural language processing with location-based software to guide shoppers at stores. The AI system responds to queries such as the location of products within the store and functionalities of a product. Artificial intelligence is being embedded into products to minimize human intervention. While Amazon's Dash button automates purchase, Sharp is incorporating AI into home appliances for hands-free operations. Sharp's vacuum cleaners and microwave ovens can be controlled through voice commands. Nestlé SA has deployed robots as sales assistants at retail stores in Japan. The fleet of humanoids engages customers with product information and sells Nescafé products and vending machines. Cognitive computing and automated systems enhance retail operations – from stock management and pricing to planogramming and promotions. It provides insights to optimize marketing spend and boost productivity at the store. However, technological progress must deliver compelling benefits to all stakeholders. Each retail enterprise should replace or augment human effort with artificial intelligence to transform business processes. The success of AI-driven retailing lies in navigating a personalized shopping journey for every shopper. RPA: Velocity meets accuracy Robotic Process Automation (RPA) provides retailers with opportunities to optimize costs and enhance efficiency across in-store systems and the supply chain. It eliminates human intervention in the retail-specific as well as administrative and generic back office processes. Rules-based systems for order processing, inventory planning, customer service, merchandising, product returns, and refunds can be processed faster and with better accuracy by RPA solutions. Software robots integrate with enterprise systems such as Finance and Human Resources to transform execution. It unifies data sources to simplify reconciliation. In the absence of manual data entry or repetition, databases are always auditable. Moreover, automated processes support reporting and compliance. Most important, RPA streamlines workflows and establishes a robust foundation for advanced analytics. =====================

Sense, Analyze, Engage: How to Successfully Monetize Your Fan Ecosystem

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/ successfully-monetize-ecosystem.html ----- Insights AI/Automation I envy the

ancient Romans. They had a world-class coliseum right in the middle of their capital city, and spent hours watching gladiators contest and chariots race. It was a great way for citizens to get away from the drudgeries of day-to-day life and enjoy the excitement. A trip to a stadium today is not much different. Except that there are jumbotrons and audio announcers vying for the attention of fans that until recently were exclusively focused on the playing field. Broadcasters largely drive the at-home experience for sports aficionados, but in a hyper-connected world where fans are increasingly turning to tablets and large smartphone to take in a game, they have a newer opportunity to connect with this expanding market. Broadcasters offer third parties access to their viewers' attention and data, and have thus created a revenue stream through their loyal fan base. An anachronistic mind-set and a fear of soaring technology costs dissuade many stakeholders in the sporting industry, including clubs from comprehensively digitizing their fan experience. But the reality is that technological rewards and fan satisfaction far outweigh the costs. It also has a measurable, positive impact on revenue. Why else do you think consumer-facing businesses like for example the retail industry, are developing their own chat bots that are designed to better engage consumers and nurture loyalty? According to experts, today's chat bots, instant messaging platforms, and sophisticated artificial intelligence tools can create seamless interactions between company-owned machines and customers. Should the sports industry be any different? Absolutely not, and as we witness the gradual shift towards digitization of the fan experience and creative disruption of the sports ecosystem, it is a combination of 'sense', 'analysis' and 'engagement' that will create a robust revenue channel. When I say 'sense', I refer to the ability to determine the pulse and sentiment of sports persons, fans, and sponsors. Analysis refers to deep diving into data to understand the actions of fans, and engagement refer to locating ways that were once unimaginable to connect with fans. For example, through data driven platforms and artificial intelligence. This enables sports clubs to monetize their fan experience through real-time advertisements and videos based on analysis, insights, and leaderboards, before, during, and after the event. The core aim being to constantly add value and richness to the sporting experience. So what is the process by which technology can revolutionize and monetize sports while exciting the current fan base further? The answer lies in bringing old fans back, attracting new audiences, and creating a set of digital native fans. Ideally, the activities around sense, analysis, and engagement should be implemented by a single provider and be accessible to fans, sponsors, and media on one easily navigable, integrated, and efficient platform. This is where solution-based IT companies like Infosys offer game-changing insights and implementations for monetizing sports in new ways. For instance, we can sense player stress, strain, and recovery with wearable technology like Whoop, or apps which offer video-based sensing. We can also sense the physical, transactional, and social traits of fans. We can analyze the stress, strain, and recovery of players, and convert that into insights for fans. We can also analyze fans to help build profiles, create segments, and run digital marketing and monetization campaigns. The final step before monetization is engagement. We know whom to engage (targeted to specific needs), when to engage, how to engage (which channel - app, Web, video content, physical billboards), what to engage (content, tickets, merchandise, ads), how to track results, and which players, sponsors, betting companies and betters

should be in the loop. This combination of sense, analysis, and engagement leads to monetization on an integrated e-commerce and socially active platform. So how can the sports ecosystem be divided and made accessible to every stakeholders needs, under a single platform? There are several ecosystems in any sport: fan, sponsors, club, advertisers, broadcasters, and gaming and betting. Each ecosystem has differing analytical and data needs. Let's pick as an example, the fan ecosystem. Within this ecosystem, there are different zones, which can be monetized by providing the desired value-add to the fan. For example: tracking physical & digital fans (WPP, Google), engaging fans (Facebook, Twitter), club marketplace (Club website, store), in-game (merchandizing, refreshments), hyper-personalized mobile advertising and gamification (real-time games and leader boards with prizes). A key strength of technology is that it can allow sports organizers to analyze data from various sources and delve deeply into what, where, and whom to engage in the target audience. It can tie a number of fan zones onto one e-commerce platform, create targeted ads and market based on match day and virtual attendance demographics, offer 'premium spot' auctions at different high-impact visibility points in the match, and localize delivery of content across the world. (In my next blog post, I'll discuss some specific tools used to make nearly every sports match an event to remember.) Learn how Infosys helped ATP transform the fan experience >> ======================

AI/automation

Testing of AI Systems Need Not Be Complicated

Insights AI/Automation Testing is an extremely important aspect of software design. Without adequate testing, any implementation is likely to land you in a minefield of issues. A well-defined and thorough testing process is important to ensure reliability of the solution and to keep support and maintenance costs in check. Over the years, testing has emerged as an important part of the development process rather than being viewed as an afterthought. In any standard software testing process, the Quality Assurance (QA) team's job typically includes testing basic functionality, reviewing and analyzing the code, testing each unit and finally, testing for a single user. It isn't as simple when it comes to Artificial Intelligence (AI). Given that AI involves much greater complexity compared to regular software development, even the testing process becomes more challenging. Therefore, organizations need to envision a different approach when it comes to testing their AI frameworks and

systems to ensure that these meet the desired goals. For instance, QA departments must clearly define the test strategy by considering the various challenges and failure points across all stages. We recently put out a paper titled 'The Right Testing Strategy for AI Systems,' which examines some key failure points in AI frameworks. It also outlines how these failures can be avoided using four main use cases that are critical to ensuring a well-functioning AI system. AI frameworks typically follow five stages and each stage has specific failure points: Data Sources and Quality Since AI trains itself via multiple dynamic and static data sources, there can be several issues related to the quality of input data. The data could be incorrect or incomplete. Poor data quality or formatting issues can also pose a challenge. In case of dynamic data, its variety and velocity could induce errors. Input Data Conditioning AI systems typically draw data from big data stores and data lakes. If the rules for data loading are flawed or if there is data duplication, then it can cause errors. There could also be data node partition failure or truncated data or even data drops. Machine Learning and Analytics AI uses cognitive learning algorithms to enable machine learning and analytics. Success sometimes depends on how data is split for training and testing. Also, sometimes, if the data behaves differently as compared to previous data sets, it can throw up out-of-sample errors. Understanding the relationships between entities and tables can also be tricky. Visualization Visualization is an important aspect of AI systems and generally lies on custom apps, connected devices, the web, and bots. Sometimes, incorrectly coded rules in custom applications can result in data issues. Formatting and data reconciliation issues between reports and the back-end can bring in errors. Communication failure in middleware systems/APIs can result in disconnected data communication and visualization. Feedback In AI systems, feedback comes in from sensors, devices, apps, and systems. If the rules in custom applications are incorrectly coded, it can cause data issues. Incorrect predictions can also result from the propagation of false positives at the feedback stage. Each of these failure points can be identified using the right testing technique. Some of the important testing use cases to be considered are testing of standalone cognitive features, AI platforms, ML-based analytical models, and AI powered solutions. Only a comprehensive testing strategy will help organizations streamline their AI frameworks and minimize failures, thereby improving output quality and accuracy.
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Testing Imperatives for AI Systems

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/ testing-imperative-for-ai-systems.html ----- Insights Key Aspects of AI Systems Testing AI/Automation In the past, Artificial Intelligence (AI) research was confined primarily to big technology companies and was conceived as a technology concept that could mimic human intelligence. However, with rapid advances in data collection, processing and computation power, AI has become the new electricity for every business. The market for AI has leapfrogged in the last couple of years with applications spanning a broad range of industries. In the coming years, the widespread uptake of AI is anticipated to help unlock its true potential and

improve efficiencies in various fields. Currently, AI systems are more probabilistic in nature and work with sophisticated input models, which can detect suspicious or risky behavior. This is in stark contrast to the deterministic nature of traditional IT systems which use a rule-based approach and generally follow the "if X, then Y" model. Testing of AI systems, therefore, involves a fundamental shift from output conformance to input validation in order to verify their robustness. With AI systems gathering momentum, there is a growing need to ensure their quality. For example, today's automobiles are increasingly using multiple intelligent systems with roughly 150 million lines of code, which is more than what is used in modern fighter jets. Thus, it has become imperative to exhaustively test AI systems in order to ensure their robustness. However, testing AI systems poses certain key challenges that can be overcome with the right approach. Testing of AI Systems is Not Free of Challenges Data Validation The effectiveness of AI systems is largely dependent on the quality of training data, including aspects such as bias and variety. For example, smart phone assistants and car navigation systems find it difficult to comprehend different accents. The impact of training data is illustrated in an experiment by researchers from MIT Media Lab who trained "Norman", an AI powered psychopath by exposing it to data from the dark corners of the web. Where a regular algorithm perceived a group of people standing around a window as just that, Norman saw them as potentially jumping out of the window. This experiment shows that training data is of utmost importance for AI systems to give the desired output. Core Algorithm The heart of AI systems is built on algorithms, which process data and generate insights. Model validation, learnability, algorithm efficiency and empathy are among the key features of this approach. Learnability is the ability of a system to learn and modify its behavior with time. Some examples of websites with learnability include Netflix and Amazon, which understand user preferences and come up with appropriate recommendations. Another example is a Voice Recognition System like Siri or Cortana, which picks up the semantics of language websites. However, with Cortana now responding to "I am being abused" with the number for the National Domestic Violence hotline, it is important for chatbots to be tested for comprehension of things such as sarcasm and tone. The recent Uber crash in March 2018 where a pedestrian was killed by a self-driving car was a result of software failure. The car's sensors did detect the victim, but unfortunately did not identify her as a trigger for applying the brakes. Distinguishing between real and illusory objects is a primary challenge in developing self-driving car software and a classic example of model validation for core algorithms. Non-functional: Performance and Security Testing Performance and security testing is integral to AI systems. This also includes aspects such as regulatory compliance. Recently, HSBC's Voice Recognition System was breached by a customer's non-identical twin who was able to access balances and recent transactions and could even transfer money between accounts. Improper testing can lead to chatbots being manipulated into revealing business sensitive information. Systems Integration Testing AI systems are designed to operate in the larger context of other systems and to solve specific problems. This requires a holistic assessment of AI systems. Thus, integration testing is of primary importance when multiple AI systems with conflicting goals are deployed together. In the American state of Arkansas, under a Medicaid waiver program, assessor-driven interviews would be used

to decide the hours and frequency of caretaker services applicable for a beneficiary. When the healthcare industry turned to automation in order to improve business efficiency, the service hours apportioned to beneficiaries were substantially reduced in many cases. There was no notification sent to the beneficiaries informing them about the change which led to an increase in grievance appeals. Beneficiaries did not receive any response to their appeals as the automation system put in place was too complex to be expressed in common parlance. As per a leading analyst firm, the global business value derived from AI is forecasted to reach $1.2 trillion in 2018, a 70% increase from 2017. This market is expected to grow to $3.9 trillion by 2022. With more and more systems imbibing AI characteristics, it is important that they are tested thoroughly. Infosys is on a journey to create multiple assets and solutions in this space, and is also enhancing its people skills in preparation. =====================

The Intelligence in Using Renewable Energy

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/the-intelligence-in-using-renewable-energy.html ----- Insights AI/Automation While it is hard to ascertain by when, it is widely acknowledged that fossil fuels are not the future sources to fulfill our energy needs. Renewable energy is emerging as the most reliable alternative for our future, however, despite significant progress in pockets, there are quite a few daunting challenges. Among the leading sources of renewables, solar and wind are dependent on the weather, are unpredictable, and we still need to smoothen the flow of energy from generation to consumption. The advancement in storage technology is promising yet far from where it needs to be. From time to time, generation of renewable energy will fall short of demand and hence it cannot be the reliable source of base load for consumption. The base load continues to shift to fossil fuel-based generation which defeats the purpose to move to renewables in the first place. One solution is to use demand-side flexibility cleverly, cutting demand for renewable energy when supply is low and bumping it up in times of plenty. This is possible by advanced load control at an equipment and appliance level, such as large air-conditioning units or industrial furnaces to switch off when power generation is low and consume more energy when there is excess supply. Additionally, the owners of this equipment could also be contracted to make their stored energy and battery packs available to the grid when required. While the concept is sound, there are a few problems when it comes to implementation. Before the grid can decide whom to tie up with and what tariff to pay, it must know the number of devices in play and the extent to which they will participate. It also needs to safeguard the energy consumption data it will collect from those devices from being misused and misinterpreted. My view, deployment of Artificial Intelligence (AI) and machine learning technologies can resolve most of these issues. By applying machine learning to the data generated by advanced sensors, smart meters and intelligent devices beyond-the-meters, grid operators can estimate how individual appliances behave. They can also use algorithms to predict the

storage life and accordingly determine the payouts to be made. In the case of large Commercial and Industrial consumers like supermarkets, office buildings, factories, railways, grid operators can use AI to analyze relevant operational data from all the relevant equipment, such as solar panels and cooling systems, to make informed real-time decisions to maximize demand flexibility. Germany, for instance, is using a machine learning-based early warning system that takes real-time data from wind turbines and solar panels around the country to predict the energy that will be generated over the next two days. Other ways in which AI can facilitate demand flexibility is by employing game theory algorithms to devise incentives to improve overall participation, and leveraging blockchain or other distributed ledger technologies to protect data. It is possible to create a market place for consumers to participate in demand side management initiative in their local market. While managing intermittency of renewable energy is the biggest goal, AI can also help the industry improve safety, reliability and efficiency. It can also provide visibility into energy leakage, consumption patterns and equipment health. For instance, predictive analytics can take sensor data from a wind turbine to monitor wear and tear, and predict with a high degree of accuracy when it would need maintenance. Artificial Intelligence technologies can also help renewable energy suppliers launch new service models and expand the market place for higher participation. By applying AI to data pertaining to the energy collected, the industry can gather granular consumption insights that it can use to introduce new service, the industry can also locate upstream/ downstream products operating in dynamic pricing models. This will also create an opportunity for retail suppliers to tap into the consumer market. And perhaps best of all, AI can also facilitate the development of strategy, policy, and planning, around current use and future demands. I can't help but think, that can only mean one thing - more power to human potential! Read more articles on artificial intelligence and automation >> =====================

Transforming Service Experience for the Enterprise

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/ transforming-service-experience.html ----- Insights AI/Automation Innovation in artificial intelligence (AI) is rapidly gaining traction across the business operations landscape. Businesses expect AI-powered technology to help them innovate faster and better so they can stay relevant to customers. Enterprise Service Management allows organizations to integrate different departments more effectively for smoother business processes, facilitating better, faster, and cheaper operations. In this episode of Infosys Podcast, Infosys anchor Alex speaks with Gaurav Dutt Uniyal, IT Service Management Practice Lead at Infosys, about how and why must enterprises adopt service management. Alex: Hello, folks! Welcome to Infosys Podcast. This is Alex speaking, your host, and we are honored to have Gaurav Dutt Uniyal as our guest today. He heads the IT Service Management Practice at Infosys. Alex: Thank you, Gaurav, for being here with us today. Gaurav: Thanks, Alex, for hosting me. Alex: Tell me about service management.

Gaurav: Sure! In simple terms, it's a framework, it's a set of guidelines, a set of best practices to manage service operations for any organization more efficiently. The core focus of service management is to streamline and harmonize processes across geographies, across business units, across vendors to make sure that you have one global view of process across the organization. In a nutshell, service management is all about harmonizing the processes, automating the processes, and delivering a higher level of user experience. Now, when we look at this domain - service management, this framework itself has evolved in the last few years. Five to six years back, prominent framework or prominent term was what we call as ITSM, or IT Service Management, which focuses a lot on streamlining IT processes. That used to be the focus of several organizations for last few years, but in the last couple of years what we have seen is that organizations have realized that 'hey, we have a framework called ITSM, which we are using for IT services, and because it provides the construct and the foundation capabilities which can be utilized for my other parts of the business as well, why not extend service management to my other business areas?' Alex: So, it's constantly evolving. Does that also have to do with when you talk about geography, you are talking about different cultures as well? So service management has a wide range of applications in terms of global or cultural enterprises as well. It that correct in saying that? Gaurav: Yes! Absolutely. As far as processes and tools are concerned, one of the bigger focus areas that we have in any program that we execute is to build up global view of process and tooling, but at the same time have flexibility in our solution to be able to cater to specific geographies and business units. And I'm glad that you bought up this point about geographies – so, whenever we execute these large programs, one of the key focus areas is driving user adoption and making sure that employees of any organization embrace that change. Alex: So, what are the current trends around service management today? Gaurav: First one we see is the 'service management' in true sense is becoming 'enterprise service management'. This is no longer ITSM, focusing just on IT. Service management is truly being embraced by organizations to drive efficiencies across business operations as well. We are seeing lot of organizations utilizing solutions, these process, service management as a concept for their business operations, as I mentioned earlier HR project management, project portfolio, CRM, and so on and so forth. The second trend is that we are seeing is around bringing in more and more automation and artificial intelligence. So capabilities like chat bots, bringing in natural language processing (NLP), machine learning, decision engines. And what we are also seeing that while these used to be high level concepts or solutions out there in the market, now these are being deployed for our customers. The third trend that we see right now is bringing in industry specific or vertical specific knowledge into service management. And to give an example – we are implementing service management process and platform for a large pharma organization. As part that initiative they are streamlining their service management processes, bringing in a new tool set, redefining their metrics KPIs, the way they manage and look at their operations. That initiative is going on at the moment. One of the problem statement that company wanted to address is that, as we implement service management, how do we ensure compliance to GXP requirements. GXP is a standard in the pharma industry. That's one of the requirements they had, so when we are implementing service management we have to make sure that

our solution is GXP compliant. Similarly, when we are having these kind of conversations with retail organizations, insurance firms, financial organizations, while the underlying principles, the guidelines, the frameworks, the best practices still remain consistent, not specific to any industry, during these implementations now we're seeing a trend of bringing in the domain expertise and making that solution vertical focused as well. Alex: So, has accessibility to the vendors and the customers improved, because you're literally you are giving that much accessibility to them? And how much of what you are doing is tailor-made, because it sounds like because of the vertical focus on you are heaping everything in one consolidated package? Does that fine-tune what you are offering in terms of service management? Gaurav: One of the proposition that we bring in is having expertise on service management, because of multiple implementations and civil programs we have done, but also be able to tap on to domain knowledge that's available across Infosys. So while we have our team, which is a 1,200 minimum people, we also have access to a larger pool of resources where they have expertise on financial services, insurance, retail, manufacturing clients and all. That's where we are able to bring in that expertise. Now what we have also done in this space is we have taken our experience around service management, we have also leveraged experience from different domain SMEs, and we have packaged it all together and built a solution what we call as Enterprise Service Management Café . ESM café is a solution that we utilize for all of our service management programs because it already has different processes, templates, accelerators built-in as well as a lot of solutions also a part of that IP that helps us accelerate transformation for any organization as they go through the service management journey. Alex: So, tell me what motivates enterprises to go for service management? Gaurav: Every large organization, they do have process, they do have automation, to a certain extent they do have the tool set. I think it's a question about what is the maturity of their service management function within the organization. Typically, we have seen a few demand patterns which trigger service management. One, as I said earlier, large enterprises have multiple geographies, different vendors, different processes. Many organizations realize that we [they] are not able to get a comprehensive view of how operations are being run today. They have a large set of data, completely disintegrated, large set of reports and dashboards, but still not able to get meaningful insights. So they can't take certain actions because they have so much of data with them but [have] not been able to get the right information. A second trigger we have also seen is certain events like business services and applications are very critical for any organization's business today. Organizations start seeing that my [their] critical business functions, or business applications are not always up. I am seeing a trend that there are disruptions in those business services, there is higher down time, and then we need to do something about it. The other trigger we have seen is how do you make it more lean, bring down the cost. So that's another trigger for service management. Other trigger we have seen is around user satisfaction or the kind of experience any user would have with service management. In today's world, all of us have access to all popular technology - Facebook, Google, Amazon. We are used to that kind of experience the moment we step out of our office world. But the moment we get into office, we are still used to seeing that old portal, the way we access

our IT services, the way we reach out to staff to get something fixed. There is a huge difference. And that's another trigger that how do you bridge that gap and make user experience much better and seamless for the employees. Alex: Do you see yourselves as business advisors or troubleshooters in this? Where would you place yourselves in service management in that respect? Gaurav: Depending on the scenario, we have to play both the roles. Any organizations adopting service management, they have to go through a journey and that journey starts from first knowing what really needs to be fixed. Closely tied to that is knowing what we want to achieve at the end. So, in most cases, we play the advisory role where we help them define their strategy, the architecture, and help them deploy the solution. But in certain cases, we also have to get to tactical details to understand if there is a specific issue – that how do we troubleshoot it and then make sure that the inputs from the troubleshooting go back to the larger architecture and strategy that is being developed. Alex: Streamlining, fine-tuning is a benefit but could you elaborate on other benefits that service management brings? Gaurav: I think you are right to say that streamlining, fine-tuning are benefits, but I would say these are softer benefits or I would like to say that these are enablers to deliver benefits for an organization. By the virtue of having streamlined processes, better automation, better tooling platform, these are the benefits that get delivered. And what we typically see is huge positive impact on user experience. So, that's one of the key benefits that we have seen. The second benefit is obviously on the cost that an organization can save. In any large implementation, we have typically seen consolidation of at least eight to 10 different platforms into a single platform. Because of this consolidation and streamlining, there is a huge amount of cost-saving that also gets delivered to the organization. The third benefit is around predictability in services. I think that it's very important to know that because of having the right set of processes and tools, I know my business operations or my business services are going to be up by this percent, this much. So how do you bring in that predictability, forecasting into your approach, or into the way you are managing your operations, that's the third benefit that we have seen. Other than that we have also seen bringing more transparency across operations. Several IT leaders, business leaders that we have talked to [say that] one of the challenges they face is that "I have operations being done in different geographies, or different units are managing the operations with their platforms and systems and their processes, and I don't have any way to get a comprehensive view on how my entire IT organization or how my HR operations are being run". So by having service management, we connect those dots together, we have one set of common process, one common tool that can be used across geographies, across business areas, business units, and be able to bring in transparency in terms of the performance of services, what is the spend on these services, and that is a huge benefit. Alex: In general, what are the different challenges enterprises face in adopting service management? Gaurav: The typical challenges that we have seen with any organization, as they start their journey on service management, the biggest challenge is about the resistance to change. Because even if you have your legacy tools, which you don't like, you know that the processes are broken, this tool is old, but at the same time you have been using it for 10 years or 20 years, depending on your stay in the company. So, in a way you are used to that particular tool or set of processes that you are using for your day-to-day

work. As a new solution, and as we help companies go through this journey to implement service management, they always have the fear of unknown – "I know that this tool is bad, but I know this is how it works, and this is the process". That resistance to change, I think, that's one of the key challenges that we have seen for any organization as they start their implementation on service management. The second challenge that we have seen is around getting the right amount of data as we implement service management capabilities. Usually, what happens when we implement service management –there are three or four areas that we typically focus on. So we focus on: one, streamlining processes; second we focus on implementing the right technology to support those new processes; third, we focus on enhancing the user experience or managing organization change; and fourth area is around building the foundation data which can be consumed by the platform as well as the processes that are being deployed. Other challenge that we run into is that many organizations they have this data, the information about their business services, sitting in pockets in excel files. It is in different data bases, it is in legacy tools, and as part of this transformation how do we bring it all together. The third challenge that we've seen is also around maturity of users across different business areas or departments. We are trying to bring in consistency, we trying to have one set of process that can be used by everybody, but the way different users look at those processes, and how they use it, it also depends on how mature that organization is in terms of their current set of processes, in terms of the current tool that they have. So, we have to make a balance that certain departments will find mature processes and help drive their adoption. In certain cases, the maturity would be a bit lower and how do we bridge that gap. The other challenge is in organizations they look at these implementations as very tactically that we have to replace a particular toolset, but service management as a domain is much beyond only a tool. It's all about how do you set up a framework that helps you drive process efficiencies with the right tool, managing organization change. So how do we make sure that all the right parties are involved and they work together doing that implementation. Alex: So with archaic systems, do you find yourselves having to educate your clients to a larger extent because you're having to take that leap from their old processes and systems to a new body or a new platform? Gaurav: That's a constant exercise we have to do throughout the engagement. Typically, what we also do is whenever we start any large program for transforming service management, we usually keep an initial phase of around four to six weeks. This phase is all about planning, educating users, educating key stakeholders, building the strategy, refining the roadmap, understanding dependencies, understanding potential risks, building mitigation plan. We do that exercise in the beginning itself so that we at least know what kind of challenges would come up. So, that really helps us as we go through the different phases of the program. Other strategy that we adopt is we bring in our ESM café solution upfront during our client conversations. With the help of ESM café, we can help users see what they are going to get at the end that 'hey, this is how your target state is going to look like'. When they see the target state, how simple the process is going to be, or this is how my new tool is going to look like, or this how I'm going to request my services, the adoption or the participation level in the program increases quite a lot compared to if they wouldn't have seen something live out there. Alex: Could you share some scenarios of how

Infosys helps its clients in service management? I mean, with an extension to the question that I previously asked you. Gaurav: So, there are organizations who are starting with implementing service management for IT, streamlining their IT operations, and then there is a natural progression towards applying the same principles, the same concepts, same frameworks to their business areas as well. We start with IT, fix the processes, and then expand into business areas. Now what we're also seeing, an alternative approach where organizations are starting with their business processes. They are starting with HR, they are starting with their CSM (customer service management), they are starting with project portfolio management – fixing those processes and then getting into IT. So we are seeing both type of implementations. I am taking a couple of examples here. The first example is for a global fast food chain. The problem statement they had was that they had a variety of tools. They had different business areas with their own tool set. They had different ways of working, different processes in different geographies. When Infosys got engaged with this client, when we started the implementation, we were also helping them go through larger infrastructure transformation. So the challenge we had was to not only implement service management capabilities, but also implement service management in conjunction with the larger transformation which is happening on the infrastructure side. What we helped them achieve is to have one process that they run across all the areas in not only North America, but in the UK and other areas as well. Alex: Is this a long transition from implementing the process to begin with to transformation? Do you give yourselves a large transitionary period? Gaurav: That's one case. There is another interesting case for a large insurance organization based out of Europe. The problem statement they had or the focus area they had was around user experience that how do we make it seamless, topnotch, how do we improve the user experience - that is what they wanted to focus on. So what they did is that they looked at all their business processes - be it for facilities, be it for field services, be it for IT, be it for HR, and they implemented a platform along with processes to tie it all together. So any user, when they want to request for service and they want to use it, they don't have to go to those individual areas to request something - they had one portal where they can go and request anything which they like. Not only request, they can track the entire life cycle and there is a fulfillment engine as well. It was all about improving the user experience. So that's another case example that I wanted to quote where we helped them through this customer satisfaction as well as improve the experience for their users. The third one is for a CPG company and a very interesting use case. As I said, organizations are also adopting new platforms for their business operations and then moving to IT, it's different way of how they're adopting it. So this particular company, they started their service management transformation on the business side first. They picked up a set of business processes which are broken, which are running on legacy tools, that need fixes and they automated more than 10 business workflows on to the platform. So one of the reasons why these organizations are able to get it out there and achieve these results is because of having the right technology available in the form of this platform ServiceNow. Alex: Having implemented service management to those companies, what differences, what benefits, what efficiencies did you see after sometime? Gaurav: In certain cases, the benefits are very specific to the organization but these are general trends as well. The typical

benefits that we've seen is that there is a decrease in the request that goes to the service desk. Typically, what happens is if you need something, you will pick up the phone, call the help desk, "Hey, I need this". And then you can talk to them for 10 minutes, 20 minutes and then your request gets fulfilled. With the help of these solutions, there is a huge focus on enabling self-service. You'll no longer have to call somebody - you can simply go to the portal, request your service, and then the fulfillment process starts. The second option could be that you can utilize the chat option using a mobile app. So there are different avenues the way those requests can be submitted. You no longer have to pick up the phone, talk to somebody for 20 minutes, to get it fixed. One, this helped in improving the user experience because the self-service has gone up, the volume of request to service desk has gone down. The user satisfaction is up. Second is obviously the cost benefit because you no longer have to make those calls. The third advantage is around consolidation. In all these implementations we saw, as a new solution like ServiceNow gets implemented, or as we implement service management capabilities, there is a huge amount of consolidation that happens across platforms. Other one is about we saw predictability in their business applications availability. So these are the typical benefits that we have seen, user experience, cost savings, consolidation, having better transparency and predictability in the way that the operations are being run. Alex: Now, with any industry, with any profession, looking at IT specifically, we're all looking to improve efficiency of processes. Now, I don't know what level service management has reached today but do you see any room for efficiencies, improvement in efficiencies in your processes as well, because the last question I'm going to ask you is, bearing that in mind, what kind of future do you foresee for service management? Gaurav: Just to get to this question, first of all, yes, service management has reached a certain level of maturity, but at the same time we could already see that the things that are lined up for the next 12-18 months, and how industry is shaping and how we are adopting those trends internally. And as I said earlier, service management as a function is there in most of the large organizations to a certain extent. It's about what's the maturity of that function and how do we enhance it further. Service management so far has been a flat framework and a horizontal framework with no specialty for any vertical, but now we see that there could be a potential – service management for retail, service management for healthcare, service management for insurance – could be mini variants that could come up. Internally, within Infosys, we are building those frameworks but we could see in the next nine to 12 months these newer areas like IoT would also get integrated with service management. Alex: What drives you personally in service management? What excites you about the future on a personal level? Just one statement. Gaurav: I think what drives me is the diversity of the problem statements that I see, and I'm pretty sure my colleagues and my team would feel the same. While we work with large enterprises and many organizations have common challenges, we still find two or three problem statements which are very particular to their business, and which are very important to their business as well. And then we get excited helping them go through that journey and not only solve the common problems which are there in the industry, but also help them solve that particular business problem. Then when we see the results that, when we did something on service management, how it helped them not only within IT, but delivering some results on the business side. So that sense of

achievement, be able to solve those specific problems, I think that personally drives me and I'm pretty sure that I think most of my colleagues would also share the same feeling. Alex: So you enjoy these challenges? Gaurav: Yes, absolutely. Alex: Thank you, Gaurav. I must say it was a very informative session. I've learnt a great deal in our conversation. And I'd like to thank all of you for listening and for more information please visit Infosys.com. We look forward to you tuning in next time. ======================

Travel Industry – The Journey to the Next Phase of Digital

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/travel-industry.html ----- Insights AI/Automation From using websites as marketing channels to enabling online reservations, the travel industry is an early adopter of digital technologies. As the business environment becomes more competitive, customer expectations are increasing, and with Horizon two and Horizon three technologies maturing, the time is ripe to implement novel strategies and provide exceptional travel experiences to customers. The travel industry includes various providers of the travel experience, including airlines, hotels, and rental car services, to name a few. Across the board, customers today expect hyper-personal experiences that are relevant and contextual. Given the explosion of mobile devices and associated technologies, the travel industry is looking for ways to improve the digital experience for its customers. The use of technology in the travel industry too has evolved considerably in the last few years. Organizations now have access to real-time data from multiple sources to help them improve demand forecasting, guest profiling and resource planning. Artificial Intelligence (AI) and Machine Learning (ML), Augmented Reality (AR) and Virtual Reality (VR), Data Analytics etc., have reached an advanced level of sophistication and have several proven use cases across industries. These technologies have the potential to disrupt traditional approaches to marketing, customer insights and engagement, as well as to increase profitability. Advanced Data Analytics and Big Data In the digital age, most customers leave behind a considerable amount of data at each stage of their travel journey, be it planning, research, reservation, stay, or post-travel review of their experiences. This includes a rich mix of structured and unstructured data gathered from a variety of sources including front desks, contact centers, mobile apps, social media, and other guest service channels. Using insights from this data, advanced analytics helps service providers bring a high degree of personalization to the travel experience. With better targeting and customized offerings, there is an opportunity to build customer loyalty. Infosys offers the Customer genome solution that uses information to build a digital and virtual profile of the client and then works with Airline Passenger Service Systems (PSS), Customer Relationship Management (CRM) Systems, Hotel Property Management Systems (PMS) and Point of Sale (POS) systems to guide the providers to offer rich customer experiences in travel. Example - The needs of senior citizen hotel guests, such as first floor rooms, shorter wait times to check-in, and concierge support, are vastly different from those of millennial travelers who are comfortable using a mobile key and

voice activated elevators. Our genome solution generates these profiles and sends recommendations to the hospitality staff. The below graphic shows the various digital experience opportunities that an airline company must tap to be competitive in the travel industry. Curbside and gate-side software modernization for a large airline company based in the U.S., that is designed to vastly improve passenger experience at airports, reduce agent time at the gates for operations such as re-boarding, re-booking, confirmations, bag tag generation, seat assignment, and baggage check-ins. The new solution is implemented in 5 major hubs of the airline and rolled out to 40,000 agents, terminals worldwide. Dynamic pricing and revenue management strategies can be based on real-time data from competitor rates, local events, weather, and seasonal patterns. We can provide fare managers and revenue managers unprecedented insights into pricing for airlines and hotels. While there are several commercial products that offer point solutions in this space, we believe that an overarching mechanism that takes insights from customer behavior and classic revenue management tools to then help build predictive models and extend them to offer customized campaigns and offerings is the next big frontier. Our Infosys Analytics workbench is helping our clients stitch an end to end solution by providing data scientists, operations research personnel, revenue managers and campaign generators with a single platform that is empowered with self-service analytics. Artificial Intelligence and Machine Learning AI can potentially transform and enhance every aspect of travel significantly. The effectiveness of AI/ML hinges on the quality of data available, and the travel industry has traditionally been good at collecting data. AI offerings from Infosys use the rich data that is accessible today, with consent, to provide bundled deals and offerings to every segment of the targeted clientele. Machine Learning combined with Natural Language Processing (NLP) can be used to build chatbots that can mimic human behavior to a large extent, making interactions as smooth as possible for end users. Cognitive chatbots can assist travelers at every stage of travel, providing advice on picking a destination, suggestions on where to eat and visit or deals on spa offerings based on their personal preferences. Hotel operators can use AI to improve operational efficiency by monitoring IOT based sensors in hotel premises to detect faults and anomalies and fix them before they cause disturbance to guests, thereby preventing calls to the service desk or worse, a negative review in social media. The business cases are endless given the significant reduction in the capital cost of such solutions and greater standardization of devices, technology, and adoption. We are helping a large airline Network Operations Center (NOC) in the U.S. by automating several routine processes using the AssistEdge RPA suite. It helps the dispatcher to focus on more strategic work, while RPA automation helps with specific scenarios such as initial login, screen orientation, re-running flight planning, fuel planning, or re-computing weight and balance automatically if there is a flight delay. Travel data is dynamic and constantly changing with weather, traffic and other conditions that are beyond the organization's control. Therefore, it is better suited for use with Machine Learning to optimize operations than with rule-based probabilistic models. ML can help decide allocation of rooms for hotel guests to drive maximum profitability or determine flight takeoff and landing sequences to optimize fuel consumption. AI and cognitive capabilities can play a big role in meeting and exceeding customer expectations in utilitarian needs during air travel. Using

AI and data science, airlines can predict, reduce and optimize the entire baggage handling supply chain by modeling optimized routes for bag trolleys, providing intelligent inputs to bag loaders and sending continuous updates to travelers and gate agents on missed bag situations. Infosys has considerable experience in delivering 'Under the Wing' solutions to airline clients. End to end baggage handling, monitoring, tracking, and reporting for a large Airline in the U.S. The Infosys Digital practice worked closely with the client to map out the entire business process and assess current MBR (Missed Bag Rates), and then complied with new IATA norms to bring in new technology to reduce the MBR to under 2 missed bags / 1000. The solution takes flight planning and network operations data, and integrates with airport and airline systems to provide real-time tracking of all checked bags from check-in to retrieval across interline transfers. Infosys also developed technology that runs on ruggedized devices for scanning and confirmation. This solution won an IATA award in 2017 in Barcelona. Another area of interest to airline and airport operators is using location-based sensor (LBS) networks, beacons, and geo-location services to improve security and efficiency of movable assets in airside and landside services, be it fuel trucks route monitoring or wheelchair demand forecasting and tracking at the airport gates. Infosys has helped a large airline carrier with a Personalized Offers Solution to automate and optimize wheelchair assistance services to eliminate waiting time for passengers and advise wheelchair agents about which gate to go to and where the guests have to be transferred, with all the information made available on mobile devices. We have also developed a solution for POS payments using voice and sound technology that may help airport concessionaires and hotels to provide innovative frictionless experiences as part of their payment channel. Augmented Reality/ Virtual Reality Given that travel is all about enjoyable experiences, there is tremendous scope for AR/VR technologies to make an impact. They can enable rich, immersive experiences for potential travelers, while allowing them to make the right travel decisions. As a marketing tool, they can drive travel inspiration in ways that standard channels such as video or printed collateral simply can't match. The impact of technology on travel has been seen for a while now, but there is an opportunity to leverage new and exciting advances to add to the organization's effectiveness. Infosys has deep expertise in several new technologies like Blockchain, AR/VR, IoT, API, and microservices, which we stitch together to bring compelling solutions to our clients. Our strength lies in our deep domain understanding of the travel and hospitality business, and connections with public figures in the industry and policy making alliance groups such as HFTP, FocusWright, HSMAI, and IATA. These experiences help us incubate ideas, offerings, and platforms that deliver tangible topline and bottom line transformation and other digital benefits to our travel industry clients.
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AI Trustworthiness in Aerospace, Fintech, Automotive, and Health Care

Insights AI/Automation Artificial intelligence (AI) initiatives are challenging even for the most sophisticated companies. But not all AI projects are equal. In highly regulated industries, such as aerospace, fintech, autonomous vehicles, and health care, the barriers to adoption can be formidable. Regulatory structures are rapidly evolving to address AI concerns about data security, privacy, and customer safety. Understanding these new rules can make or break a company's potentially transformative AI strategy. AI spending is expected to increase by a compound annual growth rate of 46% over the next five years. Much of AI's value will derive from human-machine augmentation, powered by response-based systems. Companies will also be able to reduce costs and improve technology risk, which in turn will ensure that applications have business significance and close association with global and geography-specific ecosystems. However, few of those benefits are likely to materialize for companies that can't navigate shifting regulatory systems. Government bodies and industry consortiums worldwide are coming together to determine the rules for AI. With this focus, we looked at these industries to assess where they stand on the critical elements of AI trustworthiness. Below are highlights from an Infosys whitepaper detailing trends in the aerospace, fintech, automotive, and health care industries. AI trustworthiness in the aerospace industry AI trustworthiness in the aerospace industry is primarily driven by two perspectives: safety and explainability. The European Union's Aviation Safety Agency has created building blocks for AI. These include learning assurance, AI explainability, AI safety and mitigation, and the creation of a foundation layer for AI adoption in the aerospace industry. Within this framework, the key elements involve technical robustness and safety, accountability, privacy and data governance, and societal and environmental well-being. On the business process side, where human and machine-oriented processes will align and amalgamate, various competencies are in development, including how relevant AI is in the process, road maps to implementation, technology stacks, and safety. To adopt affordable AI, important elements must be both predictable and standardized. Data privacy and governance mandates are evolving so that captured data is assessed both from a fairness perspective and a discrimination perspective. Explainable AI (XAI) is needed in each workflow. AI trustworthiness in fintech Fintech companies were among AI's early adopters, an outgrowth of the industry's embrace of digitization. AI has been used in data processing and synthesizing along with rules-based business processes lower in the value chain. With privacy so important, encryption layers and policies are needed at all stages in the technology stack. AI platforms also play important fraud prevention roles in business portfolios that include credit data and loyalty programs. With banking, trading, and commercial units all having customer-facing attributes, a structured transition to AI is needed, with a road map that moves from

cognitive to self-managed to self-resilient systems. A careful balance of governance, ethical awareness, financial data monitoring, and fair decision-making must be the cornerstone of all fintech initiatives. As such, fintech consortiums are working together to ensure that end users accept this AI fintech revolution, with rules governed by geography-specific institutions, regulatory bodies, and business organizations. AI trustworthiness in autonomous vehicles AI in autonomous transportation has matured; it's now used in connected vehicles for compliance, safety testing, secure communications, and platform services (Tesla is a great example). Control and vision systems are popular, while safe adoption has been accelerated through encrypted batch streaming with data analytics. For such critical systems, redundancy must also be built in to ensure human safety, while the use of cloud API-based automation and intelligent analytics increases each system's viability. Implementation is made easier through automated decision response, since taking humans out of the loop makes the car safer. In this paradigm, data flows seamlessly through all elements of the system and adheres to strict policies. AI trustworthiness is certified by ensuring the unmanned system can navigate many different scenarios and environments without failure. There are currently no federal regulations specifically related to autonomous vehicle technology, although U.S. agencies are examining the issue. AI trustworthiness in health care The health care sector is taking a product and platform approach to AI. The technology is used to assess historical data, authenticate data, and speed up real-time decision systems. However, oversight by doctors is still critical to assure ethical governance. Adoption is going full steam ahead with descriptive, predictive, and prescriptive AI embedded across the value chain. Big data is used to provide pattern recognition and simulate surgical outcomes. Successful ethical guidelines that will be accepted by the public require many attributes, including data safety, privacy, XAI, consent, liability, data integrity, and algorithmic accountability. The adoption of natural language processing, deep learning, and knowledge representation with AI will be necessary to meet these requirements. Currently, there are no national regulations specific to the health care sector. However, many different policy groups, task forces, practitioners, regulatory bodies, researchers, and councils are forming consortiums specific to different areas of health care, with most currently drafting guidelines. Moving forward with AI trustworthiness AI is a prominent technology in each industry and is used to improve efficiency, enhance the customer experience, and create autonomous decision systems (while keeping humans in the loop). AI allows businesses of all types to sprint toward Industry 4.0 and Society 5.0. As highlighted, all ecosystem partners must work closely with regulators and professional bodies to develop standards and best practices for this critical technology. Infosys is working hard in this area, contributing to SAE International standards development as part of technical committees. In time, this will provide incentives for companies to follow through with a quicker AI adoption strategy, unleashing the full potential of humans and leading to comprehensive and sustainable growth.
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What More Can Automation Bring To The Automotive Business?

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/what-more-can-automation-bring-to-the-automotive-business.html ----- Insights AI/ Automation We've all heard Mary Barra, CEO, General Motors, repeatedly refer to how the automobile industry is changing more today than it has in five whole decades, as it awaits a revolution in personal transportation. The change this is bringing is not only fundamental but deep-rooted, caused by actors on the outside such as Tesla and Uber, slowly but surely making both driver and owner redundant with their autonomous vehicles and ride-sharing model. The impact is starting to show. For the seventh month in a row, U.S. car sales in July this year continued to decline. And predictions are that carmakers are likely to sell about 17 million vehicles or fewer this year compared with nearly 17.6 million last year. This has serious consequences for the industry, which although highly efficient in its manufacturing methods (read just in time, LEAN etc.), is dated in its selling practices: basically, instead of producing against an order, car manufacturers churn out cars based on a demand forecast made months in advance and then flood the dealerships. It doesn't take long for the inventory to pile up and because a new car can only remain new for a year, unsold stocks are flogged as old, at a discount or easier credit. Amidst all this, automobile manufacturers are investing enormous sums in autonomous vehicle technology, with no sign of payback. The only way they can sustain that is through cutbacks and layoffs. GM has already laid off workers, and there's been talk all year that Ford will follow suit. As traditional automakers struggle to stay profitable in the short term, and alive in the long, we believe that automation - in each of the three most important entities in the ecosystem, namely manufacturers, financiers and dealers - could provide the answers. Physical automation of tasks and processes The automobile industry is no stranger to automation. It is, in fact a pioneer in this area, having started out on its journey in the 1960s. There is very little in the assembly line or supply chain that is not fully optimized, and even less left to gain. From simple mechanization, carmakers progressed to industrial robotics – General Motors introduced Unimate, the world's first industrial robot – then to digital automation, and today are extensive users of robotic automation. U.S. automakers buy one in two industrial robots sold globally, says the International Federation of Robotics. A few years ago, Ford introduced a "seeing" robotic arm to install different parts, such as windshield, fenders and doors, on the body of the Ford Escape more accurately. Chrysler's Sterling Heights Assembly Plant has a robotic flexible body shop. Handling everything from welding to assembly to painting, robotic automation is indispensable on the automobile shop floor. It has also pervaded car financing and distribution. Going from physical robots to digital bots, taking advantage of robotic process automation (RPA - a term that has become standard across the industry) with bots handling customer queries in the call centers of financing companies, and software robots at dealerships scheduling service appointments, sending alerts, running diagnostics and even selling cars itself. In March 2017, online car retailer Caravana launched its fourth car vending machine in the United States. A

buyer can research, purchase and finance a car on the company website and then ask for it to be delivered, or choose to pick it up from the vending machine, which works pretty much like any other. If the buyer needs help, a company rep is at hand. Data-driven automation of decisions Digitization brought data and the technology to gather it, manipulate it, analyze it, interact with it and act upon it. Data science has come a long way from business intelligence and early analytics applied to orderly, enterprise owned information to encompass technologies, such as big data and predictive analytics, machine and deep learning, natural language processing and visual recognition, that can handle absolutely enormous quantities of data from a variety of sources and formats, and in varying degree of cleanness. Following from this, the way data is used has undergone a sea change, where it is no longer about studying events past, but about understanding events as they occur in real time, and predicting future events before they unfold. Where data merely provided a diagnosis in hindsight, it is now producing insights that can be used to make smarter decisions and initiate timely actions. All of this can run on its own, without human intervention. The modern car is a supercomputer on wheels, and its sensors and cameras generate a wealth of data that someday might be worth more than the automobile itself. A sensor fitted on the engine can alert the driver about a part needing replacement; a camera can pick out an empty parking spot. A self-driven car produces about 1 GB of data per second, and it is expected that by 2020, manufacturers will earn more from selling data than cars. Self-driving taxi operators will earn more than cab fare by beaming personalized, location-specific advertisements and promotions. Connected cars will also potentially save manufacturers and insurance companies millions of dollars in prevented accidents. On the financing side, data is driving automation of several decisions and processes. GM Financial, for example, uses an integrated loan origination solution that can interact with users to process requests or perform transactions automatically. The solution not only automates application processing from end to end – data validation, car valuation, credit scoring, fraud detection, etc. – but also makes lending decisions in conformance to company policies and local and national regulations. Data-driven automation has also entered the car dealership to impact everything from customer experience to marketing campaign effectiveness and lead conversion. At the Walser Automotive Group, a marketing automation platform picks up CRM systems data to craft individualized marketing messages with content that speaks to the customer's desires and position in the purchasing life cycle. An example of this is a repeating campaign called "Shoppers", aimed at customers in the middle of the funnel, which has consistently yielded impressive results. Intelligent automation of the ecosystem At the third and highest level, automation will take over the automotive ecosystem itself. Still some years away, the seeds for ecosystem automation are being sown today by technologies such as Artificial Intelligence. A scenario of that kind could be imagined somewhat like this: A potential customer asks an online chatbot on a car manufacturer's website or social messaging platform whatever he needs to know about a particular model. The bot transfers that information and context to the car company, which might, using an automated marketing platform, send additional relevant content and promotional offers to the customer and arrange a test drive in a virtual reality environment. Assuming that U.S. car manufacturers are still prohibited from selling new cars online

and hence dealerships are still in vogue, the happy customer places an order with the dealer; again a chatbot might facilitate the transaction, including an attractive car loan and a vehicle insurance policy that is crafted based on the buyer's driving history. Now the manufacturing plant gets into action, ordering add-ons such as paint and accessories just-in-time from the respective vendors via an automated sourcing platform, putting them on a ready and waiting car body, to be shipped to the dealer for delivery. (Note that this prevents the dealer's inventory from piling up.) The customer picks up the automobile, and syncs it with other cars in the family and their mobile phones. He drives to work on his fancy new wheels. Depending on who gets off work first, and the current location, the car advises who should pick up the kids from school. Thirty minutes from home, the customer activates the air conditioning and the oven from the dashboard of the car, and orders a bottle of wine from the nearby connected supermarket which will deliver by drone. Dinner is now waiting. This scenario can be enlarged in umpteen ways – a connected car that hooks into a ride-sharing ecosystem and doubles as a taxi, or a common pool of cars share-owned by several people, to name just two. Here, a technology such as Blockchain could come into the picture to create transparency and enable a trusted transaction between total strangers. Undoubtedly, the automobile industry has made tremendous advances in process automation, and considerable progress in data automation, but has barely begun to automate its ecosystem. There is a need to focus attention and resources in this area because it could potentially solve most of the industry's problems by lowering cost, adding monetization opportunities, reducing unsold inventory, and above all, preparing for the not quite imminent, but certainly inevitable, domination of the autonomous car. ======================

What's 'Next-gen' About Next-gen Services

----- Arcticle source ----- https://www.infosys.com/insights/ai-automation/what-next-gen-about-next-gen-services.html ----- Insights AI/Automation Recently, Infosys was acknowledged for its application services leadership in NelsonHall's Vendor Evaluation & Assessment Tool (NEAT). While the rating, at one level, is a reflection of our ability to deliver compelling immediate benefits to clients, what's equally relevant is that it's an indicator of our preparedness to fulfil their future needs. Although the report itself acknowledges this, it's my conversations with clients from across the world that strengthens my conviction. It is clear that leaders at the helm of every kind of business are grappling with the same dual agenda - to make problem-solving of well-defined, current challenges more efficient, and simultaneously to also focus on problem-finding and explorations to uncover new avenues of value creation that can serve the enterprise's future. Next-generation services - like the ones referenced in NelsonHall's Evaluation of Infosys - power this duality. And here's how. These services rely on automation to bring breakthrough productivity to problem-solving endeavors. In fact, the very core of next-gen IT services is based on automation and a people+software delivery model with efficiency benefits

that can then be shared with the businesses that commission these services. From bringing automation to IT operations, building process automation, scripting test automation and frameworks for automated knowledge curation, the point then is to focus on doing more, with less for more. Using agile and DevOps capabilities to deliver modern applications in a shorter timeframe is integral to the game plan. Artificial Intelligence (AI) can also be harnessed to bring productivity improvements to work. Advanced AI technologies, when combined with in-depth understanding of the business and the IT landscape, can give businesses the edge of automation while also using critical knowledge locked inside source code, application silos, maintenance logs, exception tickets, and even individual employees, to solve tough business challenges. It can enable systems to predict problems and automate the solving of these problems otherwise requiring skilled people to invest time and effort. With problem-solving in the domain of automated systems, thanks to advanced technology and new-age services, fresh bandwidth is created for people to devote themselves to problem-finding, to spot new opportunities and build the unprecedented solutions that can bring home the value of these opportunities. An increased focus in product engineering services on IoT and areas such as predictive maintenance, machine learning, and intelligent and adaptive systems is making it easier to bring brave new ideas to life. In addition, when Design Thinking services are also included as part of the services package, it can help client businesses internalize the ways of problem-finding, as repeatable and practical methods to explore new avenues of value-creation and bring innovation into their context. And yet, it's not unusual for a discomfiting tension, between problem-solving and problem-finding, to make things far from simple for businesses. And the solution often lies in nurturing an organizational fabric that supports the harmonious co-existence of both these mandates. An ethos where people are continuously learning to harness machines that are growing every day in their ability to solve problems, and also to measure people-success in terms of the breadth and expanse of their purposeful problem-finding. So, in addition to automating what can be automated, and innovating to find new problems ahead of new solutions with techniques such as Design Thinking, there is in the next-gen services repertoire something that nudges the thinking of the client organization to not let focus on the 90-day rhythms of enterprise life distract them entirely from long-ranging pursuits of real progress. Something of an inspiration to wait for fruits to be borne over longer lifecycles. This coming together of automation and innovation in a culture of purposefulness, this catalyzing of the natural cycles of business, tempered with longer-term priorities and perseverance, in my view, separates the 'next-gen' services from the more easily contracted set of next services. =====================

Why AI-Augmented Virtual Assistants Will Soon Be Your Travel Companion

Insights AI/Automation Today, we have an app for almost everything – including doing the most mundane of tasks. The travel industry is no different and is flooded with all kinds of apps from helping users find a one-way ticket with a stopover (Skiplagged), to locating restaurants closest to your boarding terminal and ordering your meal before you get there (Grab). But with artificial intelligence making a presence in a number of areas of our life, just an app is no longer enough. Travelers are looking for more personalization, and the smartphone is the tool leading us from app-based communication to two-way conversation. Welcome to virtual assistants and chatbots that are set to significantly enhance our travel experience. Wouldn't it be nice if instead of downloading and interacting individually with multiple apps - taxi, hotel, flight, etc., we could interact with just one, AI driven virtual assistant who knew our preferences, upcoming schedule, travel entitlements/budgets and helped plan our entire trip, making taxi arrangements, flight booking, hotel booking, ordering airline/airport food, parking, local excursions, dinner booking and more. This may sound too good to be true and although in its infancy there are some options available already. Infosys helps airports and airlines conceptualize and create virtual assistants and chatbots which accompany travelers through all phases of their journey, from trip planning to travel and back. Virtual travel assistants and chatbots are being designed to help with following aspects: Improve passenger experience Ancillary revenue opportunities for travel providers Seamless travel experience An interesting aspect is that the AI chatbot can play a role at every phase of the travelers' journey. Pre-trip: Helping travelers plan their upcoming trip with personalized travel options During the trip: Providing information 24/7, responding to changes in the travel plans on the go , opportunities for service providers to offer real-time contextual promotions to travelers Post Trip: Provide feedback to travel providers especially around not-so-pleasing experiences, confirmation of reward accrual and redemptions, make changes to preferences, etc. Working in this direction is a company named Mezi, which offers a personalized virtual travel assistant. This company has partnered with online travel agents – Expedia, and financial institutions – American Express, to discover travel options and complete the interaction with a booking. Designed for frequent and harried travelers – the corporates, the Mezi virtual assistant uses natural language processing to create a personal experience through which it gathers requirements and preferences of the person. But when one is rushing from meeting to meeting, and needs to make and change travel plans while on the go, the desire is for more than just another virtual travel assistant. Identifying these pain points in unplanned travel and helping fast paced corporates address these concern is Sam (Smart assistant for Mobile). A combination of AI-powered chat and people, Sam offers both a technology and human experience, and goes

beyond letting the traveler just make travel plans to also access real-time updates on estimated time to airport, delays in departure, the exact carousel that will bring out the luggage, weather at destination, and more. Infosys has also designed an AI-driven chabot which can accompany passengers from their home to the airport and back. It provides seamless experience to travelers for check-in, boarding pass, real-time flight info, security wait times, weather information, F&B (Food and Beverage) options etc. This chatbot will eventually integrate with Infosys Entertainment Experience Platform to provide personalized passenger engagement at the airport. While AI-based virtual assistants are becoming increasingly popular and more are being launched even as you read this post, we feel it is important that these are built keeping the passenger needs at the center. Revenue opportunities for airlines, airports, hotels and other travel providers are immense. In the near future, I see an increasing integration of services a traveler is likely to need while on a trip, and access to them becoming intelligent, personal and predominantly voice-based travel assistant.
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Other Insights

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Authors

Insights AVP and Senior Principal Technology Architect, Cloud Infra and Security Business, Infosys Abhijit is an Associate Vice President and Senior Principal Technology Architect with Infosys, having around 19 years of experience in the industry. He has led emerging and niche technology business practices, built products, and led complex technology programs in the space of HPC, Big Data, Operations Autonomics, and Hybrid Cloud Computing. He is currently focusing on building and delivering the next-generation AI platform to help clients reimagine their business and IT operations landscape. His interests include adoption of technology for

impacting social and economic transformation. Vice President and Global Head, IoT Practice, Infosys Abhishek Goyal has spent over two decades with Infosys with 17 of these as part of the Oracle practice. Currently, he leads the IoT practice at Infosys, where he is responsible for delivering IoT and digital solutions and services worldwide across industry verticals. Besides managing several Centre's of Excellence around IoT technologies, Abhishek also drives several strategic and corporate initiatives at the unit level. He is also a US patent holder for activity points-based effort estimation for package implementation. Abhishek has a degree in mechanical engineering from the Indian Institute of Technology, Kanpur, and a post graduate diploma in business management in marketing and finance from Xavier School of Management, XLRI, Jamshedpur. Research Director, IDC Health Insights Research director, Alan S. Louie, Ph.D., is charged with spearheading IDC Health Insights' Clinical Development, Strategy, and Technology Research service with coverage of innovation and best practices in pharmaceutical R&D, and a further emphasis on technology and innovation in clinical development, business analytics, translational research, and personalized medicine. Dr. Louie has authored more than 160 reports on innovation in life sciences and blogs regularly on the topic in the IDC community. Dr. Louie graduated with a Ph.D. in biochemistry from the University of California at Riverside and holds a B.A. in biochemistry from the University of California at Berkeley. Associate Vice President and General Manager - Public Sector, Infosys Allen brings more than 35 years of experience in consulting and systems integration services to governments in Australia, New Zealand, UK, Asia, and the US. Since 2011 Allen leads Infosys business growth in the Australia, New Zealand, and UK public sector. Previously Allen was VP for the Unisys public sector business in Asia Pacific and a senior manager at Deloitte Consulting Public Sector. VP & Head – Enterprise Quality Solutions (EQS) Alok leads the Process Consulting Practice at Infosys, which helps clients in driving Agility, Efficiency & Reliability in their Ecosystems. He has over 23 years of experience – spanning across IT Consulting and Enterprise Quality Management. He has been a trusted Advisor to clients on Agile & DevOps transformation and has consulted Clients globally - across US, Europe & APAC. He is also an Evangelist of Agile & DevOps adoption at Infosys and is part of the core team driving Agile transformation within Infosys. Alok holds a B.Tech and a MBA degree from IIT-Bombay, India. He resides in Bangalore. Vice President and Regional Head, Manufacturing, Retail, CPG & Logistics, Infosys Ambeshwar (Amby) has spent over 13 years with Infosys, developing trusted CXO relationships, high-performing teams, and helping his clients successfully execute complex transformational and outsourcing programs. He has played a critical role in supporting the profitable growth of Retail, Consumer Goods and Logistics practice in Europe, by developing a healthy portfolio of long-standing client relationships. Prior to Infosys, Amby worked as a strategy consultant with a leading big four consulting firm. He has a MBA in business strategy and a bachelor's degree in computer engineering. He lives in Nuremberg, Germany with his wife Munisha and daughter Anahita. Vice President - Retail, CPG and Logistics, Americas, Infosys Amitabh is a leader in the practice focusing on client relationships globally in addition to focusing on the CoE for Retail Supply Chain and Merchandising Solutions. Amitabh has 19+ years of IT and Business Process Delivery experience with Retail and CPG clients. He has been recognized as

a thought leader and has authored several white papers in the areas of supply chain management and merchandising. Amitabh holds an MBA from the Indian Institute of Management, Calcutta, and a mechanical engineering degree. Principal, Enterprise Applications, Modernization Practice, Infosys Amrish designs and develops applications using open source technology, such as Couchbase and Kafka. He is part of the open source COE and is closely involved with clients in their large migration and transformation projects. He has worked with clients in the health care, insurance, and retail industries to define complex architectures. Amrish also has extensive experience with database migrations, cloud enablement, and legacy modernization. Senior Vice President, Regional Head — Australia and New Zealand, Industry Head — Financial Services, Asia Pacific, Infosys Andrew manages five industry business units and more than 4,500 employees in Australia and New Zealand, Infosys' second largest market. He also leads the company's financial services business in the Asia Pacific region. Before joining Infosys in 2010, Andrew was a senior vice president at London-based Genpact, where he was responsible for the EMEA region. He has lived and worked in Europe, Asia, Australia, and the United States. Andrew is a graduate of the Australian Institute of Company Directors, received an MBA from the Australian Graduate School of Management, and is a senior associate of the Australian and New Zealand Institute of Insurance and Finance. He also serves on the board of Infosys Portland and Infosys Compaz. Senior Consultant, Infosys Consulting, Americas Andrew has extensive experience leading cross-functional teams and using data analytics to solve a variety of problems related to business strategy, pricing, sales, marketing, and supply chain. He has led several strategic projects and worked with clients in multiple industries, including financial services, aerospace and defense, and energy. Andrew is based in Nashville, Tennessee. Senior Vice President and Group Practice Engagement Manager, Cloud, Infrastructure and Security (CIS) services, Infosys Anant is responsible for growth of the CIS service line in the Americas and Asia Pacific regions for Infosys. In his 22 years of professional experience, he has worked closely with many global clients to help define and build their cloud and infrastructure strategies and run end-to-end IT operations. Currently, he works with customers and the industry sales/engagement teams on the digital transformation journey. He defines digital transformation as helping customers to determine the location of workloads, leveraging new age development tools for cloud apps, enabling DevOps and most importantly keeping the environment secure and enhancing customer experience. Industry Principal, Infosys Anie has 20 years of experience in capital markets and consulting. She has worked with large financial services clients as a domain expert and now is with Infosys' central automation unit. Anie leads multiple programs in democratizing automation across the organization. She has a postgraduate degree in business management and is based in Bangalore. Associate Vice President – Consumer, Retail & Logistics, Infosys Anil is an accomplished go-to-market specialist in conceptualizing and demystifying digital service offerings. He has deep IT experience across consumer-centric industries as well as transforming marketing, sales and employee functions. He is an expert in building and managing strategic partnerships across customer experience, data science and cloud platforms. He is responsible for incubating and scaling digital strategy, creative, production and technology offerings for marketing, e-commerce and sales

functions across strategic CPG, consumer tech and retail clients. Anil is based in Frankfurt, Germany. Co-Founder & CEO, Skava Arish Ali is Co-Founder and Chief Executive Officer of Skava, an Infosys subsidiary in the retail sector in the U.S. and Europe. He is responsible for leading the company's revenue growth, as well as leading product innovation and increasing client satisfaction. Arish has over 20 years of experience in software design and development with Microsoft and other firms. Prior to his current role, he was the Software Development Manager leading the R&D team at Brience, where he helped pioneer mobile middleware platforms and the development of websites using advanced mobile content optimization technology. He joined Infosys in 2015 when Infosys acquired Skava. Arish is a frequent speaker at retail and financial services forums and conferences and a contributor to industry publications, analyst discussions, industry trends, and forums for organizational competitiveness. He has been quoted in publications such as FireceRetail, Inc., Mobile Marketer and San Francisco Business Times. Arish has a master's degree in electrical and computer engineering from the University of Massachusetts, Amherst and a bachelor's degree in electrical engineering from the Indian Institute of Technology, Kanpur. Senior Vice President, Business Strategy, Planning and Operations, Infosys Arun Hoskere is a senior vice president and head of Business Strategy, Planning and Operations at Infosys. As the head of Infosys China, he is driving sustainable growth for the business and helping clients through their business transformation journey by bringing innovative global practices and expertise. Hoskere has 25 years of experience in the information technology industry and has been with Infosys since 1994. He has extensive experience in delivering technology-led business solutions in a global delivery model to Global 2000 clients across Americas and Asia Pacific. In his career, he has led specialized teams with in-depth experience in software architecture, software design & development on diverse platforms, managing client relationships & large transformation programs across industries like financial services, hi-tech, logistics and energy. Arun has also led strategic organization change management programs on business strategy implementation, geography expansion, planning & operations and has driven value through process transformation, operational optimization and efficiency. Hoskere holds a B.tech in Computer Science and an engineering degree from University Visvesvaraya College of Engineering, Bangalore India and has completed his Executive Leadership Program from Stanford University, USA. Associate Vice President and Head – Global Diversity and Inclusion, Sustainability Reporting and Governance, Infosys Aruna started her career as a Cost Accountant and worked extensively in the area of sales and marketing, before coming home to learning and development. Over the last 25+ years, she has traversed many fields gaining a rich experience and perspective across organizations, people and functions. As Associate Vice President, she leads Infosys Diversity and Inclusion and Sustainability Reporting and Governance portfolios. A leader in Executive Council at Infosys Bangalore Development Centre, she is also Founder Mentor of Green Connect, the Infosys environmental sustainability initiative powered by Infoscions. She was the President of the Electronics City Industries Association (ELCIA), an industrial estate of over 180 corporations, and she continues to be engaged in security, traffic, transport, infrastructure and social programs for the estate. She now serves as the Chairperson of ELCIA Trust. She works with Bangalore City Police and the

Government of Karnataka on projects concerning improvements to traffic and infrastructure and the prevention of crime in the city. In 2009, she was honored with the WILL Women's Choice Award, a special recognition for Women in Leadership. She was also selected as The Most Happening Woman in Bangalore – 2011, by the Women's Guild, a forum for talented women across fields and endeavors. Her current efforts include working with Civil Defence; Jaago Re and Jaagte Raho, Citizen Police and other projects aimed at growing the involvement of citizens in governance and actions – a key to building a vibrant democracy. A keen sports enthusiast, Aruna has represented Karnataka in Women's Hockey for many years including captaining the state team, school, college and university teams in a sports career spanning over 11 years. She is also an amateur athlete (marathon) and motorcyclist. She also serves on the Board of Studies at Mount Carmel College's Commerce Department President – Portfolio & Service Design, BT Advise, BT Global Services Ashish Gupta is responsible for implementing network and IT strategy globally. As head of BT Advise, he also leads the development of BT's global professional services capabilities that complement core propositions. With extensive experience across BT, Ashish has held several positions including being the managing director of BT Global Platforms and deputy CIO of BT Wholesale. Before joining BT in 2004, Ashish spent nine years with Tech Mahindra in various roles, including IT delivery director responsible for Tech Mahindra's CRM practice. He holds a Master of Business Administration degree from the London Business School. Associate Vice President, Delivery Head for Automation and Applied AI, Infosys Ashok has worked at Infosys for more than 23 years and played multiple roles in IT and business consulting. He has designed solutions and delivered complex programs for multiple Fortune 100 clients worldwide and across industries. Ashok currently heads automation and artificial intelligence implementation for Infosys clients. Senior Vice President and Segment Head - Services, Utilities, Resources, Energy - Infosys Ashiss Kumar Dash is the Global Head of Services, Utilities, Resources, and Energy industries at Infosys. Dash, as he is popularly called, leads a highly driven team of client services professionals and technologists focused on creating leading-edge capabilities to help clients navigate their digital journey. In his role, Dash is responsible for the growth of this amalgamation of verticals, from setting strategic direction, driving financial and operational excellence, to accelerating revenue momentum. Dash has over two decades of industry experience and the last decade has enabled him to build deep expertise, lead business strategy and consolidate client services for the Resources (Chemicals, Metals, Mining, and Agribusiness) and Utilities (Electric, Gas, Water) sectors. He specializes in global delivery solution design and IT transformation and has expertise in designing value-driven engagement models to create business value transformation programs. Dash has been actively involved in steering committees of transformational programs for several large customers. His areas of interest include application of business intelligence and analytics for process agility and customer loyalty, solutions for grid transformation, and the evolving workforce. As an innovator and a visionary, Dash has represented Infosys at forums such as Smart Grid Interoperability Panel and Microsoft Smart Energy Reference Architecture Advisory Council. He is a keen observer of technology trends and has published perspectives on energy industry trends, business analytics, and strategic decision support for enterprises.

Dash is an engineering graduate from Indian Institute of Technology, Kharagpur, India and has a certification from the Global Leadership Program at Stanford University. Dash is based in Los Angeles. He is an avid reader and ardent marathoner. Vice President, Regional Head – Delivery & Operations, Australia and New Zealand Ashok Mysore has over 26 years of industry experience across telecommunications, financial services, logistics, energy, utilities, and services industries. He is the Vice President and the Infosys Regional Head of Operations for Australia and New Zealand, where he is responsible for developing a performance driven culture to achieve accelerated profitable growth by delivering value while continuously improving internal efficiencies. Ashok joined Infosys in 2004 to lead the telco, media and entertainment business and has held numerous industry and sales leadership roles, before taking up the regional COO role for delivery and operations across Australia and New Zealand in 2014. Ashok has wide experience in sales leadership, general management and consulting across Australia, New Zealand, the United States, India and South-East Asia. Ashok as part of Global Deputy COO's office is responsible to roll out all corporate initiatives in ANZ region focusing on digital, trending technologies and talent localization strategy. Ashok chairs the Global Steering Committee on Blockchain, sits on multiple customer steering committees and program boards, and has been actively involved with the Australian Computer Society for many years. Ashok completed his Executive Leadership Program from the Stanford Graduate School of Management, and has an MBA in Strategy & Leadership from the Mt Eliza Business School as well as a Bachelor's degree in Computer Science & Engineering. He is based in Melbourne. Global Head - IT Service Management, Infosys Arvind possesses diverse experience in design and implementation of large, IT service management, and infrastructure transformation programs. A winner of International IT service management leadership award, he is an expert in strategy definition and execution, practice management, talent management, thought leadership, and innovation. He has intellectual property (IP) rights for Green Information Technology framework, and is an official reviewer of the IT Infrastructure Library (ITIL) V3 and ITIL V3 2011 updates. Member of Board & Global Head of Business, EdgeVerve Systems Ltd. Atul Soneja is the member of board & global head of business, EdgeVerve (subsidiary of Infosys) and Infosys Nia™. He is driving the Automation and AI strategies for Infosys clients to help them navigate their digital transformation journeys successfully. With a focus to drive intelligent decision making across businesses, Atul helps clients in their automation continuum journey leveraging the power of AI. With over 23 years of experience, Atul excels at driving product strategy, aligning marketing and sales goals to the organization's vision, and managing the P&L for EdgeVerve. Senior Vice President and Head of Financial Services — EMEA, Infosys Ajay has 20 years of experience in technology, consulting, and outsourcing services in Europe and North America. His work has included the development of product and platform partnerships, and large transformation deals with financial services firms. More recently, Ajay has led information management and regulatory transformation efforts, and collaborations with fintechs. Before joining Infosys, Ajay was a partner and large deals leader for IBM GBS Financial Services in Europe. He has a bachelor's degree in computer science and an MBA from the London Business School. Associate

Vice President and Head of Digital Solutions, Retail, CPG & Logistics, Infosys Balakrishnan C S (Balki) is an Associate Vice President and the Head of Digital and Product Platforms for Consumer, Retail and Logistics business unit. Balki specializes in digital strategy, stitching technology and process capabilities needed to solve core digital related challenges for customers and works towards strengthening Infosys vision to deliver end to end digital transformation. He has worked for top Fortune 1000 customers over the last 20 years in various roles to roadmap, program manage and deliver various digital programs. Senior Vice President, Service Offering Head - ECS, AI and Automation, Infosys Bali is a senior vice president and heads the delivery for ECS business unit of Infosys catering to energy, utilities, telecommunication, media, entertainment and services industries. He also heads the AI and Automation unit for Infosys and is responsible for driving both internal automation for Infosys and providing independent automation services leveraging market leading products for clients. Bali has been with Infosys for more than 25 years and has played sales, program management and delivery roles across different geographies and industry verticals. Bali spearheaded creating vertical practices, industry consulting group and solutions to deliver differentiated value-added services to clients. In his previous roles, he headed ADM, SAP and Testing service lines for ECS. He was also head of the Bangalore development center and set up our first Global Development Center in Canada. He has managed several large programs for Infosys for various Fortune 500 clients. Bali participates and speaks at multiple industry forums. Head of Americas, Human Resource Development, Infosys Becky has an HR career spanning three decades and joined Infosys in July 2016. She has spent her entire career working with IT Professional Services teams. Most recently she was Vice President – HR, responsible for Experian Global IT Services. Prior to this role, she spent 10 years at Capgemini, a company she joined as the result of an acquisition that spawned their Global Outsourcing practice. Over those years, Becky held various HR roles mostly involving large scale transformational change. She also has a strong background in Talent Development and a passion for client interface. Becky was also responsible for helping set up the first delivery centers in India for Capgemini. Becky has a Bachelor's degree in Finance and an MBA focusing on Organizational Behavior and Change from Southern Methodist University in Dallas, TX. Associate Vice President, Design Thinking With more than 18 years of design thinking, change management, marketing, communications, product management, program development, and getting-stuff-done experience, Carly has worked for some of the biggest brands in the tech industry: Infosys, Gartner and SAP. Bringing a work hard, play hard attitude to projects, she succeeds in both leadership positions and in the trenches. Carly has demonstrated success in translating the theories of design thinking and agile programming into execution. As part of Infosys, Carly helps lead client interventions, designs custom engagements and design thinking awareness and education. A change leader, researcher and storyteller both in experience and degree. Carly is pursuing her doctoral studies in organizational change at the University of Southern California, where she is exploring the future of work and the impact of artificial intelligence (expected graduation May 2019). She received her Masters in Organizational Psychology/ Change Leadership from Columbia University and her Bachelor of Science in Journalism from Ohio University's E.W. Scripps School of Journalism. Associate Vice President and Head of Delivery

for High Tech Consumer Electronics, Infosys Brijesh Balakrishnan is Associate Vice President and Head of Delivery for High Tech Consumer Electronics at Infosys. He also heads the Blockchain practice of the company. An alumni of Columbia Business School, Brijesh is also a member of Executive Councils and winner of multiple corporate Excellence awards. Brijesh has over 20 years of IT experience in various leadership roles. He also has diverse IT experience in geographies of USA, Japan, Europe, Singapore and India. He is an Industry speaker at NASSCOM, Government conferences, Indo-American Chamber of Commerce and other industry events. He also writes articles for The Hindu and Times of India. Brijesh holds an Engineering Degree in Electronics & Communication, an MBA in Finance from Symbiosis Pune, and an Executive Management from Columbia Business School. He also has a specialization on 'Manufacturing & Supply Chain' from IIM Bangalore and has done a course in 'Executing Growth Strategies' from Wharton Business School. Brijesh is an avid cyclist and attained the coveted Super Randonnuer title. Country Manager, Infosys Brazil and Partner, Infosys Consulting Claudio is the country head for Infosys Brazil and Partner at Infosys Consulting. He oversees Brazil´s subsidiary strategy and execution for a profitable growth. Before Infosys, Claudio was a Delivery Director and co-founder of CPM Braxis (currently Capgemini, Brazil) and Vice-President of NTT Data in Brazil (former Value Team), where he led Consulting Services for Manufacturing and Agro-Business verticals. He has over 25 years of experience in software packages (ERP, CRM, Business Intelligence), system development and customization, and program and project management. He has been instrumental in handling organizational re-structuring, turnarounds, mergers, start-ups and leading teams through change. Additionally he has deep knowledge of the Brazilian Legal, Fiscal, and Tax systems in contract management and business operations. Associate Vice President, Infosys Chand is a client partner with more than 25 years of experience across multiple industries, including waste management. He has expertise in leading multiple initiatives including client services in package, product, and outsourcing. Chand is also on the advisory committee of Infosys subsidiary EdgeVerve, where he contributes to their market strategies and provides marketplace feedback. Chand is adept at managing client relationships, involving the delivery of critical and high-impact projects with cross-functional teams of various sizes. He has engaged clients in the U.S., Australia, Southeast Asia, and the Middle East. Chand has an engineering degree and an MBA in marketing. Senior Producer, Infosys Knowledge Institute Chad Watt is a veteran business journalist who most recently anchored Infosys Digital Radar 2020 report. His reporting and editing career included stops in Texas, Washington, D.C, North Carolina, Florida and New York City. He holds degrees from Columbia University in New York City and Southern Methodist University in the Dallas area. Chad now works in Richardson, Texas. Head — Digital Services, GE Global Research Center Dr. Brandon wears many hats — he leads digital services at GE's Global Research Center, manages a portfolio of advanced technology research programs that combine digital strategy with GE's services technology pillars (that deliver hundreds of millions of annual benefit to GE's businesses and customers), and builds the next-generation product portfolio for GE Digital. Prior to this, Brandon led software transformation and worked closely with the Vice President for Software Research and the leadership team to develop the digital strategy

and digital twin. Brandon joined GE in 2008 and has led software and digital research programs at the intersection of statistical signal processing, computer vision, physics based modeling, and materials science, before managing the System and Signal Analytics Laboratory in 2013. Brandon received his PhD degree in electrical engineering from Purdue University. Chidambaram Ganapathi, Associate Vice President and Practice Head, Infosys Digital Workplace Services Chidambaram Ganapathi, is the Associate Vice President and Global Practice Head for Infosys Digital Workplace Services. He has over 19 years of experience in IT consulting, practice building and pre-sales, solution architecture and delivery for global Fortune 500 clients across multiple verticals including financial services, telecom, education, pharmaceutical and other industries. He has extensive experience in IT Strategy & Consulting and has provided technology advisory services in the execution of large transformation programs for global clients to successfully deliver on their strategies. Chidambaram is an active speaker in industry forums, conferences and brings thought-leadership in the areas of Cloud, Digital and Workplace transformation through his blogs and podcasts. Vice President of Software Research, GE Global Research Center As a senior member of GE Global Research Center, he is responsible for the software, systems, and analytics research for GE's industrial and capital businesses. He works with GE's subsidiaries, partners, and clients, to leverage their deep domain expertise and significant data assets. Colin is also an Officer of the GE Corporation. Colin previously worked with IBM from 1994 to 2014. In his previous role as the Vice President of Systems Research in the IBM TJ Watson Research Division, he was responsible for creating market making systems and system software that provided leadership for IBM's next-generation mainframe, distributed, and storage systems. He has also been a member of the IBM Integration and Values Team (top 300 executives worldwide) for the past 11 years. Colin received a PhD degree in electrical engineering from the University of California, Berkeley; a master's degree in the science of management (MSM) from Stanford University (as a Sloan Fellow); a master's degree in electrical engineering and computer science at the University of California, Berkeley (MSEECS); and a bachelor's degree in electrical engineering at Howard University (BSEE). What's more, in addition to six patents, he has also received various technical and community honors. Professor of Economics, WHU Otto Beisheim School of Management, Germany Dr. Jürgen Weigand is Professor of Economics at the WHU Otto Beisheim School of Management in Vallendar, Germany. He holds Masters, doctoral and post-doctoral degrees in Economics from the University of Erlangen-Nürnberg. He is also a graduate of Columbia Business School's Senior Executive Program (CSEP 125). His area of expertise is competitive strategy, competition policy, and corporate governance. Professor Weigand is Deputy Dean of WHU and Associate Dean Degree Programs. Partner & Strategic Design Consulting Leader, Infosys Corey has over 35 years of experience, in industry consulting providing advice on technology and business as an expert in strategic design thinking, digital transformation, customer experience strategy, design, and the use of visualization applied to the development of innovative products, processes, and services. He specializes in the formation of design and innovation programs, overseeing execution teams, working in a global Centers of Excellence that create breakthrough business solutions and technologies to bridge the gap between Business, IT

and the End User. Prior to his 20-year career in consulting, Corey spent 15 years as a design lead in the entertainment, broadcast, gaming, interactive, product, environment and print and marketing industries, winning multiple awards, and has been named one of the 100 most influential designers of the decade by AIGA, the professional association for design. Digital Growth Leader for Software Research, GE Global Research Danielle joined GE Global Research in Niskayuna in 2007 as a combustion researcher and in 2015 became the manager of the Turbomachinery Aerodynamics Laboratory. Danielle received a BS in Aerospace Engineering from University of Central Florida, an MS in Mechanical Engineering from Penn State, and a PhD in Mechanical Engineering from The University of Central Florida. Executive Vice President and Global Head of Enterprise Application Services, Infosys Dinesh joined Infosys in 1990 and has worked in business development and service delivery management. He has more than 30 years of experience in a variety of industries, including retail, consumer packaged goods, logistics, energy, utilities, and telecommunications. Currently, Dinesh's responsibilities include SAP, Oracle, and enterprise application integration services such as API, BPM, and SOA. Active in several nonprofit organizations, Dinesh is also founder and managing trustee of UDAYA, a social support organization that helps educate under privileged children and orphans. He has a bachelor's degree in engineering from Mysore University in India and currently lives in Bangalore. Research Director, NelsonHall David covers IT Services in the areas of digital transformation consulting and application services. He has been a part of NelsonHall's IT Services analyst team since 2016, providing comprehensive and insightful coverage of IT services markets. During his time with NelsonHall he has been recognized by clients for his knowledge of digital consulting services, including cloud migration, UX-UI consulting and SAP S/4HANA as well as industry IT service buyer priorities. David assists both buy-side and vendor organizations in assessing opportunities and supplier capability across IT service lines. His current project is Agile, DevOps & Automated Software Development: Improving Time to Market. Prior to joining NelsonHall, David worked for over sixteen years in the IT consulting industry, with the last ten years spent designing, developing and selling application and digital services solutions for one the world's leading consulting and outsourcing firms. His experience spanned consulting, application development and maintenance solutions for ERP, legacy, SaaS and digital applications across a number of industries. His experience includes significant focus on organizational and operating models, business case development, metrics and performance management. David holds an MBA with a concentration in International Business as well as a BA in Management & Marketing, both from Florida State University. He lives in Denver. Senior Vice President and Region Head Americas – Retail, CPG and Logistics, Infosys In his career spanning over two decades, Dinesh has been helping the world's leading retailers leverage technology, and outsourcing partnerships to create sustainable differentiation. His focus areas include digital economy, analytics, and packaged led enterprise resource planning (ERP) transformation. Dinesh is a Senior Vice President of Retail, CPG and Logistics practice in the Americas for Infosys. In this role, he is responsible for new business development, go- to-market strategies, and client relationships. He is also responsible for forming strategic partnerships with partners. His leadership style combines an entrepreneurial drive with

business-management skills, to drive gains in revenue, market share, and profit performance. He holds a master's degree in business administration from the Indian Institute of Management, Bangalore, and a bachelor's degree in mechanical engineering. CEO and Chairman of the Board, Proximus Dominique Leroy has been Proximus CEO since January 2014. She joined Proximus (formerly Belgacom) as Vice President of Sales for the Consumer Business Unit in 2011 and was appointed Executive Vice President of the Consumer Business Unit in 2012. Prior to Proximus, Leroy worked for 24 years at Unilever. She was Managing Director of Unilever Belux and member of Unilever's Benelux Management Committee. Leroy is Chairwoman of the Boards of BICS and Be-Mobile, Chairwoman of the International Advisory Board of the Solvay Business School, and an independent Board member at Lotus Bakeries and Ahold Delhaize. Executive Vice President, Group Head – Strategy, M&A and Chief Risk Officer, Infosys Deepak Padaki is executive vice president, group head – Strategy, M&A and chief risk officer at Infosys. His responsibilities include long-term strategic planning for the organization and the management of cross-functional strategic initiatives. As the chief risk officer, he is responsible for defining the company's risk management framework and identifying and monitoring the risks to the successful execution of the company's strategies and operations. Padaki also heads the company's M&A function, defining areas of inorganic growth and leading transaction, due-diligence and post-merger integration teams. He is a member of the board of Infosys' subsidiaries Edgeverve Limited and Panaya Inc. Padaki has been a speaker at several industry events on M&A and enterprise risk management, including the India–U.S. Forum 2017 organized by the Ministry of External Affairs, the Economic Times M&A Summit 2017, the CFO India Conference on Risk Management 2017, the Roundtable of India Chief Risk Officers 2017, the World Economic Forum Chief Strategy Officers Meeting 2016, and the India National HRD Conference 2000. He holds a Bachelor of Engineering degree in Computer Science from the University of Mysore, India. He is currently based in Bengaluru, India. Associate Vice President, Organization Change Management, Infosys Emmanuelle Blons is the Associate Vice-President of Organization Change Management at Infosys and is based out of Paris, France. She brings over 20 years of experience in change management and HR. She specializes in organizational transformation, transition management, and people challenges linked to outsourcing for large scale programs. She is convinced that AI transformations are human, cultural, and societal before being technological. She is a member of EBG (Electronic Business Group) which is the main digital innovation think-tank in France. Emma has co-authored the book 'Best Practice of Consulting' edited in 2014 (Dunod) and is currently working on a new book on AI and HR, to be published in 2019. Emmanuelle holds an MBA from ESSEC Business School, done in partnership with IIMA. Architecture Executive, Telstra As architecture executive for networks and IT, Gary leads the enterprise technical architecture at Telstra, at a time when it is transforming its network from hardware based into a software-defined network housed on clouds running virtualized network functions. It is also focused on improving the customer experience and increasing the agility and flexibility of the business by digitizing its BSS functions, and focusing on ways to componentize and converge functions. During the course of his career, Gary has been a founding member of several business start-ups where he has led

the construction and operation of large-scale complex platforms supporting large national client bases. He excels at adapting emerging technologies into businesses, resulting in many industry firsts. He has received industry recognition for these accomplishments, including an EMMY Award; he holds several patents. Gary has further influenced the industry by serving as a member of the board of directors, customer advisory boards, and industry technology committees of industry facing organizations, and key industry suppliers. Prior to joining Telstra in Australia, Gary held key roles in the US broadcast industry, including serving as the chief operating officer of Comcast Media Centre and vice president of broadcast and network operations at Primestar. Vice President, Head - Australia & New Zealand, for Services, OEM, Utilities, Resources, Communications & Energy, Infosys Gaurav is the Vice President, Head - Australia & New Zealand, for Services, OEM, Utilities, Resources, Communications & Energy at Infosys. He has over 21 years of experience in the IT industry, working in sales and delivery. With over 12 years in the Australian region, he has successfully held leadership roles in areas of Sales and Deal Management / Account Management, Practice Management, Delivery Management and Business / Technology Consulting. Gaurav has significant experience in working with clients across telecom, energy, utilities, education and banking industry verticals. In addition, he has spearheaded rapid growth and sustenance of the Enterprise Solutions Practice (Oracle, SAP and Integration technologies) for Infosys in Australia, and holds a good understanding of the technology landscape across enterprises. Associate Vice President and Senior Principal Architect, Architecture Practice of Energy, Utilities, Communications & Services, Infosys Gnanapriya C has over 24 years of experience in the software and the telecommunications industry. She is currently the Assistant Vice President and Senior Principal Architect heading the Architecture Practice of ECS (Energy, Utilities, Communications & Services), Business Unit at Infosys. She has been involved in multiple engagements for various OEMs and service providers. She consults on Enterprise Architecture, Transformation Solution & Technology architecture in the areas of E2E B/OSS, Online / Digital transformation, SDP with multichannel delivery capability for Communications Service Providers (CSPs) leveraging industry standards and best practices. She also drives architectural services for Energy, Utilities & Services. Her expertise lies in SDN / NFV, IoT, Open Source Software, Cloud Adoption, Technology Modernization, Dev-Ops, B2B integration, API and Micro Services, and Blockchain. She holds a Bachelor's Degree in Electronics & Communication Engineering and a Master's degree specializing in Communications Engineering, Business Administration. She has published several articles and presented in leading industry forums like TM Forum, W3C, ATM, ACM, and The Open Group. She has successfully led couple of Catalyst programs, demonstrating ideas and solutions in TM Forum. She has co-authored a book on "Digital Signal Processing" published by Tata McGraw Hill, available in International edition and Mandarin language. She is also the invited author for a "Billing Dictionary" book published by Althos Publications. Senior Vice President & Head—Enterprise Application Integration, BPM & Services, Infosys Gopikrishnan (Gopi) is a Vice President and currently leads the global services for the Enterprise Application Integration, BPM & Services portfolio. Over the course of his two-decade long industry experience, he has handled dynamic and complex business needs of clients, and executed various strategic objectives of the

organization. Gopi has been a part of management councils and leadership teams across various functions in his career. He was the lead for the Supply Chain Management Practice, Account Lead for strategic clients in retail & CPG space, and a lead for strategic clients in the Europe region, during his early professional career. Till recently, Gopi led delivery for Application Development and Maintenance (ADM) services for hi-tech and manufacturing clients globally. In addition to his current role, he is the Development Center (DC) Head for the Mangalore DC, which has 4,000 people. Gopi also leads one of the strategic movements in the organization – Zero Distance. Zero Distance is aimed at creating innovation at a grassroots levels in the organization, by having every project team move closer to end user, closer to technology and closer to value. Gopi holds a bachelor's degree in electronics and communication engineering from Mangalore University. Vice President and Global Head, Modernization Practice, Infosys Gautam Khanna is a vice president and global head of the Modernization practice at Infosys. The practice incubates new offerings, builds services and consulting IP and spearheads application transformation engagements across verticals and service lines. The practice encompasses the four key pillars of application modernization - open source, Agile/DevOps, legacy modernization and cloud. Gautam has diverse experience of over 20 years spanning IT services delivery, program management and sales. He has been instrumental in forging together a vibrant open source partner eco-system that is catalyzing the embrace of open source across the Infosys client base. Gautam holds the designation of the Fellow, Life Management Institute (FLMI). He is a Bachelor of Technology in Chemical Engineering from Indian Institute of Technology, Delhi and holds an M.B.A. from Indian Institute of Management, Lucknow. He is pursuing a Ph.D. at Indian Institute of Science on what makes great leaders develop themselves faster than others. Gautam is an avid reader and very passionate about leadership development. Founder and CEO, Adia Ernesto is the Founder and CEO of Adia, a mobile-based on demand staffing platform for the contingency work. He started the company in 2016 while supporting The Adecco Group's Chief Sales and Innovation Officer. Having lived and worked in six countries between Europe and the US, he strongly believes that building a diverse and multicultural team creates the strongest foundation for success. Today, Adia is live in Switzerland, UK, Germany and US. Prior to Adia, Ernesto co-founded an on-demand laundry business and was part of Dell's corporate finance organization. He holds a master's degree in banking and finance. Associate Vice President and Executive Client Partner – Retail, CPG & Logistics, Infosys Ezhil Mani is an Executive Client Partner and responsible for customer relationship, business growth and profitability for strategic clients in the Texas region. He has 20 years of experience in defining and delivering IT services for several large retailers in North America. As a technology evangelist, Ezhil leverages his deep experience in consulting and outsourcing to help his clients adopt strategic technology solutions. During his career, Ezhil has been instrumental in setting up and managing a 350 seater Proximity Development Center in Bentonville, Arkansas. Ezhil holds a Master's degree in Computer Applications from National Institute of Technology, Trichy. Vice President and Delivery Head – Financial Services, Infosys Gururaj has over 23 years of global experience, and currently heads the offshore delivery for financial services. His key responsibilities include, growing the portfolio, incubating and developing new accounts, providing

strategic direction, ensuring customer satisfaction, sustaining delivery excellence, and managing people and operations. Gururaj also heads the Infosys Bangalore Development Center. In his career at Infosys, Gururaj has played diverse roles including project/program manager, transition manager for large outsourcing and offshoring, account/relationship manager at client site, offshore delivery manager, and divisional manager - across multiple geographies (Europe, Singapore, South Korea, Australia and the US). He also has exposure to transition and M&A scenarios in an IT service provider environment, as well as special exposure to setting up and running offshore centers in China. Gururaj's specialties are IT Delivery and Account Management, IT Services strategy, Offshoring and the Global Delivery Model, Business IT alignment, Global Sourcing, Financial Services, Cards and Payments, Risk and Compliance, Emerging economies, Large deals, Presales, Large scale People Management across global centres. Gururaj has a Bachelor's Degree in Engineering, Electronics and Communication from the University of Mysore. Vice President and Managing Partner, Infosys Consulting Holly brings the scientist's curiosity and observational skills to the world around her. She uses her interactions with some of the world's leading corporations — and their work forces — to form fresh and intriguing insights on education and skills. After 25 years of work in the consulting domain, she remains a hands-on practitioner who helps clients deal with people and organizational implications of agile enterprises and changing business models. Her forte is to deliver learning programs for Infosys and its clients. Holly is now bringing this perspective to the World Economic Forum, as a steering committee member of their Global Future Council System Initiative on education, gender, and work. Researcher, Infosys Knowledge Institute Isaac has spent four years in economic data analysis and consulting. Before that, he had more than 10 years in the retail industry. He is responsible for data analysis and research at the Infosys Knowledge Institute. He has collaborated on both the Digital Radar 2020 and the Tennis Radar research reports published by IKI. Isaac graduated from the University of Texas at Arlington with a Master of Science degree in Economic Data Analysis. Isaac works in IKI's Richardson, Texas office. Managing Director-India, Udacity Ishan has been on a mission to change the way education is delivered in India and provide education access to all. with a strong belief in the democratization of education, he has been trying to create platforms to deliver quality education to the masses. Currently, he is working as Managing Director India at Udacity. Ishan's role focuses on launching more India-focused courses and take the Indian business to new heights. He is also advancing the cause of the ed-tech sector in India as the chairperson of the ed-tech committee of Internet and Mobile Association of India, the premium internet economy focused not-for-profit industry association. Associate Vice President and Principal Technology Architect Infosys Center for Emerging Technology Solutions (iCETS) Jagada heads Data Lifecycle Innovation at Infosys. She works on creating Emerging Technology offerings and is responsible for IPs such as the Infosys Data Services Suite (iDSS), Infosys Enterprise Data Privacy Solution (iEDPS) & Infosys Data Workbench (IDW). She leads the Emerging Technology Solutions group at Hyderabad and works closely with multiple practices such as Application Development & Maintenance (ADM), Business Process Management (BPM), Data and Analytics (DNA) and Enterprise Application Services (EAS) where data is a key asset. She is very passionate about

building new solutions that could aid our clients achieve their overall enterprise data management strategy. Jagada has a Master's Degree in Computer Science from University of Texas. She has an overall work experience spanning two decades and has been with Infosys for 10 years. Prior to Infosys, she has worked as a consultant with Sabre, IBM, Nokia and Cingular/ATT. Associate Vice President and Head of Digital Supply Chain, Sales, Infosys Jagdish Vasishtha is an associate vice president with the Enterprise Application & Integration services practice of Infosys. His focus areas include digital supply chain, API-microservices, IOT and predictive maintenance. Vasishtha brings over 20+ years of experience in managing complex business transformations for fortune 1000 clients by reimagining customer experiences, improving business processes and leveraging innovative digital platforms. Senior Vice President, Regional Head of Financial Services — Americas, Infosys Jay has spent more than 27 years in banking, financial services, and insurance as a process control engineer, and business and technology consultant. He also has extensive experience in engineering, practice development and large-scale, enterprisewide technology program management. Jay is a member of the Infosys executive council for financial services and also an Infosys Latin America board member. He has postgraduate qualifications in software engineering and business management. Executive Vice President and Deputy Chief Financial Officer, Infosys Jayesh has a wide range of responsibilities, including corporate finance, treasury, business finance, SOX, internal audit, investor relations, global taxation, revenue assurance, reporting, and corporate accounting. In addition, he is also responsible for mergers and acquisitions and management of the CEO's office. He has more than 20 years of finance experience, including more than 15 years at Infosys across two stints. Jayesh has also worked in different capacities at Tishman-Speyer, Rediff.com, Mu Sigma, and KPMG. Jayesh is a chartered accountant and holds a bachelor's qualification in commerce from Mumbai University in India. Associate Vice President, Mainframe Modernization Practice, Infosys Jaydip Sanyal is an associate vice president and is part of the leadership team of the Modernization track in Infosys. Sanyal and his team are responsible for the strategy and technology behind modernizing legacy and proprietary technologies running on monolithic z/OS, AS/400, Java, .Net based architectures to new generation open source based architectures on public and private cloud. He has also led multiple consulting initiatives where he has advised customers on the business case for modernization and helped them to define their roadmaps. Sanyal also has extensive experience in advising customers on adopting open source technologies. He has participated in numerous modernization and open source events as a speaker and a panelist. He is an avid blogger on how you can modernize mainframes and make it digital ready. Sanyal has a degree in engineering and a postgraduate MBA degree from IIM with over 22+ years of experience in IT. Executive Vice President and Global Head of Manufacturing, Infosys Jasmeet Singh is an executive vice president and global head of Manufacturing at Infosys. He is a global leader in next-generation digital services and consulting. Singh is responsible for overseeing and growing client relationships in the Automotive, Aerospace, Defense and Industrial Manufacturing sectors. He is also on the Board of Fluido, a Finland based digital transformation leader and Salesforce platinum consulting partner that became part of the Infosys family in October 2018. Prior to this, Singh

led the Financial Services business as the SVP & industry head for the Americas at Infosys. He has been instrumental in growing the business and deepening the relationships in this sector. With over two decades of experience in IT and technology driven business transformation, Singh brings deep appreciation of business processes and the usage of technology as a strategic differentiator for clients. He has a keen interest in the business value that technologies like IIOT, automation and machine learning can bring to the manufacturing industry. Singh started his career with Tata Steel, after completing his Bachelor's degree in Electrical Engineering from IIT (BHU) Varanasi. He also holds a Master's in Business Administration from the Faculty of Management Studies Delhi. He spent close to 5 years with Deutsche Bank on the business side before moving to Infosys. Singh is based in New Jersey, where he lives with his wife and two sons. He is an avid reader and enjoys playing tennis. Associate Vice President, Utilities, Infosys Jatinder (Jatin) has over 12 years of experience with Infosys working for clients in the area of business processes, service delivery, project governance, requirements analysis, and business process design. Senior Producer, Infosys Knowledge Institute Jeff was a veteran journalist before joining the Infosys Knowledge Institute in 2019. Previously, he spent more than two decades covering government, politics, criminal justice, sports business, energy and the environment for The Dallas Morning News, the largest newspaper in Texas. Now, Jeff is writing and editing thought leadership at IKI and managing the Infosys Insights website. He lives near the Richardson Hub with his wife, twin daughters and twin cats. Vice President and Global Head of Infosys Knowledge Institute Jeff Kavanaugh is a vice president at Infosys and the global head of the Infosys Knowledge Institute, the company's research and thought leadership arm, and its global leader. He is also a leader in Infosys' Manufacturing consulting practice. Since joining the firm in 2005, he has been based in Dallas, working primarily with automotive, industrial, high-tech, and telecom companies on a variety of issues, including product innovation and lifecycle management, productivity, marketing, digital strategy, and organization. He has coauthored numerous publications, including Infosys papers on digital transformation, connected vehicles, Industry 4.0, automotive aftermarket, and product lifecycle management. He is the author of the best-selling book Consulting Essentials: The Art & Science of People, Facts, and Frameworks. His research and perspectives have been published in leading international media. Kavanaugh is a regular speaker at industry conferences and universities on a range of business and technology trends. He is an adjunct professor at the University of Texas at Dallas, in their Graduate School of Business. He serves on boards of the Institute of Business Analytics at Indiana University and the Marketing Analytics Advisory Board at the University of Texas at Dallas. He is a Lean Six Sigma Master Black Belt and a professional engineer. Senior Vice President of Engineering & Chief Technology Officer, Spirit AeroSystems, Inc. In his role, John has responsibility for engineering and R&D across all programs, and also leads Spirit's IT organization. Prior to this assignment, he served as senior vice president and general manager of Airbus Programs, and SVP / GM of Propulsion Aerostructures at Spirit. John graduated in 1981 from the University of Kansas with a degree in aerospace engineering. His career at Boeing Wichita began as a stress analyst in 1981. He worked on Nacelle Programs, company IRAD, and the A-6 Replacement Wing. He completed a

master's degree in aerospace structures in 1986. In 1997, John led next-generation 737 engineering programs, including the development of the 737-900 fuselage and empennage. In 2000, he led the Define Team on the 777LR airplane, and in 2001, he became the director of business operation. In the spring of 2002, he graduated from Wichita State University with a Masters of Business Administration. In 2003, he became the director of product definition and manufacturing of the new Boeing 787 program. At the time of the divestiture of Boeing Commercial Airplanes Wichita Division in June 2005, he became vice president / general manager – 787. In 2008, he served as chief technology officer. Associate Vice President and Global Head of Domain Consulting for Communication & Media, Infosys Jinu Koshy, has more than 26 years of experience in the telecommunications, media & IT industry working with clients across North America, Europe, India, Japan and ANZ. With his experience in the industry that includes working with communication service providers, media companies, telco OEMs, ISVs and silicon vendors, Jinu brings a unique perspective to the emerging convergence in the Communications & Media industry. He has extensive experience driving Innovation Councils, engaging C-level executives, setting up major programs, structuring solutions, managing products, running partner ecosystem, engaging with niche start-ups and building global teams. As head of 'Communication & Media Domain Consulting' for Infosys, Jinu leads a global team of consultants who are helping Communication and Media Service Providers adopt digital practices while adding new capabilities and revenue streams, transform their networks and drastically reduce cost on their existing infrastructure. Jinu holds a Bachelor's degree in Electronics and Communication Engineering. Partner - Supply Chain Practice, Infosys Consulting As partner and UK supply chain practice head, Jonquil defines the go-to-market strategy for digitally-focused market offerings - and leads strategic change and complex supply chain transformation programs for the CPG and manufacturing industries. She is passionate about people, ardent about leadership and about developing high-performing teams with a sense of purpose. As an educationist, she is committed to learning and growth – reflected in her part-time role as a lecturer at Beuth University, Berlin, and in her authorship on sustainability and renewables in Industry 4.0. She possesses an MBA from Beuth University and is fluent in German, English and Spanish. Associate Vice President, Infosys Digital Julie brings deep expertise in multi-channel strategy, operations and business development for C-level and Fortune 500 clients. Her digital track record includes partnerships with premier, global retailers, including Wal-Mart, Amazon.com and Macy's, providing cutting edge, multi-channel consumer strategies. Julie leveraged her experience to create the digital agency at Harte-Hanks that supported many verticals, pharmaceutical being the largest, supporting Merck, Johnson & Johnson, Astra-Zeneca, BMS and Schering-Plough. Julie was awarded Who's Who in American Colleges and Universities as well as Buyer of the Year at Wal-Mart Stores. She is also a member of the Emerging Technologies Committee for SEMPO. In her spare time, Julie teaches spin classes, and preaches the benefits. Senior Vice President and Global Head, Insurance, Infosys Kannan Amaresh is a senior vice president and the global head of Insurance business at Infosys. He is a professional chartered accountant with more than 25 years of experience in the areas of banking, finance and risk management. He has spent nearly 18 years at Infosys, initially as the head of

consulting for Infosys' BFSI division, followed by his current role as the global industry head for insurance where he manages global client relationships across Europe and North America. Amaresh is an established thought leader in the industry, with particular focus on risk management and rise of AI and consumer services. He is also an inventor, with a patent pending in the U.S. for his seminal work on "Predicting Financial Impact of Business Framework." Senior Producer, Infosys Knowledge Institute Kate is a senior UK journalist who has worked for leading publications including the Financial Times and the Guardian newspapers during her long career. She is an expert on technology, and has covered a wide range of subjects from consumer cybersecurity to the corporate threat landscape, cloud and the metaverse to AI. She appears regularly as an expert guest on BBC TV and radio to discuss technology stories . Prior to joining Infosys, Kate edited the consumer technology magazine for Which?, the UK consumers' advocacy body. Kate is now editing and writing thought leadership at IKI, working across a range of subjects from supply chain to the metaverse. She lives in London. Associate Vice President, Resources and Utilities, Infosys Kapil Nanchahal, heads the new accounts for utilities, managing the growth and management of new relationships in North America and Latin America. He is an industry leader focusing on advising enterprise clients on IT and business transformation. Nanchahal specializes in IT Enterprise application strategy and implementation across the value chain of the utilities industry. His experience spans business strategy, growth of new service lines, large transformation initiatives, sales operations and sponsorship of top global alliance partnerships. Vice President, High-tech Industries, Infosys Komal Jain is in charge of High Tech, Semiconductor, ISV and Distribution unit at Infosys. He is a global business leader in information technology, consulting and outsourcing industry and a trusted partner to C-level leadership of many business organizations. Jain creates visions and designs strategies to build a highly motivated and skilled team for delivering business and technology solutions to clients. As an industry thought leader, he has authored several white papers in the areas of innovation, business transformation and shared services and addressed several Industry forums. Chairman, Axilor Ventures, Chairman, Itihaasa Research and Digital, and Co-founder, Infosys Senapathy 'Kris' Gopalakrishnan served as the Vice-Chairman of Infosys from 2011 to 2014 and the Chief Executive Officer and Managing Director of Infosys from 2007 to 2011. Kris is one of the co-founders of Infosys. Recognized as a global business and technology thought leader, he was voted the top CEO (IT Services category) in Institutional Investor's inaugural ranking of Asia's Top Executives and selected as one of the winners of the second Asian Corporate Director Recognition Awards by Corporate Governance Asia in 2011. He also was selected to Thinkers 50, an elite list of global business thinkers, in 2009. He was elected president of India's apex industry chamber, the Confederation of Indian Industry (CII), for 2013–14, and served as one of the co-chairs of the World Economic Forum in Davos in January 2014. In January 2011, the Government of India awarded Kris the Padma Bhushan, the country's third-highest civilian honor. He now serves on the Board of Governors of the Indian Institute of Technology Madras, the Indian Institute of Management Bangalore, is the Chairman for the Board of Governors of IIT - Bangalore, and is on the Board of Trustees of the Chennai Mathematical Institute. Kris holds masters' degrees in physics and computer science from the Indian Institute of Technology Madras. Executive Vice

President Group Head, Human Resource Development, Infosys Krishnamurthy (Krish) Shankar is an Executive Vice President and the Group Head of Human Resource Development at Infosys. In this role, he is responsible for envisioning the roadmap for HR, driving strategy, and implementing operational priorities aligned with the overall organizational mandate. Krish has over 30 years of experience and has led several global HR functions in organizations like Bharti Airtel, Hindustan Unilever and Unilever. Prior to joining Infosys, Krish was the Head of HR for South Asia at Philips. In his wide ranging experience in these organizations, he has led the transformation of HR into a strategic partner, facilitated organization- wide transformation and capability development, and was instrumental in building a strong talent pool through a series of leadership development initiatives. Krish holds a postgraduate diploma in HR from XLRI, Jamshedpur, and has received an executive certificate in Strategy and Organization from the Stanford Graduate School of Business. Krish is an avid reader, loves wildlife photography, and trekking. A football enthusiast, he occasionally runs half- marathons. He is passionate about teaching and exploring new ideas in HR and organization development. Krish is based in Bangalore. Vice President and Managing Partner – Retail, CPG and Logistics, Americas, Infosys Consulting With 22+ years in Industry with experience, Kishor is a veteran in driving the Transformation Agenda of customers with industry specific solutions and service offerings. He has also been responsible for establishing the Strategic Insights practice, at Infosys, focused on delivering services for business insights leveraging advanced analytics. Kishor has worked with retailers and CPG companies across the value chain, including marketing, sales, supply chain, and finance. At Infosys, he has played an important role in developing innovations and leading go-to-market solutions. He has published several papers on topics relevant to the industry domain, and is a speaker at several industry forums. His passion and area of focus is to help organizations drive their digital transformation agenda. Associate Vice President and Principal Architect, Engineering Services, Infosys Krishnananda R. Shenoy is Associate Vice President and Principal Architect of Engineering Services at Infosys. As the Chief Architect of the Internet of Things (IoT) practice, he helps clients define IoT solutions to drive their businesses. He is also responsible for conceptualizing and implementing point of views (PoVs) and proof of concepts (PoCs) across industry verticals. He leads partner product integration and heads delivery for the Industrial Internet Consortium (IIC) testbed. Prior to this, he held varying roles in telecom product research and design (R&D) in 3G / 4G network, system integration of Long Term Evolution (LTE) network, and VoLTE network design. Before joining Infosys, he worked as a lead hub engineer with Wipro-British Telecom, and as a communication engineer in National Thermal Power Corporation (NTPC). Shenoy has a bachelor's degree in electronics engineering from Bangalore University. AVP, Supply Chain Transformation Lead CRL, Infosys. Krishna leads the Infosys supply chain practice for consumer goods, retail and logistics. He is especially focused on artificial intelligence-led supply chain transformation solutions, supply chain strategy and design, and end-to-end global supply chain visibility solutions. Krishna has more than 22 years' experience in AI-and automation-led IT and supply chain transformation. He is based in the Dallas, Texas area. Vice President and Portfolio Head – Services, Infosys Kumar Paramasivam is a vice president and heads client services for

Professional Services, Travel and Hospitality, Education and Business Services at Infosys. With over 18 years of experience, he has worked with clients in various industries and helped them leverage Infosys as a strategic systems integration and outsourcing partner to realize their business objectives. Kumar holds a master's degree in engineering and is a certified supply chain professional from APICS. Vice President, Business Applications, Infosys Lax Gopisetty is a senior business leader driving digital transformation growth with MS Business Applications practice for G2K clients and more. He has over 25+ years of global management consulting experience across Infosys, Accenture, PWC, and IBM, advising cross industry clients with their complex transformation initiatives spread across global regions. His focus is on bringing Innovation and value creation to enable clients to be future ready enterprises built on digital capabilities. Associate Vice President, Cloud Solution Strategist, Enterprise Cloud EcoSystem, Infosys Madhan Raj has 23 years of IT experience. He currently leads the cloud solution strategy at Infosys, which is focused on business centric cloud transformation. Prior to this, he has led the Azure and Office 365 service line. He was also the enterprise architect in large transformation. In the cloud transformation strategy, Madhan Raj focuses on cloud disposition which includes large scale migration of legacy applications as well as developing cloud native applications based on business drivers. Madhan Raj holds a Master's degree in electrical from the India Institute of Technology, Madras and a Bachelor's from the College of Engineering, Guindy. Senior Vice President and Global Head of Ecosystems & Alliances, Infosys Madhu Janardan started his career with Infosys in 1996, and is currently a Senior Vice President and Global Head of Ecosystems and Alliances. Madhu has over 27 years of experience in defining strategic business solutions and IT consulting for several companies in Japan, Europe, and North America. Prior to this role, Madhu was the Industry Head for Americas and oversaw several retail and CPG accounts in the US and has expertise in developing, and maintaining strong client relationships. With his collaborative approach to innovation, he has led teams to consistently deliver client delight, in challenging business- technology environments. Madhu has led by building an affiliate team and coaching them to get pacesetting results for the unit and the company. Madhu completed his master of computer applications from the Regional Engineering College, Trichy, India (now National Institute of Technology). After almost 16 years in the Greater Seattle region, Madhu has recently made the Bay Area his home. He enjoys cooking and going on scenic hikes. He also spends time participating in community activities and teaching at the local university. He runs a private trust that focuses on education and healthcare for the underprivileged in India and some parts of Africa. Associate Vice President and Principal Research Analyst, Infosys Center for Emerging Technology Solutions Manjunatha is an intrapreneur incubating emerging technology led offerings for Infosys. He leads development of new offerings across artificial intelligence, blockchain, robotic process automation, autonomous systems and automation, in particular for software quality assurance. Another area in which he plays a role is in taking Blockchain and other emerging technology offerings to market and creating First-of-a-Kind market opportunities for Infosys. He has been a key contributor in creating a culture of innovation and innovation infrastructure for Infosys with programs like Co-creation, Flatworld, Building Tomorrow's Enterprise,

Murmuration, Hackathon, Labstorm and Zero Distance. His other interests include the larger context of societal change, economy, politics and history. Manjunatha has experience across Trends research, Valuation & Costing, Mentoring Startups, Strategy and IT Consulting with Deloitte, and Aerospace research with Aircraft research and design center. He is an Engineer, MBA and a Chevening Scholar from University of Oxford on Innovation. Vice President and Delivery Head, Cloud Infrastructure and Security Services Manohar Atreya is Vice President and Global Delivery Head for Cloud, Infrastructure and Cyber Security Services. He has more than two decades of experience in implementing technology in a variety of client projects. He has experience in consulting, programming and design, program management, client account management, and service delivery. Manohar has expertise in managing delivery and business growth for many different technology services - cyber security services, IT application management, infrastructure management, production operations, and cloud infrastructure & transformation services. Manohar is passionate about delivering value from technology implementations, strongly advocates embracing latest technologies, and believes success is reflected in lower TCO, better-managed risks, and enhanced user-experience. Manohar has an MBA from Indian Institute of Management, Bangalore, and a Bachelor's Degree in Engineering. Vice president, regional head, Americas, Retail, CPG and Logistics Mayank Ranjan is the US Midwest regional head responsible for consumer packaged goods and retail at Infosys. He has been in the industry for over 25 years, of which 20+ years have been with Infosys. He is a founding member of the Infosys CPG and retail business and has been part of the entire software value chain. Ranjan leads our relationship with key global CPG and retail clients, supporting them in their transformation journeys. Ranjan has been closely involved in establishing the digital transformation practice at Infosys. Head — Analytics Technology Organization, GE Global Research Mark is the head of GE Global Research's Analytics Technology Organization, which comprises of labs operated by members with PhDs in applied statistics, applied mathematics, quantitative finance, operations research, industrial engineering, robotics, machine learning, signal processing, image analysis, and computer vision, with researchers located in upstate New York and Israel. They enable GE's big iron products to generate more profits for customers by increasing their revenues, lowering their costs, and managing their risks. Additionally, the team creates new solutions for other Fortune 500 companies and supports the research goals of the US government. Assistant Professor of Computational Economics and Business Analytics, WHU – Otto Beisheim School of Management, Germany. Martin received his Ph.D. in economics from WHU in 2014 and was granted two research scholarships: in India (Infosys, 2013) and Japan (University of Tokyo, 2015). From 2012 to 2014 he has been involved in joint research projects with the London School of Economics and Google Inc. in the Google Summer of Code Program. Before he started his doctoral studies, he received his MBA degree, worked as the Head of IT for three years in a small and medium size company, and graduated from the Technische Universität at Dortmund with a diploma in computer science. Vice President, APAC Regional Head of Infosys Digital Based in Sydney, Matt is responsible for digital strategy and capability development across the APAC region, bringing together existing digital delivery and newer experience design services. He came to Infosys with

more than 20 years of experience in digital leadership at major agencies as well as startup and ad tech firms. Matt has worked with top companies, from Coca-Cola to Samsung to Visa, on strategy, operations, sales and marketing communications. In his personal time, Matt is a fan of dry red wines and motorbikes. Associate Partner, Manufacturing and Supply Chain, Infosys Consulting Melissa Hadhazy is an Associate Partner in Infosys Consulting's Manufacturing and Supply Chain practice. With over twelve years of industry and consulting experience, Melissa has worked on a wide breadth of distribution, operations, and strategy projects. Melissa has worked throughout Europe and North America for leading international companies across Consumer Goods, Heavy Manufacturing, Retail, Construction, Logistics and Services Industries. Along with her varied experience, Melissa has deep knowledge in Lean manufacturing, process re-engineering, supply chain optimization, inventory and warehouse management, corporate risk management, project management, negotiations tactics and strategy development. Global Sourcing Manager, APAC, Infosys Mimi Lee is a senior organisational change manager in the Client HROCM Solutions Group. She is responsible for designing and delivering change solutions across a number of sectors, supporting digital, Agile, and managed services within the Asia Pacific region. Mimi has more than 18 years of industry and consulting experience, helping clients with cultural change, organisational design, change leadership, strategic sourcing, and stakeholder engagement. She has also worked with organizations on communications, mergers and acquisitions, business readiness, change impact assessments, transition, managing change agent networks, and learning and development. Vice President and Regional Head—Services, Americas, Infosys Mitrankur (Mit) Majumdar is a strategic business leader, specializing in executing business transformation through IT and processes. At Infosys, Mit plays an important role in positioning Infosys as a global systems integrator across information services, publishing, professional services, education, internet technologies and travel and hospitality practices. With over 20 years of experience in consulting and outsourcing, Mit has extensive experience in incubating and developing market share in media and communications, telecom, wireless, cable and satellite industry segments. He has been instrumental in growing the cable portfolio as a significantly larger practice within Infosys. Mit holds a bachelor of engineering degree in electronics and telecommunication and an MBA from McCombs Schools of Business, University of Texas. Head of Energy, Resources & Services, Europe, Infosys An ardent tech evangelist, Anis has spent the last couple of decades re-imagining and re-architecting some of the largest organizations in the world to adopt disruptive technology. He is particularly passionate about leveraging 4th Industrial Revolution technologies like Machine Learning, Blockchain, Mixed Reality and Artificial Intelligence to inspire businesses into a platform economy where there is equal access to opportunities without human bias. Anis has spearheaded the development of new technology platforms that differentiate organizations by leveraging data. At Infosys, Anis helps his customers digitize and "renew" their current business landscapes whilst helping them venture into "new" business models through disruptive technology. Anis holds a degree from BITS, Pilani, India and when not immersed in work, is actively involved in mentoring start-ups in the Blockchain and Machine Learning space. Senior Vice President, Research & Development, KUKA Roboter GmbH Michael Haag studied Computer Science at the Karlsruhe

Institute of Technology (KIT) from 1990 to 1995. In September 1997, he received the Springer 'Best-Paper-Award' during the 21st German Conference on Artificial Intelligence. In 1998, he received his Dr.-Ing (Doctor of Engineering) in automated video sequence evaluation at the Institut für Algorithmen und Kognitive Systeme (Prof. Dr. H.H. Nagel). In 1999, he started his career as assistant to the chief technology officer (CTO) of IWKA Aktiengesellschaft, Karlsruhe. In 2004, he joined KUKA Roboter GmbH, Augsburg, and was responsible for innovation management, headed a team for robot applications in logistics, and managed Planning and Technology within R&D. He coordinated the development of the new robot control generation KR C4. Currently, he is Senior Vice President, R&D, at KUKA Roboter GmbH and Head of the Competence Centers. He also gives lectures in robotics at the University of Karlsruhe - Technology and Economics (University of Applied Sciences). Partner – Enterprise Change, Gamification Practice Leader, Infosys Consulting Michael is a Partner at Infosys Consulting, leading the Enterprise Change Practice for Retail, Consumer Products, and Logistics. In addition, he is also a Gamification Practice Leader. Michael has over 25 years of experience in IT, consulting, and outsourcing. He has domain expertise in gamification, organizational change management, learning management, knowledge management, and collaboration. Throughout his career, Michael has helped clients to align people, processes, and technologies to drive individual and organizational performance. He holds a bachelor's degree in business data systems from the University of Texas, San Antonio, USA. Senior Vice President, IT and Digital Media, ATP Murray is a Senior Executive with the Association of Tennis Professionals. His technology background includes extensive experience in big data, along with real-time and enterprise systems in the entertainment, transportation, hospitality, and retail industries, including building a real-time scoring system for tennis to track hundreds of millions of data points on a global basis. Murray has provided strategic analysis and pragmatic advice to boards, executives, and managers on topics such as strategic planning, organizational effectiveness, and best methods to leverage technology to their strategic and commercial advantage. Principal Consultant, Advanced Engineering Group, Infosys Nampuraja brings 15 years of research and industry experience. He currently manages the innovation opportunities focusing on the adoption of emerging technologies in the asset-intensive industries, which also involves co-creation engagements with the clients and academia. This includes the focused initiative on Industry 4.0, enabled by the convergence of IT and OT (operation technology) in cyber-physical systems, where Infosys has strategically partnered with FIR (Institute for Industrial Management) at the RWTH Aachen University in Germany. He is an active participant in conferences and forums, and focuses on efficient management of assets and their associated performance. Senior Vice President & Group Head – Organization Development, Human Resources, Infosys Nandini is a Senior Vice President and Group Head, Organization Development. In her role, Nandini leads Talent Management and Development across the Infosys group. Her focus includes Performance Management, Succession Planning, Organization Design, Career Development, Workforce Analytics, and Climate assessments. Nandini has led the performance management transformation for Infosys, helped create a Digital Career platform for job seekers and learners, and led the designing of an Analytics led manager enablement

platform. In her career span of over 17 years at Infosys, she has led diverse initiatives including Infosys Leadership Institute, and setting up of the HR shared services. She has also been the Business Partner head for large business units, and Employee Relations and Learning & Development. Nandini is a key member of various talent management forums including Corporate executive board, and Strategic Human Resource Management (SHRM) among others. Her work on Performance management, Analytics, Career development and Engagement sensing has received wide recognition in the industry circles. The Digital Career Platform was the 2016 winner of National HRD (NHRD) in the category of Best Corporate HR practice. Nandini holds a Ph.D in Human Resource Management & Behavioral Science from the Indian Institute of Management, Calcutta, with a Bachelor degree in Engineering and Masters in Mathematics from BITS Pilani. Vice President and Head of Cards & Payments, Financial Services Narayan Sivaram is a founding member and head of the payments unit at Infosys Financial Services and advises CXOs on digital transformation and artificial intelligence. Based in Dayton, Ohio, he is also responsible for overseeing fintech outreach. Nans is a regular speaker at events, such as Cards Forum and Money20/20, on AI, cloud, internet of things, design thinking, Agile, technology modernization and other trends in the payments industry. He has a bachelor's degree in mathematics and instrumentation engineering from Anna University in Chennai, India. Executive Vice President, Head - Cloud Infrastructure and Security Solutions and Head - Infosys Validation Solutions, Infosys Narsimha Rao Mannepalli is an executive vice president and heads both the Cloud Infrastructure and Security Solutions service line and the Infosys Validation Solutions service line. These business units propose and deliver solutions and services to clients in various industry segments around the world. In his earlier roles, Mannepalli managed service delivery for clients in insurance and payments, and manufacturing domains. With nearly two decades in Infosys, Mannepalli has played diverse roles across units, and has experience in a number of mainstream service lines such as ADM, IMS, IVS, Enterprise Solutions & Management consulting. He also has a proven track record of managing large units selling and delivering IT solutions and services. Mannepalli was also head of the Hyderabad Development Center for over 10 years. With a 31000+ workforce, he led the Hyderabad center to being the top exporter in the state for many years in a row, and the best managed center within Infosys in 7 out of 8 years. Senior Lecturer, University of Melbourne Niharika collaborates on interdisciplinary management research projects with numerous industry partners, governments, and research organizations. Her expertise includes technology and innovation management, organizational psychology, judgment and decision-making, creativity, entrepreneurship, behavioral strategy and operations, research and development, and engineering management. She is a frequent speaker at academic conferences and industry events, and has been published in top management journals. Niharika has a bachelor's degree in engineering and master's degree in electrical engineering from the University of Missouri. She completed her doctorate in management at the Indian Institute of Management in Bangalore and a research fellowship at Harvard University. Senior Vice President and Global Head for Engineering Services, Infosys Nitesh Bansal is a senior vice president and global head for Engineering Services at Infosys. He is passionate about bridging the physical-digital divide, advocating AI, machine learning and

process automation to amplify business value. He has worked with numerous clients helping them understand ways to leverage Industry 4.0 and IoT technologies leading to digitization and improvements in manufacturing operations, and effectively use servitization for new revenue models. Bansal is also responsible for leading the innovation charter for Infosys and has a core group of researchers who focus on technology trends and their intersection with business value. This group works on Horizon 3 and Horizon 2 technologies and has been responsible for launching services like autonomous technologies, additive manufacturing, Software Defined Networking and 5G, that have now become mainstream. One of the key focus areas for Bansal has been to drive value through transformation of networks – going from significantly hardware based to software based systems. He is actively involved in helping both network providers and enterprises to identify and drive value through technology transformations. Bansal is on the Executive Supplier Advisory Board (E-SAB) of Open Networking Foundation (ONF). He is a regular speaker at recognized business schools and also a member of the Industry Advisory Board of the Tauber Institute of Global Operations as well as Ross School of Business at University of Michigan. VP & Delivery Head - Cloud Infrastructure Services, Infosys Pandiya Kumar Rajamony has over 25 years of expertise in Cloud and Infra Services/CIS. Rajamony is a leader with a proven track record in cloud computing & infrastructure consulting and delivery. He has held roles in the CIO /CTO advisory, program/project management and transformation solutions. Rajamony manages the integrated service delivery segment for the CIS unit, responsible for enterprise infrastructure transformation services and leads the Center of Excellence technology group focusing on new ideas and innovation. He has incubated and institutionalized automation services with adoption of data analytics, automation tools and has demonstrated efficiency improvements across the client landscape. He is an open source evangelist and spearheads its adoption in the cloud and infrastructure space and is incubating a new service around it. Vice President & Head, Retail, CPG & Logistics, Americas, Infosys Parag Jain, manages the complete new client acquisition and business development efforts for Infosys for the retail, consumer goods & logistics business unit across USA, Canada and LATAM. He holds a diverse and wide exposure to multiple industry sectors including media & entertainment, consumer goods, distribution and logistics, high tech, telecom, retail and manufacturing industries. Parag has over 25 years of experience managing a wide range of corporate functions including sales, account & P&L management, marketing & campaign management, pre-sales, operations & delivery, and project management. He has founded and promoted tech startups and managed the complete operations, sales, and procurement for medium sized family run enterprises in the past. Global Head, Digital Strategy & Innovation, Infosys Paul Bailo is the Global head of the Digital Strategy and Innovation practice at Infosys. Paul is an expert in digital strategy, design thinking and innovation and has successfully managed many large-scale business units and major projects to improve processes, productivity, communications and technology applications. In addition to his abilities to develop and implement workable products and application that fuel the success of key business initiatives, Paul has a proven record of harnessing technology to meet changing strategic business needs and client business requirements. Chief Marketing Officer, Nassau Re Paul Tyler serves as chief marketing officer for

Nassau Re, where he leads the strategy, development, and delivery of company marketing campaigns across digital and traditional channels. Tyler has led the digital rebranding efforts of acquired insurance companies and affiliated asset management companies. He has launched a direct-to-consumer channel for Nassau Re that includes term life, final expense, and fixed annuities. In addition, he launched Nassau Re/Imagine, an insurtech-focused incubator based in Hartford. Prior to his role at Nassau Re, Tyler worked at Fidelity & Guaranty Life as senior vice president from 2012 to 2017, where he was responsible for corporate strategy, brand development, marketing communication, social media and mobile applications. He led development of one the first set of iPad and iPhone apps for the independent insurance sector. Prior to FGL, Tyler worked at MetLife in a variety of strategic roles for 14 years in operations, technology, sales, and compliance in the retail business. Previously, Tyler worked in management consulting as a project manager for Monitor Group, specializing in the financial services and telecommunications industries. He earned his A.B. from Princeton University and his J.D. from Cornell Law School. Chief Executive Officer, Everest Group Peter Bendor-Samuel founded the Everest Group in 1991 with the vision to assist the then nascent outsourcing and global services industry to evolve more powerful and effective mechanisms to create and capture value. Over the past two decades, he has led the Everest Group to be on the frontier of the global services industry, ensuring that the firm is constantly at the intersection of how leading firms take advantage of disruptive technologies, innovative service vehicles, and game-changing talent models. Under Peter's stewardship, the Everest Group has evolved into a firm with a reputation for delivering high-quality consulting and research through a culture of individual and firm excellence, combined with a collaborative and values-based culture. This excellence model allows the firm to consistently be recognized for generating innovative insights and solutions that define and shape the next generation of global services. Peter is the author of the industry best-selling book, 'Turning Lead Into Gold: The Demystification of Outsourcing'. He is a regularly featured thought leader in international business media including the Wall Street Journal, New York Times, and Financial Times. Associate Vice President and Senior Principal Technology Architect, EdgeVerve Systems (an Infosys subsidiary) Peter Loop brings to the table his vast expertise in the banking industry and over 30+ years engineering experience at Intel and Microsoft. He is an innovative senior leader with a long career of transforming the enterprise system ecosystem. He has developed solutions to accelerate innovation and reducing disruption, cloud migration of banking solutions, API management and integrations, user experience strategy, mobility and BI strategies. Peter is leading efforts in the field of crypto-currency/distributed ledger technologies (Blockchain) for global financial services markets and their potential applications to banking, and also in driving evangelism and adoption of new technologies. President and Chief Executive Officer, TM Forum Peter orchestrates the day-to day operations of TM Forum. He is a respected industry thought leader and a senior international business executive and entrepreneur with a unique wealth of experience. For 14 years, he has successfully performed across the sales, marketing, and general management functions of a large multinational ICT company. He also has 12 years of experience as a business-oriented CIO and as a member of executive boards in large multinational companies in the pharmaceutical,

telecommunications, and finance industries. Among his numerous career accomplishments, Peter was named the CIO / IT Executive of the Year by Computerwoche, an IDG publication. Peter also founded, successfully ran, and then sold itcps Management Consulting AG, a provider of business and technology consultancy services for all industries. He is based in Switzerland, speaks several languages fluently, has conducted business globally in developed as well as emerging markets, and has lived in a few different countries. Additionally, Peter is a seasoned non-executive director on various boards. Partner, Business Consulting, Infosys Phil Freegard is Head of Digital Transformation Practice with the Infosys Management Consulting Practice. With a Design Agency background, Phil has worked in the digital industry for 15 years, across a wide range of Insurance, Banking, and Retail clients. Phil has a special interest in creating value for customers through digital channels, and in customer-centric experience design. He leads the Design Thinking approach within Insurance and Banking at Infosys. Phil has worked with clients in the USA and Europe and across Retail, Telecommunications, Banking, and Insurance; a digital subject matter expert, he supports clients with their experience strategies and Omni-channel technology implementations. Associate Vice President and Global Head, Cloud Practice, Infosys Pradeep Yadlapati is Associate Vice President and is Global Head for Cloud Practice. He has two decades of IT experience in strategic consulting, building high performance teams, strategic sales planning, and building strong partnerships. In his current role he works closely with AWS, Azure, Google and Oracle in driving Cloud adoption for Enterprises. Pradeep's experience spreads across delivery, sales, operations, marketing & branding Pradeep has been helping clients across multiple geos across Americas, Europe and Asia Pacific and has vast experience in Financial Services and Insurance domain. Pradeep is passionate about picking up new challenges and adopting technology to bring innovative solutions to customers Pradeep has a B.E in Computer Science from Siddaganga Institute of Technology, Tumkur. Senior Vice President and Head, Infosys Center for Emerging Technology Solutions (iCETS) Joshi leads the Infosys Center for Emerging Technology Solutions. iCETS builds expertise in emerging technologies and contextualizes them to create business solutions for Infosys clients. Joshi has been instrumental in building the strategic "Living Labs" program at iCETS, and through it has set up co-creation labs with clients. His portfolio includes AI and cognitive solutions, blockchain, design and experience, AR-VR, and cybersecurity and data management. Under Joshi's leadership, iCETS has created products for conversational interfaces, data privacy, enterprise gamification and location-based solutions, among other areas. As part of its global charter, Joshi leads the creation of startup ecosystems and academia relationships. He has more than 30 years of experience in software technology, IT/business process outsourcing and multicultural team management. Associate Vice President – Oil & Gas Practice, Infosys Rajeev Kumar is an associate vice president and head of sales for Energy Americas. He has 20 plus years of experience in the healthcare, life sciences, and oil and gas industries. At Infosys, Rajeev has played a key role in establishing the company's presence in the oil and gas sector, including upstream, downstream, midstream, oil field solutions, and engineering, procurement and construction. With a well-defined go-to-market strategy, Rajeev has helped clients set up safe and secure service operations using emerging technologies such as artificial intelligence,

machine learning, automation and internet of things. Rajeev holds a degree in mechanical engineering. Prior to joining Infosys, he worked at Tata Steel as senior officer in the engineering shop. Director, India and APAC, Coursera Raghav Gupta is the Director for India & APAC region at Coursera. He is responsible for growing Coursera's consumer and enterprise business in the country, and thereby bringing the world's best education to learners across India. Raghav has 20 years of experience in consumer, internet, and management consulting industries in India, Southeast Asia and Europe. By partnering with the company's founders, Raghav successfully launched BlaBlaCar in India in early 2015. As a management consultant for 15 years, Raghav led the Retail Practice of Strategy& (erstwhile Booz & Co.) in India, and served as President of Technopak Advisors (a leading consulting firm in consumer facing industries). Raghav holds an MBA from INSEAD in France, and is a recipient of the INSEAD Syngenta Scholarship for Emerging Country Leadership. He did his post graduation in fashion business management from the National Institute of Fashion Technology in New Delhi, and is a Mechanical Engineer from the Pune University in India. Vice President, Engineering and Industry 4.0, Infosys Raghav has more than two decades of industry experience and is focused on advanced engineering and digital technology adoption in manufacturing. He is a founding member of Infosys' engineering unit and has led critical engagements in aerospace and defense, automotive, energy, utilities, high tech, and manufacturing. His expertise also includes international business, practice development, digital and product engineering strategy, and innovation. Raghav was an early advocate of artificial intelligence, machine learning, autonomous systems, hyperautomation, and edge computing solutions. He also has a particular interest in complex engineering analytics, product lifecycle management, and the industrial internet of things. Associate Vice President and Head – Advanced Engineering Group, Infosys Ravikumar G.V.V, Ph.D., is associate vice president and head of the Advanced Engineering Group at Engineering Services, Infosys. He has 27 years of experience working on aircraft structures, knowledge-based engineering, composites, artificial intelligence, robotics, Industry 4.0 and high-performance computing. Dr. Ravikumar has authored more than 45 technical papers, holds three patents and has contributed to several prestigious engineering programs, including commercial composites software AUTOLAY, a spinoff product of the Indian Light Combat Aircraft program. Dr. Ravikumar has designed and implemented Industry 4.0 solutions and was involved in developing the Industry 4.0 Maturity Index as part of the acatech consortium. He is currently collaborating with leading universities in Europe and the United States to develop more new solutions. Dr. Ravikumar's education includes a Ph.D. and an MTech in applied mechanics from IIT Delhi, and a BE (with honors) from BITS Pilani, India. Prior to Infosys, he worked at Tata Research Design and Development Center, Pune, and at the Aeronautical Development Agency, Bangalore. He is a member of several professional bodies and technical committees, including the expert panel of the acatech consortium, which developed the Industry 4.0 Maturity Index and the World Economic Forum initiative on the factory of the future. He has won many awards, including the corporate excellence award from the American Society of Engineers of Indian Origin. Associate Vice President & Managing Client Partner, Infosys Rakesh is a practice sales lead for emerging technologies and enterprise applications at Infosys. He has over 22 years of experience,

driving technology-enabled business transformation programs for large corporations across the globe and helping them define and build next-generation IT capabilities. Rakesh holds a bachelor's degree in production engineering and an MBA in Operations Management. Associate Vice President and Head of Infosys Tennis Platform Raghavan Subramanian leads the Infosys Tennis initiative to conceptualize, build, deploy and showcase the best of Infosys digital and analytical capabilities through strategic partnerships with Australian Open (AO), Roland Garros (RG) and ATP. These innovations have led to significant increase in fan engagement and experience in both AO 2019 and RG 2019. In his 25 year career with Infosys, Subramanian has held strategic leadership positions in the Infosys CIO org and Infosys R&D. He has led the implementation of multiple innovative initiatives in the areas of automation and simplification of mission critical internal applications. At Infosys Labs, the R&D wing of Infosys, where he headed the Centers of Excellence (CoEs) for big-data analytics, text-analytics, Internet-of-things, UX, gamification and legacy-modernization, he helped several clients with cutting edge proof-of-concepts in the emerging technology space. Subramanian has been invited as a speaker in several forums, is a co-author of 2 patents and has many publications. He was adjudged the "Technology champion of Infosys" in 2006. Associate Vice President and Head of Media and Entertainment, Infosys Rajesh Shunmugam is an associate vice president and the head of the Media and Entertainment business unit at Infosys, responsible for sales, strategy, and execution. He supports his customers in their digital transformations as the M&E industry continue to reimagine and reshape the way content and information is consumed real time effectively and efficiently. Associate Vice President and Head of Architecture for the Modernization practice, Infosys Rajib Deb is an associate vice president and global head of architecture for the Modernization practice at Infosys. In his previous role, he led the DevOps practice and played a key role in developing a DevOps maturity model. He also played a key role in driving AI and ML based automation to improve operational efficiency across all large support programs within Infosys. Deb has more than 21 years of experience in the information technology industry. In his current role, he and his team of architects help Infosys clients accelerate their digital journey through adoption of open source, microservices and cloud native architecture. When he is not working on client projects, he spends his time on writing technical articles, blogs and open source contributions. Deb holds a Master's degree in computer science from Illinois State university. Associate Vice President, Head of Sales, Engineering Services, Europe, Infosys Ramchandra G Kulkarni heads the engineering services for Europe region at Infosys. Prior to this he was the global head of discrete manufacturing, finance and insurance engineering services. Kulkarni has over 25 years of experience in manufacturing automation, and has worked with the likes of FANUC – an automation products and services provider, and SITRA, the Finnish innovation fund. Kulkarni has a bachelor of engineering from Delhi College of Engineering, a masters in computer science from the University of New Hampshire, and an executive program in business administration and management from Stanford University Graduate School of Business. Vice President and Global Head of Infosys Validation Solutions (Testing Services), Financial Services, Healthcare, Insurance and Life Sciences Rajneesh is Vice President and Global Head of Infosys Validation Solutions (Testing Services) for Financial

Services, Healthcare, Insurance and Life Sciences Vertical segments. He also heads the Infosys Pune Development Center. With over 24+ years of experience, Rajneesh has played several diverse roles cutting across multiple vertical segments, geographies and service lines. He has a proven track record of managing & growing service capabilities, growing & nurturing strong client relationships and delivering complex programs. He is one of the founding member who created Testing Services at Infosys which has grown over last one & half decades to become one of the largest & fastest growing service lines at Infosys. In his role within testing, he has helped clients transform their testing organizations from traditional testing organizations to organizations focused on quality assurance to now quality engineering. He is passionate about building automation capabilities for organization. Rajneesh is also actively involved in various testing forums. Principal Consultant, Infosys Knowledge Institute Ram's focus is on thought leadership and research for the application of emerging technologies and concepts in manufacturing and engineering. He is a frequent blogger and speaker on Industry 4.0, servitization, reskilling, and the future of work. Ram has also co-authored the book "Neoskilling for Digital Transformation" in collaboration with L Prasad, retired professor of organizational behavior and human resources management at the Indian Institute of Management in Bangalore. Their book is published by Wiley India. Ramesh Lakshmanan, AVP– Digital, AI & Automation, Communication, Media and Technology, Infosys Ramesh Lakshmanan is Associate Vice President of Digital Transformation, AI and Automation, at Infosys, with 20+ years of experience. Ramesh has worked across retail, CPG, communications, telco and high-tech industries. He has been providing digital strategy consulting including e-commerce, digital marketing, omnichannel enablement, HX-UX, design thinking, field service management, digitization of systems, retail operations, practice management and technology-led innovation. Ramesh has a track record of developing and scaling new business opportunities, building trusted partner relationships, providing disruptive solutions, and defining business models. Associate Vice President, Communications, Media & Technology Randip Sinha is an Associate Vice President with the Communications, Media & Technology (CMT) vertical at Infosys responsible for driving the growth of "Network Services" business across ANZ & APAC regional Markets. He is also a member of the CMT global Strategy team. Randip has 20+ years of experience in the telecommunications sector working across the globe in various roles across Sales, product management and delivery. Randip has lately been focussed on providing solutions to the Telecoms in their journey to build the "Networks of the future" which is premised on technologies such as SDN/NFV/5G/IOT etc. Randip is based out of Melbourne, Australia. Director, IoT Practice, Infosys Raman Kartik Iyer heads the global delivery for IoT practice across industry verticals. He has over 20 years of experience and has played sales, program and delivery management roles in different geographies. His experience includes product design, industrial automation and Industry 4.0. He has helped multiple customers define and navigate their digital transformation journey by bringing in solutions on IT-OT convergence, factory visibility, condition monitoring and predictive maintenance, digital twin for process and asset, and digital thread. Iyer is a bachelor of engineering from Jabalpur University and has completed the executive program in leadership and strategic thinking from IIM, Ahmedabad, India. Head — Delivery and Operations,

Infosys Knowledge Institute Ramesh has nearly two decades of experience in research spanning multiple asset classes, emerging technologies, and global delivery. He has also led the development, writing, and production of the Infosys TechCompass reports — the Knowledge Institute's flagship technology series. TechCompass provides a strategic perspective of important technologies and trends that drive their evolution and adoption. This perspective helps project teams, clients, and the market to make better, more informed decisions on architecture, tools, and technologies. Before joining the Knowledge Institute, Ramesh spent several years at Infosys Consulting where he led a team supporting the credit desk of one of the world's largest financial institutions. Previously, he was also an equity research analyst supporting one of the largest hedge funds. Principal Analyst and Founder, Constellation Research R 'Ray' Wang is the Principal Analyst and Founder of Constellation Research, Inc. He's also the author of the popular business strategy and technology blog 'A Software Insider's Point of View'. With tens of millions of page views a year, his blog provides insights into how disruptive technologies and new business models impact enterprises. He has held executive roles in product, marketing, strategy, and consulting at companies such as Forrester Research, Oracle, PeopleSoft, Deloitte, Ernst and Young, and Johns Hopkins Hospital. Ray is a prolific keynote speaker and research analyst working with clients in diverse sectors like digital, innovation, business model design, engagement strategies, customer experience, matrix commerce, and big data. His Silicon Valley research firm advises Global 2000 companies on futuristic business strategy and disruptive technology adoption. He is a regular contributor to Harvard Business Review and is frequently quoted in The Wall Street Journal, Forbes, Bloomberg, CNBC TV, Reuters, IDG News Service, and other global media outlets. His new book, Disrupting Digital Business, is published by the Harvard Business Review Press and available globally now. This book provides insights into why 52 percent of Fortune 500 companies have been merged, acquired, gone bankrupt, or fallen off the list since the year 2000. It highlights the fact that it's not technologies that drive this change — but a shift in how new business models are created by leveraging technologies. He is available @rwang0 on Twitter. Vice President and Delivery head in Financial Services, Infosys Renu Rajani is a IT services/consulting leader with 28 years of experience. As a delivery head, Renu leads the delivery for a large cluster of Banking & Financial Services clients spanning across APAC, Europe and the USA. Renu's experience spans across IT Services delivery, regulatory compliance, transformation, providing technical solutions, outsourcing governance, and consulting. Renu has helped clients in outsourcing their engagements, delivering seamlessly, and transforming delivery in line with latest digital business, technology and regulatory needs. Prior to joining Infosys, Renu served Capgemini, Citibank, IBM, in key leadership roles. She holds an MS degree from Krannert Graduate School of Management, Purdue University; and a B Tech degree in Computer Science from Lucknow University. She is also a certified Banker (CAIIB) and accredited as IBM Senior Project Manager with Delivery Project Executive/ Service Management Specialization. Infosys Consulting Richard believes in the Googly mantra of 'know the user, know the magic, connect the two.' For the past 20 years, he has shaped how companies make the Internet work for their customers across fintech, cloud, artificial intelligence (AI), and big data. He now uses his experience to be a trusted advisor to executives who

know that something needs to be done, but would like to be a little more certain about what to do and how to do it. He guides large financial organizations on their journey from atoms to bits and has been pivotal in driving blockchain research, examining AI's impact on financial services, and modernizing digital experiences for clients. Vice President and Head of Financial Services for Benelux, Switzerland & Nordics, Infosys Roshan Shetty is vice president and head of Benelux, Switzerland & Nordics region for financial services. He has over two decades of global experience in the IT services industry and has managed financial services clients across the globe (US, UK and Europe). His area of expertise lies in partnering with clients to shape strategy and execute transformational programs leveraging business and technology services. In his previous role at Infosys, Shetty was the country head for Netherlands, where he was responsible for the strategy and execution of Infosys businesses. He was the architect of business growth and visibility in the Dutch market - A key growth market for Infosys in Europe. He holds a Master's Degree in Business Administration, and a Bachelor's degree in Chemical Engineering. Shetty has successfully completed the Executive Leadership Program at Stanford University and also the Stanford Ignite Program - Entrepreneurship & Leadership. Senior Vice President & Global Head, Energy (Oil and Gas) Practice, Infosys Robin Goswami is a senior vice President and heads the Energy (Oil and Gas) practice in Infosys. Goswami has been instrumental in building the oil & gas practice in the organization since its inception to its current stature. He is a transformative leader with over two decades of experience in the IT sector and is credited with delivering not only high growth in the industry but also getting Infosys recognized as a leader in key analyst reports. Goswami excels at formulating and executing vision based strategy with his deep industry knowledge and ability to build high performing teams. He is also a member of the board of directors of two companies - an IT consulting firm acquired by the Infosys Energy practice, and a global consortium that sets data exchange standards for the Upstream Oil & Gas industry. Goswami lives in Texas with his family and enjoys hiking, skiing & taking active family vacations. Vice President, Global Head of Leadership and Talent Development, Infosys Robin Kirby is the Vice President and Global Head of Talent & Leadership Development at Infosys. In this role, Robin leads the global strategy, infrastructure and execution of leadership and talent development for Infosys across 200,000+ employees, covering all business units, regions, functions and the Infosys ILI (Infosys Leadership Institute). Robin has over 17 years of experience in HR and Leadership Development and prior to joining Infosys, was the Vice President of Talent at Symantec. Prior to Symantec, she spent 10 years at GE in HR & Leadership Development roles such as GE Global Learning Leader, HR Leader for GE Healthcare Sales & Service in the U.S. and Global Manager for some of GE's premier high potential development programs. Robin holds a Master's degree in Human Resources from the University of South Carolina as well as double Bachelor degrees in Finance and Management. Robin began her career as a Supply Chain leader with Honda Trading America and quickly found her passion in the leadership development space and made an early career shift into HR and Leadership Development. She has expertise in global leadership development strategies and execution, executive coaching, high potential programs, emotional intelligence and personality assessment, holistic talent development that incorporates diversity and recruiting

strategies along with internal development to grow a strong pipeline of future leaders. Robin resides in South Carolina with her husband and enjoys traveling, reading and cooking. Vice President & Regional Head – Manufacturing, Europe, Infosys Ruchir is Vice President and Regional Head for Manufacturing in Europe at Infosys. In a career that spans almost two decades at Infosys, he has played an instrumental role in establishing the company's presence in the manufacturing sector, which includes automotive, aerospace, discrete/industrial, and chemicals/resources. Leading with a consultative, problem-solving approach to building alliances and partnerships and a well-defined go-to-market strategy, he has helped clients set up best-in-class service operations using technologies like Artificial Intelligence, Automation/Robotics, IoT/Industry 4.0, and DevOps/ Agile. Associate Vice President and Portfolio Head, Insurance, Infosys Rohit Puranik is an associate vice president and portfolio head for Insurance business at Infosys. He has over two decades of IT leadership and client management experience. He has played a significant role at Infosys through several strategic domain-led engagements and client advisory roles. Puranik heads the New England region and played a key role in the opening of the Hartford Innovation Hub for Infosys. He has extensive experience in client relationship management, innovation and mentoring of global delivery teams operating out of Canada, China, Dubai, India, UK and USA. Puranik is the recipient of many organizational awards at Infosys. He holds strong industry experience in insurance, healthcare, long term care and telecom industry verticals. Prior to joining Infosys, Rohit was a design engineer at GBGL, India. Puranik holds an MBA from University of Connecticut and has completed a General Management program from Harvard Business School. Professor, Centre for Atmospheric and Oceanic Sciences, Indian Institute of Science, Bengaluru S.K. Satheesh is a professor at the Centre for Atmospheric and Oceanic Sciences, Indian Institute of Science, and the director of the Divecha Centre for Climate Change. He is the executive director of the South Asia Regional Office of the Future Earth initiative and editor of Current Science. He obtained his Bachelor of Science in physics and his Master of Science in physics with applied electronics from the University of Kerala. His doctorate is from Vikram Sarabhai Space Centre and the University of Kerala. Professor Satheesh joined IISc in 2000 after postdoctoral work at the Scripps Institute of Oceanography, the University of Bern and NASA's Goddard Space Flight Center. He has won numerous awards, including the Shanti Swarup Bhatnagar Prize (2009), the Devendra Lal Memorial Medal of AGU (2017), the J.C. Bose Fellowship (2015), the TWAS Prize (2011) from The World Academy of Science, and fellowships in three Indian academies as well as the American Geophysical Union. Associate Vice President and Client Services Head for Digital, Energy, Infosys Sandeep Roy is an associate vice president and head of client services for digital for energy accounts globally. Roy specializes in engaging with clients at the intersection of business process, digital technologies and organizational change to help them navigate large scale transformation programs. He brings over 20 years of experience partnering with oil and gas majors across the entire value chain of upstream, midstream and downstream designing and delivering digital solutions through the entire spectrum of operations and enterprise technology. Roy passionately follows advancements and disruptions in the technology landscape and constantly looks for their application to drive business value. He takes a keen interest

in design and experience and considers them as central to digital transformation. VP and Delivery Head, Strategic Initiatives, Infosys SP Singh (SP) is Vice President and Delivery Head at Infosys and is responsible for strategic initiatives across new business models and capability development, especially towards the objective of achieving Agile Digital at Scale. SP has played a variety of leadership roles cutting across industry verticals, technology/functional domains and business functions, creating value for our clients, in their transformation journeys. He has a proven track record of incubating and growing cross-functional practice teams, taking them to market and delivering innovative services leveraging the same. In past, he has led the Strategy and Operations Planning for Enterprise Solutions group where he was responsible for Strategy/Business Planning & Execution, Operations Planning & Effectiveness. He is associated with multiple corporate initiatives for Infosys both at the unit and the organizational level. Vice President and Delivery Head, Cloud, Infosys Saju has two decades of experience in IT infrastructure and Cloud in the space of consulting, advisory, solutions, sales, and delivery. At Infosys, he heads the Service R&D and Automation Products and Platforms for Cloud and Infrastructure Services. His industry experience makes him a Cloud and Infrastructure transformation leader and a Cloud computing expert who has advised Fortune 200 companies on strategy. He has played various leadership roles and built successful teams, managed cutting-edge technology, nurtured a partner eco-system for business growth and demonstrated content, entrepreneurial and thought leadership. Associate Vice President and Head of Digital Workplace Services, Infosys Sanchit leads sales and delivery for Digital Workplace Services and helps partners redefine employee experience and drive consumerization of end-user computing. Sanchit has worked in sales, consulting, and delivery throughout the United States, United Kingdom, Australia, and India. His strength lies in his ability to define a problem and then use cutting-edge technology and extended teams to deliver a solution. Sanchit has a bachelor's degree in electronics engineering from the National Institute of Technology in Bhopal, India, and a master's degree in business administration from the Indian Institute of Management in Lucknow. Associate Partner, Infosys Consulting, Americas Sanjay has spent more than 27 years providing business process re-engineering consulting to manufacturing and technology clients. He has extensive experience in pricing, quoting, and product configuration. Sanjay is based in New York City. Senior Principal, Head of Industries, Infosys Knowledge Institute Samad has 20 years of experience as a technology journalist, researcher, thought leader, digital innovator and marketer. He is responsible for Infosys Knowledge Institute's industry perspectives, as well as leading the group's European operations. Samad is an elected co-representative for United Citizens, which advocates for an equitable fourth industrial revolution, and he also runs the U.K. chapter of House of Genius, a start-up mentoring network. Samad graduated with a degree in sociology from the University of Surrey in England after having grown up in various Asian countries. He works in IKI's London office. Associate Vice President, Global Delivery Lead, Nia Sanjay is an Associate Vice President, Global Delivery Lead, Nia. His current role makes him a global business leader in the AI and Automation practice at Infosys. Sanjay has two decades of industry experience in multiple verticals, including retail and consumer packaged goods, financial services, telecom and technology. He has

significant consumer insights into emerging markets and mobile commerce. Sanjay has been invited as speaker at INSEAD and NASSCOM several times. He has written articles for research firms, including Leo Burnett, Images Retail and ITPRO. Sanjay holds a bachelor's degree in mechanical engineering, from Pune University. Senior Principal Technology Architect, Infosys Center for Emerging Technology Solutions (iCETS) Sanjay Mohan is a senior principal technology architect at Infosys' Center for Emerging Technology Solutions. He has more than 21 years of work experience, including project delivery for global clients, and technology and product innovation. He also has a special interest in research and development for advanced solutions to unique business problems. Consultant, Infosys Center for Emerging Technology Solutions (iCETS) Sounak Sarkar is a consultant at Infosys' Center for Emerging Technology Solutions and is responsible for identifying new areas of innovation, conceptualizing use cases, building proofs-of-concept and preparing thought leadership articles. His focus areas include "horizon 3" technologies, such as robotics, quantum computing, brain computer interface and drones. 5G and Networks Practice Leader, Infosys Limited Shashank Narain Mathur is the 5G and networks practice leader for the Infosys Communications, Media Technology Domain Consulting group. He leads technology engagements in telecoms, media and the IT industry across America, Europe and Asia-Pacific, and has a keen interest in advising customers and internal stakeholders on new technology development areas such as networks, 5G, IoT and cloud. Shashank joined Infosys in 2019, before which he worked with Ericsson as a global account CTO in Malaysia. Vice President and Global Product Head for AssistEdge, EdgeVerve Sateesh Seetharamiah is a founding member of EdgeVerve Systems Limited and currently the global product head of EdgeVerve automation product suite AssistEdge. Seetharamiah brings significant entrepreneurial, management consulting and IT leadership experience, spanning more than 25 years. He is a strong believer in the immense potential that artificial intelligence and automation have in transforming enterprises of the future. With deep roots in supply chain management, he was one of the pioneers of the internet of things and a founding member of the Auto-ID Center at the Massachusetts Institute of Technology, which created the global standard system for RFID and other sensors. Sanchit Mullick, Associate Vice President and Global Head of Sales for AI and Automation Services, Infosys Sanchit Mullick is Associate Vice President and Global Head of Sales for AI and Automation Services at Infosys. In this role he leads worldwide sales, marketing and alliances for AI and Automation services and partners with customers to help them chart their roadmap across the Automation spectrum leveraging everything from robotic automation to cognitive services. Sanchit has worked across US, Australia, UK and India having played roles cutting across sales, consulting and delivery. Given his breadth of experience, Sanchit's strength lies in his ability to define a problem and then leverage cutting edge technology and harness the strength of extended teams to deliver a solution. Sanchit holds a Master of Business Administration from the Indian Institute of Management, Lucknow and a bachelor's degree in Electronics Engineering from National Institute of Technology, Bhopal. Executive Vice President, Data & Analytics, Infosys Satish is the head of business for Data & Analytics and Digital portfolios at Infosys. He has been with the company for over 2 decades. Currently, He has P&L responsibility and manages globally distributed sales,

consulting and delivery teams across Americas, Europe and Asia Pacific regions. He is on the board of Skaava, an Infosys subsidiary and also serves on the Infosys Cyber Security council. He is responsible for key organization change initiatives in the areas of new services, talent supply chain, and optimization. Prior to this, he has played several delivery leadership roles across manufacturing, healthcare & life sciences, financial services and retail segments globally. He is the recipient of multiple Infosys Excellence awards for his contribution towards nurturing top Infosys client relationships. He holds a Bachelor's degree in Electronics Engineering from Visvesvaraya College of Engineering, Bangalore University. He also holds the Executive Education certification on Infosys Global Leadership Program in collaboration with Stanford University Graduate School of Business. Global Lead, Managed Security Services, Infosys Satish Prasad has spent more than 18 years in the information and cybersecurity domain and currently heads managed security services from Infosys' network of global Cyber Defense Centres. He has spent years working in enterprise IT security. Satish's current focus areas include operational technology, internet of things, automotive security, machine learning and threat hunting. He has a bachelor's degree in telecommunications engineering. Chief Strategy Officer at HfS Research Saurabh Gupta oversees the global research function of HfS across US, Europe, and Asia-Pac. He has 15+ years of experience across client, provider, advisory, and analyst roles, bringing a uniquely realistic and wide-ranging perspective to our industry's challenges and opportunities. He advises senior executives on business transformation initiatives and brings to the table a combination of subject matter expertise and strategic thinking. Saurabh has authored over 125 research reports, is a frequent speaker, and is regularly quoted in industry publications. He is well-known for spotting disruptive trends like As-a-Service, Cloud, Analytics, Robotics and predicting their implications for different stakeholders. Saurabh is a Mechanical Engineer from Delhi College of Engineering and MBA from IIT Bombay. He lives in Chicago with his wife and daughter. He is a fan of Indian cricket and European soccer but is still trying to comprehend American football. Global Head – Digital, Infosys Scott leverages his experience to help companies navigate the complex technology landscape of mobile, social, search, and data, driving the evolution and strategic vision of brands in an increasingly digital world. Prior to joining Infosys, he was the Chief Strategy Officer at Publicis.Sapient / Razorfish. Scott has been a strategist and digital partner for senior-level executives at Fortune 100 companies for over 25 years. Providing actionable strategic guidance across the entire digital ecosystem, Scott brings a rare combination of CXO-level business strategy, technology, and marketing experience in a fast-changing global market. Vice President – Infosys Validation Solutions and Digital Testing Shishank is with Infosys for over 21 years and currently plays the role of Vice President and Delivery Head, Infosys Validation Solutions. In his current role, he is responsible for global delivery of validation services across Retail, CPG, Logistics, Manufacturing, Hi-tech, Energy, Communications, Services and Utilities segments. He also leads the validation teams focusing on newer technology solutions like AI, Big Data, mobility, IoT, cloud and virtualization. His focus includes new service conceptualization, go to market definition, service evangelization and enabling delivery teams. A gold medalist from Indian Institute of Management (IIMB), Shishank enjoys theatre and music in his spare time

and is an active member of cultural clubs at work and outside. Principal, Advanced Engineering Group (AEG) of Engineering Services, Infosys Sreekanta has more than 22 years of experience in unmanned technologies and has created multiple novel unmanned robotic systems and autonomous technology frameworks. Some of his work has included a cost effective drive-by-wire system for automatic steering controls and automated braking systems for autonomous vehicles. Sreekanta has published multiple technical papers, holds three patents, and is chief mentor for Infosys' Robotics and Autonomous Technologies Center of Excellence. He has a bachelor's degree from the University of Mysore and a MBA and Ph.D from the Centre for Advanced Studies in Management Education & Training in Mysore. Senior Principal Technology Architect & Leader, Enterprise Strategy & Architecture Practice, Australia and New Zealand, Infosys Sharma Madiraju is the leader of Enterprise Strategy and Architecture practice at Infosys in Australia & New Zealand, as well as a core member of the local logistics and utilities industry verticals. Madiraju joined Infosys at its Melbourne office in 2004. He has worked with clients, advising senior IT executives on strategy, organizational design, enterprise architecture, IT simplification, IT cost reduction, digital transformation and artificial intelligence, across multiple industry domains. He has provided technology and architectural leadership for several large transformation programs. Prior to Infosys, Madiraju worked for both product and services organizations across several industry verticals in Australia. Early on in his career, he was an AI researcher. Madiraju has published research papers and presented in industry conferences on computer vision, pattern recognition, software engineering, IT strategy, digital transformation and enterprise architecture. He received his Master of Engineering Science (Artificial Intelligence) by research from the University of Melbourne and Master of Business Administration (Strategy & Competition) from the Melbourne Business School, Australia. Executive Vice President, Infosys Shaji is the Global Head of Delivery for Financial Services, Healthcare, Insurance, and Life Sciences at Infosys and manages a global team. He is also responsible for Infosys' Modernization Practice, Large Deals Solution Architects team, and the Transition Center of Excellence. During his 29 years at Infosys, Shaji has worked in many roles — including client facing engagements — in the United States, India, and other countries. Associate Vice President, Group Manager Client Services, Retail, CPG and Logistics Shravan has two decades of experience in Retail, CPG, Hospitality, Travel and Logistics industries. An accomplished business leader with expertise in business development, IT service delivery management and sourcing transformation, he is also experienced in building high performance sales teams and P&L management, in management consulting, technology services and outsourcing. At Infosys he is responsible for the P&L of a portfolio of strategic accounts in the Retail, CPG and Logistics vertical. Vice President and Regional Head for APAC and MEA - Retail, Manufacturing, and Logistics Practice, Infosys Shveta has lived and worked across the U.S., India, and Japan, and is currently based out of Singapore. She has over 19 years of experience in the field of business consulting, business development, and account management. In her current role, she holds P&L responsibility for the Infosys Retail, Manufacturing, and Logistics practice in the APAC and MEA regions. Prior to this, she was a client partner, leading strategic client relationships for Infosys based out of the U.S. Associate Vice

President, Principal Product Architect, Blockchain Center of Excellence, Infosys Center for Emerging Technology Solutions (iCETS) His team developed and deployed the Infosys Automation Platform, which was leveraged as a key differentiator in over 45 large ITO deals, and improved productivity in over 90 engagements. He was instrumental in incubating the knowledge and machine learning driven automation offering from Infosys. Shyam has led the CoE for Big Data Center and Cloud Computing, worked with clients on early engagements and helped in incubating successful consulting practices around these technologies. He has 9 patents granted to him and over 10 pending. Shyam has a Masters in computer science from the University of Texas Tech and a B.Tech in electronics and communication engineering from the National Institute of Technology, Warangal. Executive Vice President and Head, Global Services – Application Development and Maintenance, Independent Validation Services and Business Intelligence, Infosys Srikantan Moorthy (Tan) is an Executive Vice President and the Head of Global Services for Application Development & Maintenance, Independent Validation Services and Business Intelligence. He has over 30 years of global experience in the professional services industry. Until recently, Tan was the Group Head of HRD, where he was responsible for several facets of the employee lifecycle, including compensation and benefits, performance management, career development, and employee engagement for over 160,000 employees across the Infosys group. Prior to this, he was the Head of Education and Research (E&R), where his primary responsibility was talent development through competency building. In this role, he drove the residential 23-week training for new engineering graduates joining Infosys and also led the continuous education program involving over 100,000 employees. In addition, he was responsible for the Infosys Campus Connect program, partnering with over 400 engineering colleges in India and providing interventions to raise the employability of graduating engineering students. Furthermore, Tan leads the Corporate Sustainability Reporting effort at Infosys. In this role, he has been championing sustainability awareness across the organization through educational programs on sustainability. Tan is an active representative of the company in several professional bodies, including the Professional Development Committee of ACM (Association for Computing Machinery), NASSCOM (National Association of Software and Services in India), Education Council, and IFEES (International Federation of Engineering Education Societies). As a member of IFEES, he has played a key role in the launch of the IFEES Award for Engineering Education. In July 2010, Tan was inducted as a Founding Director of the International Professional Practice Partnership (IP3) Global Industry Council (IP3-GIC). IP3-GIC was established as the principal forum within which ICT employees can influence the development of the global profession under the auspice of a UNESCO sanctioned body. He is also part of several domestic and global taskforces dealing with education. Tan has been engaged in youth and education related voluntary activities, and is an advisory member of a non- profit called Youth for Seva, which focuses on harnessing the power of youth for voluntary activities. Tan holds a degree in electronics engineering from Bangalore University, India. Associate Vice President – Resources & Utilities, Americas, Infosys Srikanth Srinivasan has over 22 years of strategic consulting and technology transformation expertise across utility, insurance and financial services, telecom, and healthcare sectors globally at

Infosys and PwC. Srikanth leads solutions that enable digital transformation in utilities in addition to managing strategic client relationships. He works on innovative business solutions for customer care, enterprise asset management and transmission & distribution leveraging new developments in AI/computer vision/ RPA/cloud and other technologies. Srikanth is recognized as a thought leader and has authored several white papers. He holds an MBA from the Indian Institute of Management, Calcutta, and an Electrical and Electronics Engineering degree from NIT Trichy. Associate Vice President and Head, Natural Resources Sector, Infosys Sriram heads the Natural Resources Sector for Infosys and works with the mining industry CxOs on their digital Strategy and implementation. He works closely with clients from the mining industry on automation and use of Artificial Intelligence /machine learning and analytics in driving value for their business. Vice President | Head - Global Energy (Core) at Infosys Sriram Sundar heads the Global Energy (Core) vertical at Infosys. He specializes in Digital Technology, Consulting & Digital Process Outsourcing (DPO), Sales and Delivery. As a strategic partner to his F500 clients, Sriram is helping these organizations digitize their core and accelerate their transformation to Digital & Cloud. Senior Vice President and Head - Life Sciences, Infosys Since joining Infosys in 1998, Subhro has held multiple leadership positions in areas such as client management and delivery in the Life Sciences and Infrastructure business units. He has worked on large, complex, strategic initiatives for clients across multiple service offerings, such as management consulting, IT, and BPO services across the globe. In his current role, he is accountable for the Infosys Life Sciences business. Prior to his current role, Subhro was responsible for managing client relationships for a top-five pharma company in the US. This account today has expanded to include IT, BPO, and consulting services spanning the US, Europe, and Asia. In addition, he has played multiple roles in project delivery, where he successfully delivered development, reengineering, and maintenance projects within budgets, ensuring high customer satisfaction. Associate Vice President, Portfolio Head for Information Services and Publishing Practice, Infosys Subrat leads Infosys' global information services and publishing practice, where he regularly interacts with CXOs, and industry analysts and advisors. He has worked for Infosys for more than 20 years and previously managed the company's North American Oracle practice. Before joining Infosys, Subrat was a ERP consultant at a Big Four consulting firm. He currently is based in Dayton, Ohio. Chairperson, Infosys Foundation, India Sudha Murty is the chairperson of the Infosys Foundation in India. She has a master's degree in electrical engineering from the Indian Institute of Science, Bangalore. She started her career as a development engineer with TELCO (now Tata Motors) and has also taught computer science at Bangalore University. Sudha Murty is a prolific writer in Kannada and English. She is a columnist for English and Kannada dailies with more than 30 books and 200 titles to her credit – including novels, non-fiction, travelogues, technical books, and memoirs. Her books have been translated into all major Indian languages. She has been honored with awards for her philanthropic and literary efforts. She has also received the Padma Shri Award from the Government of India as well as seven honorary doctorates from universities in India. Senior Vice President and Global Head of Product Management & Strategy, Infosys Prior to joining Infosys in June 2016, as Senior Vice President and Global Head of Product Management & Strategy,

Sudhir spent over nine years at Google. Here, his last role was as product head of policy enforcement for Google's multi-billion dollar Personalized Ads products. In a previous position, he led financial fraud management across Google products, establishing the company's leadership in the industry. Before that he helped Google develop its first proprietary CRM system, now used by its worldwide sales team. Sudhir has also held leadership roles with three startups, two of which were successfully acquired. Sudhir started his career at Intel, where he held various roles in product marketing and software engineering during his eight-year tenure. Sudhir holds a bachelor's degree in computer science from IIT Kanpur, a master's degree in computer science from the University of Rochester, and an MBA from Santa Clara University. Principal Consultant and Head, Government Healthcare Analytics Solutions, Infosys Public Services Dr. De is head of government healthcare analytics for Infosys Public Services. He has extensive experience in the public healthcare sector and previously worked for the World Health Organization, UNICEF and the Indian Public Health Association. At Infosys, Dr. De leads the area of advanced data science and artificial intelligence-enabled population health, social determinants of health analytics, opioid management, care management, and value-based care. He is a frequent public speaker at various healthcare conferences, forums and at major universities, including the Massachusetts Institute of Technology. Dr. De is based in Hartford, Connecticut. He holds a medical degree from the University of Calcutta and master's degree in healthcare administration from the Tata Institute of Social Sciences in Mumbai, India. Senior Vice President and Head - Marketing, Infosys Sumit heads marketing at Infosys and is responsible for realizing the Infosys brand ambitions globally. He joined Infosys in 2004 and has since held multiple strategic positions including the Head of Infosys Products & Platforms marketing as well as the Global Head of Corporate marketing. He champions marketing effectiveness and enjoys the challenge of building strong connects between marketing metrics and business outcomes. Sumit comes with over 19 years of experience in international marketing. Prior to joining Infosys, he has worked with Polaris Software and the Tata Group where he acquired his specialist skills in brand development, marketing communications and demand generation. Chief Scientist and Head, Division of Natural Products Chemistry at the Indian Institute of Chemical Technology (IICT) Dr. Srivari Chandrasekhar received his B.Sc. (1982), M.Sc. (1985), and Ph.D. (1991) degrees from Osmania University, and pursued post-doctoral research at the UT Southwestern Medical Center, Dallas, USA, with Prof. J. R. Falck. As a Humboldt Fellow at the University of Göttingen, he worked on the synthesis of hybrid natural products with Prof. L. F. Tietze. Dr. Chandrasekhar was instrumental in setting up the state-of the- art Molbank facility at the IICT for the storage and retrieval of chemical samples for HT screening. He has over 240 publications in national and international journals. He won the Infosys Prize 2014 in Physical Sciences for his diverse and notable contributions in synthetic organic chemistry with special focus on the synthesis of complex molecules from natural sources. He has devised innovative, practical approaches to pharmaceuticals of current interest to industry. Head - Operational Vendor Control, CoE Tooling, and CoE Software Development, ABN AMRO Stefan has been working at ABN AMRO for the past 18 years and currently heads Operational Vendor Control, CoE Tooling, and CoE Software Development. He has been involved in the sourcing area

since 2005. His main responsibilities include ensuring that vendor sourcing strategy is followed and operationally managed in the right way; ensuring the right SDLC tools are implemented, upgraded, and maintained; ensuring that the right standards are in place and maintained for software quality and that high quality software is delivered into the production environment; and setting up and executing the Continuous Integration Continuous Delivery (CICD) program. Senior Vice President, Service Offering Head, Retail, CPG, Logistics, and Legacy Modernization Surya heads delivery for Retail, CPG and Logistics units. He also heads the Legacy Modernization offering for Infosys across Industry segments. Surya has defined many new technology and domain offerings grounds up, and taken to market and built a number of profitable and sustainable business units. He specializes in leading change initiatives that are business led but driven by latest technology such as Digital, Cloud, Data, and Open Source. Automation and Innovation are two key focus areas that he is personally driving in his units. He is passionate about promoting an innovation and change mindset in people and building high performing teams that are agile, risk-taking and learn continuously. Surya has a Bachelor in Engineering and Masters in Industrial Engineering from NITIE, Mumbai. Associate vice president and head, Business Innovation, Infosys Center for Emerging Technology Solutions (iCETS) Vaidya heads the Business Innovation practice for Infosys Center for Emerging Technology Solutions. He is an experienced practitioner in technology-led innovation, incubation, emerging technologies and design thinking, with 22+ years of experience in the United States and India. He helps clients identify the right problems and opportunities, leveraging design thinking to incubate solutions with the help of emerging technologies. He previously headed Infosys' research in helping multinational organizations succeed in emerging economies. He helps them understand the shifts they need to undergo in order to succeed in emerging economies, and the role technology plays in those shifts. He was a 2013 Chevening Fellow by the UK government for the Rolls-Royce India Science, Innovation and Policy Leadership program at the University of Oxford. Prior to Infosys, he worked for a major technology consulting firm in the U.S. for seven years. He resides in Pune with his family. Senior Principal of Product Marketing, Fusion Risk Management T.J. has been part of Fusion's growth from business continuity leader to operational resilience innovator, driving the cross-functional, go-to-market process across third-party and operational risk management. He is working with Infosys to bring a new Operational Resilience as a Service solution to financial services customers that need to meet the requirements of regulators and lead their organizations to differentiating resilience. Associate Partner, Business & Strategy Consulting, Infosys Thiag leads digital transformation for various telecom companies across Asia pacific and Oceania markets, helping them realize their digital strategy to deliver true value with respect to financials, customer experience and the overall enterprise digital goals. He strongly believes that people adopting to change is a pre-requisite to making any digital transformation a success. Thiag come with 20+ years of experience in the telecom domain. He has worked with leading companies such as Nokia, NBN, Wipro, and, Alcatel-Lucent and is currently working as an Associate Partner in Business & Strategy consulting at Infosys-Australia. Vice President, Education, Training and Assessment, Infosys In his tenure at Infosys, which spans 20+ years, Thirumala Arohi (Thiru) has managed many vital client relationships

for the financial services accounts from Europe before taking on the current role of Head of Education, Training and Assessment (ETA). ETA department is one of the key business enabling departments at Infosys. Thiru drives various learning interventions aggressively to enable our employees to be future ready. Under his leadership, ETA has progressed well in establishing and enhancing digital learning platforms that enables "Anytime, Anywhere and on Any Device" learning providing experiential and role based courses. Several partnering agreements are in place with Universities (RISD, Purdue etc.) and MOOCs like Udacity, Coursera, etc. in leveraging their programs. Along with driving content digitally, the Learning and Development arm of ETA also focuses on developing holistic skills in the areas of business, behavioral and leadership such as Design Thinking. Vice President, HealthCare Venky is a senior Client Partner in Infosys' Healthcare Industry Vertical. In this role, he is responsible for business profitability and growth at Infosys' global HealthCare clients, particularly Fortune 50 clients. He manages critical relationships with senior client executives, industry analysts and anchors talent development of key Infosys personnel. He is responsible for crafting and delivering business and technology solutions to client business problems with his deep understanding of Healthcare business and technology. Previously, Venky was the global delivery head for Infosys Digital transformation Practice focused on the Retail and Consumer Industry. Under his leadership the Digital practice delivered double digit growth. As Practice head he was responsible for Practice P&L, Project/ Program delivery, competency development and talent management in areas of Digital Commerce, Digital Marketing and Content management, Supply Chain, Integration technologies and Business Intelligence Venky has spent over 21 years with Infosys and has broad experience spanning multiple industries and geographies. He has won a multitude of excellence awards and Gold standard awards for outstanding achievement ranging from thought leadership in the industry to client management. He holds a undergraduate degree in mechanical Engineering and an executive leadership program from Stanford graduate school of business. Associate Vice President & Head, Digital Engagement - Center of Excellence (CoE), Infosys Venugopal Subbarao (Venu) heads the Digital Engagement CoE at Infosys Centre for Emerging Technology Solutions, which is focused on incubating offerings in the converged areas of AR-VR, IoT and cognitive technologies, which includes solutions such as Infosys Nia Chatbot. He has 20+ years of IT Experience in project delivery, consulting, research, and enterprise architecture handling large projects/product/practice management. Venu is well qualified as a technologist, with certifications in TOGAF (The Open Group Architecture Framework) and Stanford Ignite. He is also a Certified Technology Officer, through Executive Education Certification Program from Queensland University of Technology. He has filed various patents in Information Management (IM), authored book chapters and published papers in research conferences. Head — Manufacturing Practice, Infosys (Americas) Vijay is the regional head for the Manufacturing Practice in the Americas. He has been with Infosys for 19 years and is responsible for enhancing the capabilities of the manufacturing sector. For over ten years, he has been involved with the Manufacturing Practice and has been a keen observer of the trends in that sector. In addition, he has also led the discrete manufacturing and specialty automotive portfolio at Infosys. In addition, he also leads the discrete

manufacturing and specialty automotive portfolio at Infosys. Associate Vice President – Infosys Validation Solutions and Digital Testing, Infosys Venkatesh Iyengar (Venky) has been with Infosys for over 18 years playing different global roles. He currently lives in Silicon Valley and is responsible for growing validation solutions business worldwide across industries, while driving and growing niche validation solutions for emerging technologies such as machine learning, artificial intelligence, IoT, cloud, autonomous technologies and big data. Venky has developed a Patented Testing Organization Maturity Assessment methodology while leading the validation consulting group and has managed multiple organization transformations for clients across industry verticals in Americas and Europe. He holds a Bachelor's degree in Mechanical Engineering and MBA in Sales & Marketing. Outside of his professional life, he enjoys long hikes, long distance runs and tennis. Senior Vice President, Manufacturing, Americas, Infosys Vijay Narayan is a senior vice president and head of the Manufacturing business in Americas for Infosys. He is responsible for the P&L of the Manufacturing service line and works closely with several of Infosys's strategic clients on their initiatives. With more than 24 years of professional experience, Narayan is a value driven leader who has helped strategize and deliver improvements in business performance with a customer centric focus through technology for Fortune 1000 enterprises. Narayan is an engineer and has completed the Executive Leadership, Business program from Stanford University Graduate School of Business. AVP - Senior Practice Engagement Manager, Cloud, Infrastructure and Security services, Infosys Vikas is responsible for the growth and adoption of Infosys cloud, infrastructure and security services in the Asia and Middle East markets. He has more than 17 years of experience in the IT and telecommunications industries in Australia, New Zealand, India, Southeast Asia and the Middle East. Vikas has also been involved in incubating and leading go-to-market efforts for new service offerings, including artificial intelligence, hybrid IT and application-aware networking. He is based in Melbourne, Australia. Associate Vice President, Communications, Cable, Media & Entertainment Industry, Infosys Viroopax (Viroo) Mirji is an Associate Vice President and Sr. Industry Principal for Communications, Cable, Media & Entertainment domain consulting at Infosys. Viroo heads all the Americas Services Delivery and Innovation consulting programs. He has 25 years of experience in Business consulting and Product management. He is currently running innovation programs in four Cable MSO, Telco and New media firms. He won the CIO.IT 2014 award for: 'Elevating the Experience: New Ideas for Delivering Best-in-Class Service'. Head – Augmented Reality / Virtual Reality, Infosys Vishwa Ranjan sees things others don't, thanks to his 20-someodd years working in the computer graphics field. At Infosys, Vishwa helps to paint a better picture of augmented and virtual reality capabilities by showing how the technologies will impact consumers and professionals, how they'll buttress new and old industries, and what paths are necessary to get there. When he's not showcasing VR demos at the World Economic Forum in Davos, Switzerland, Vishwa can be found in the classroom using his doctorate in computer graphics to teach. Prior to joining Infosys, Vishwa pushed the limits of animation and visual effects for Industrial Light & Magic, Electronic Arts, and DreamWorks Animation, including work on films and video games in the Star Wars and Lord of the Rings franchises. Director, Digital Factory, CMA CGM Francois began his

career in 1996 as an engagement manager in IT services, after completing his Master's Degree in Applied Economics from Paris Nanterre University. He joined CMA CGM in Marseille in 2004 where he gained global experience managing the IT System deployment for shipping in China for two years, following which he was designated to lead IT for the shipping domain. In 2010, he became the Head of IT Programs department. During this tenure, he accomplished establishing the Group's e-commerce platform. In 2018, 40% of the bookings originated from the platform. From 2014 to 2017, he was responsible for all CMA CGM Group legacy applications, which included projects, evolution, maintenance, and support for more than 200 applications. Since July 2017, Francois has been leading the Digital Factory managing a wide portfolio that includes 60 live projects in areas like skills transformation, APIs, AGILE methodology adoption, data analytics tools, mobiles apps, digital agency, Internet of Things, Artificial Intelligence, and more. Associate Vice President and Head, Engineering Consulting and Architecture Services, Infosys Sriram has more than 27 years of experience in technology consulting. As the leader for engineering consulting services, he helps customers use the internet of things, 5G, artificial intelligence, software-defined networks, and other advanced technologies to build products and transform their businesses. Before this role, Sriram held multiple leadership positions in sales and consulting and worked with business leaders in mining, agriculture, process manufacturing, and telecom. Professor of Management, Cornell SC Johnson College of Business, Cornell University Soumitra Dutta is Professor of Management and the former founding dean of the Cornell SC Johnson College of Business. He is an authority on technology and innovation policy and is the co-editor and author of the Global Information Technology Report, published by the World Economic Forum and the Global Innovation Index, published by the World Intellectual Property Organization – two influential reports in technology and innovation policy. Dutta is on the global boards of Sodexo and Dassault Systems. He is also a member of the Shareholder Council of Chicago-based ZS Associates. In addition, he is a member of the advisory boards of several business schools including HEC (Montreal) and ESADE (Barcelona). He has co-founded two firms, including Fisheye Analytics, which WPP group acquired. He is currently Chair of the Board of Directors of the Global Business School Network, and was previously the Chair of AACSB International. He is currently the Co-Chair of the World Economic Forum's Global Future Council on Innovation Ecosystems. Dutta received a B. Tech. in electrical engineering and computer science from the Indian Institute of Technology (IIT), New Delhi, a MS in both business administration and computer science, and a PhD in computer science from the University of California at Berkeley. In 2017, he received the Distinguished Alumnus Award from his alma mater IIT Delhi. He can be reached on email: soumitra.dutta@cornell.edu and on LinkedIn and Twitter (@soumitradutta). Senior Vice President, Head of Digital Experience and Microsoft Business, Infosys Rajesh Varrier is a senior vice president and heads the Digital and Microsoft business at Infosys. He is a business leader and information technology professional, with over 25 years of global experience in delivering outcomes to customers. He has extensive experience in global consulting, having played the role of a chief digital officer and has also been a successful entrepreneur. Varrier has been invited as a speaker / thought leader at forums like the Confederation of Indian Industry and NASSCOM, a

trade association of Indian Information Technology and Business Process Outsourcing industry and other technology events where he has shared perspectives about various subjects ranging from entrepreneurship to HR practices. Practice Director, Everest Group Ronak Doshi is a member of the IT Services Research team at Everest Group. He assists clients on topics related to blockchain, APIs, cloud, infrastructure, digital, and application services with an emphasis on Banking, Financial Services, and Insurance (BFSI) vertical. Ronak is responsible for driving syndicated as well as custom research engagements covering service provider landscapes and current trends covering a broad set of IT services themes across the BFSI landscape. He interacts with a broad network of IT services providers, technology vendors, FinTechs, and enterprises on an ongoing basis. Prior to joining Everest Group, Ronak was a senior Instructional Designer with Infosys. He holds an MBA from XLRI, Jamshedpur and a bachelor's degree in Engineering (Computer Science) from K.J. Somaiya College of Engineering. Chief Executive Officer, Wongdoody Ben began his career at WONGDOODY as an unpaid intern shortly after the agency's founding. Since then, he has overseen the company's growth and evolution from scrappy creative upstart to one of the country's leading brand experience firms, serving some of the world's most innovative clients. Under Ben's leadership, WONGDOODY has been named Small Agency of the Year multiple times, a Best Place to Work for the last decade, and a Standout Agency by AdAge. Ben also experienced 60 minutes of fame — versus the standard 15 — by appearing twice on the game show "Jeopardy!" (once as a returning champion). Chairman, Executive Creative Director and founding partner of WONGDOODY Tracy Wong is Co-Founder and Chief Creative Officer of WONGDOODY, a wholly owned subsidiary of Infosys. The agency has created campaigns for clients such as Amazon, Amazon Web Services, T-Mobile, Microsoft, ESPN, Fox Networks and The Center for Disease Control. Their work has been featured in The New York Times, TIME Magazine, USA Today and the Wall Street Journal. Throughout his career, Tracy has frequently been named among advertising's creative elite. Winner of over 350 national and international creative awards, he has taken top prizes at Cannes, Clios, One Show, Art Directors Show, Effies, Graphis, Emmys, Radio Mercurys and Communication Arts with work that spans three decades. His groundbreaking TV campaign for Chevys Restaurants was inducted into The Clio Hall of Fame in 2006. Other notable honors include being named to the 4A's "Advertising 100" list honoring the industry's top professionals, an Ernst & Young's Entrepreneur of the Year, a member of the University of Oregon School of Journalism & Communication Hall of Fame, and recipient of the American Advertising Federation's Silver Medal for Lifetime Achievement. However, he is most recognized for his appearance on AMC's "The Pitch," a show about the real "Mad Men." Tracy is currently working on a book entitled CREATIVE DEMOCRACY™ which details a path to better creative thinking in business - through an understanding of the creative process and developing a culture of egoless, consensus-based collaboration. Head of Innovation and Delivery, Infosys Richard brings 20 years of experience across consulting and strategy roles at global technology organizations, focused on helping businesses transform for the increasingly digital future. In his current role as Head of Innovation and Delivery, Richard works to drive the development and delivery of new technologies such as Digital, Analytics, AI and the Internet of Things, with a particular

focus on talent development and skilling. Richard is focused on accelerating the U.S. talent model for Infosys and driving the creation of new Innovation and Technology Hubs by collaborating with clients, local state governments and academic ecosystems. Richard holds an MBA from Indiana Wesleyan University and a bachelor's degree in Psychology from Valparaiso University. Vice President, Talent Acquisition, Infosys Varadharaj Venkataraman, is vice president of Talent Acquisition, at Infosys. He joined Infosys in the HR function in 2002 and has played several roles driving global programs in the organization over the years. He has played a pivotal role in building the company's strength in lateral recruitment in the U.S. and India including campus recruitment, branding, contract staffing etc., and has driven the ideation, launch and growth of several game changing interventions for Infosys towards supply chain transformation and agility. Venkataraman also undertakes recruitment consulting for specific clients of Infosys and has helped some of the global technology leaders significantly scale up their operations in India. If he is not solving complex staffing challenges, you will find him reading or playing badminton. Venkataraman works out of the Infosys headquarters in Bangalore. Technology Lead, Engineering, Infosys Varun Sharma is a cost analysis specialist for Infosys' Product Cost Optimization practice. He joined Infosys in 2006 and has spent the last decade in various aerospace engineering programs in diverse roles, such as performing aerostructure and systems design; configuration and change management; and sustenance and value engineering. Varun now leads cost analytics activities to help clients in aerospace, automotive, and heavy engineering. Associate Consultant, Emerging Technologies and Cloud Security Services, Infosys Yogesh has a wide range of experience in blockchain, industrial control systems, operational technology, internet of things (IoT), and cloud cybersecurity. His work has included pre-sales, technology delivery, and innovation for global clients across multiple industry verticals. At Infosys, Yogesh has co-authored articles on firmware security for IoT devices, industrial cybersecurity risks for oil and gas operations, and security governance for blockchain. His interests include vulnerability research, program analysis, reverse engineering, static vulnerability discovery, and fuzzing. Yogesh has a bachelor's degree in computer engineering from Pune University in India and a post graduate diploma in IT infrastructure, systems and security from ACTS, the Centre for Development of Advanced Computing. He is currently based in Pune.
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Blog Posts

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Insights =====================

From Darkness to Light: The Five 'Ds' can Lead the Way

Technology makes the world a smaller, better place. Much of our 21st century sophistications are attributable to advances in technology. But even today, people across vast swathes of the planet seem to be living in the dark ages. Almost 1.3 billion people do not have access to electricity. If the statistic is staggering, the solutions beg a leap of faith and technology – energy from the sun for one hour suffices to meet the world's requirements for an entire year. However, less than five percent of the world's energy requirements are powered by renewable sources. The issue at stake is not mere electrification, but a mission for inclusive growth. The demand for power is growing exponentially. Limited access to power inhibits development. Elsewhere, an increase in population, economic, and industrial growth, along with a rise in per capita energy consumption due to lifestyle changes, are intensifying the load on the power infrastructure. The concerted effort of industries such as automobile to reduce the carbon footprint by replacing fossil fuels with electricity is further driving the demand for power. Policymakers need to ensure equitable distribution of energy supply, decouple carbon emissions from economic growth, rationalize domestic consumption as well as industrial demand, and foster sustainability of power companies. It can be achieved by focusing on the five Ds (democratization, decarbonization, deregulation, decentralization, and digitization). Democratization of energy supply facilitates access to power as well as flexibility to choose the source of power. Sustainable energy boosts economic growth and creates employment in emerging economies. In places with 24x7 power supply, the approach of consumers to renewable energy has changed dramatically over the years. In the formative stages when the price of 'green' power was high, providers offered incentives to consumers to boost demand. But today, consumers in the U.S., Australia, and Europe are prepared to pay a higher tariff per kilowatt-hour for power from wind turbines and solar farms. Small-scale or distributed generation is an efficient mechanism to democratize supply across markets. Initially, the cost-effectiveness, flexibility, and scalability of renewable energy were a cause of concern. However, utility scale wind and solar power projects are now viable due to the sharp decline in the price of solar panels and wind turbines. Additionally, rapid innovation in battery technology to drive consumer level and small-scale storage will further revolutionize this field. Deutsche Bank expects solar energy to reach grid parity in 80 percent of the global market by 2018. The cost of wind energy is predicted to be below natural-gas-based power in the future (Figure 1). Grid parity with conventional energy sources empowers environment conscious consumers to reduce their carbon footprint without paying a premium for 'green' power. Recent wind energy prices are competitive with expected future cost of burning fuel in natural gas plants. Figure 1 Cost of wind energy With no fuel cost and zero emissions, wind power provides clean energy with long-term, stable pricing and serves as a financial hedge against fossil fuel price volatility and potential future carbon pricing or regulations. Coal-based power plants

produce only about 40% of the total energy, but are responsible for more than 65% of carbon emissions. Some power plants have replaced coal with fossil fuel alternatives driven by technological advances in extraction that ensure an abundant supply of oil and gas. Natural gas is a much 'cleaner' source than coal, when methane leakage is circumvented. However, environmentalists warn that the rate of decarbonization needs to be accelerated to achieve the greenhouse gas (GHG) emissions target set by the U.S. and Europe at 80% by 2050. Further, distributed generation provides affordable and reliable energy, while mitigating carbon emissions and spurring economic growth. Bloomberg New Energy Finance expects global investment in solar installations to increase from the current 2% to 35% by 2040. Countries with rich oil and gas reserves, including Saudi Arabia and the United Arab Emirates, have undertaken programs to improve energy efficiency and reduce GHG emissions significantly. Along with all this, the power infrastructure needs to be revamped. A majority of the existing power installations will continue to be operational in 2050 while being less productive. Public-private partnerships (PPPs) can better mobilize funds required to transition to a decarbonized energy system. The entrepreneurial skills, project costs, and financial as well as technical risks of large-scale energy projects are best managed by the PPP model. The energy industry does not provide a level playing field yet. Conventional energy is subsidized in many markets and consumer segments. A conducive policy framework is a prerequisite for clean energy. Government energy policies should foster innovation as well as investment in utility-scale technologies to phase out carbon-intensive production facilities. The potential of solar, offshore and onshore wind, biofuels, marine, and geothermal energy can be realized only with institutional finance as well as regulatory support. The collapse of two leading solar panel companies – Mark Group and Climate Energy – following a series of subsidy rollbacks in the U.K., suggests that the energy sector needs all around support to realize the 'green energy' vision. Political consensus on reducing GHG emissions to mitigate climate change augurs well for the renewable energy sector. At the United Nations Climate Change Conference in Paris, in December 2015, government and business leaders made a commitment to accelerate energy transformation. Initiatives of the 'Lima-Paris Action Agenda – Focus on Energy' conference will boost energy access and help achieve sustainable development goals by providing a productive and transparent working environment for companies. Simultaneously, initiatives such as the US Clean Power Plan and 'Reforming the Energy Vision' (REV) in New York State address regulatory obstacles and market uncertainties. However, high-level strategies are not sufficient. Global standards to measure and verify real-time energy savings need to be developed. Incentives to encourage replacement of power-guzzling home appliances and industrial equipment with more efficient products are required. Significantly, holistic programs are required to modernize legacy power infrastructures. The industry has achieved Zero Distance with convergence of the points of generation and consumption. Investment in 'clean' energy sources is growing exponentially (Figure 2). Microgrids and onsite power systems allow enterprises, commercial establishments, and residential consumers to become self-reliant. More importantly, it reduces overheads and even empowers consumers to sell excess power to the electric grid. However, the ability to store energy holds the key to decentralization of electric power. Excess

energy generated, whether from rooftop solar panels in a home or a wind farm, requires large-scale energy storage systems. At the 2015 Climate Change Conference in Paris, several governments promised to increase research funding for clean energy. Business leaders including Bill Gates and Elon Musk, and agencies such as Advanced Research Projects Agency-Energy (ARPA-E) are building grid-scale batteries that will also reduce the cost of energy storage. In May 2015, Tesla's wall-mounted Powerwall batteries to store energy from solar panels at home were reported to be sold out within 10 days. The company plans to launch a more efficient version of the battery by August 2016. In a recent announcement, they clearly articulated their focus on the 7 kWh battery which is designed to integrate with solar panels. Figure 2 Investment in clean energy Source Bloomberg New Energy Finance A 10% reduction in power consumption will reduce carbon emissions by 18% and a 20% reduction in consumption will reduce 48% emissions by 2050, according to Bain & Company. A technological ecosystem can help companies and cities identify energy solutions and ensure the success of energy efficiency initiatives. Further, digital tools and collaboration between stakeholders can drive research and development in achieving an optimal energy mix. The Internet of Things (IoT) simplifies demand management by integrating diverse points of power consumption. Real-time data from heating, ventilation, and air conditioning (HVAC) systems, industrial equipment, and gadgets help optimize lower consumption. For instance, EnerNOC's energy intelligence software helps control electricity consumption in buildings, plants, and production lines. Analytical solutions predict consumption and combine it with weather data to capitalize on renewable sources. Energy management products empower customers to minimize demand and make informed decisions to reduce electricity bills. Although smart meters and IoT enhance the distribution infrastructure, they increase the risk of data breaches and service blackouts. Security incidents cost the power and utilities industry US$1.2 million in 2014, according to 'The global state of information security survey 2015' by PwC. Advanced security solutions identify vulnerabilities and protect applications, databases, and the network from physical and cyber-attacks. The utility industry needs to be more responsive to the acute energy deficit as well as the preference of the millennial generation for greener energy. The sustainability of utility enterprises will be determined by how smartly energy can be harnessed, stored, and distributed.
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Sustainability: A Decade of Meaningful Contribution

----- Arcticle source ----- https://www.infosys.com/insights/business-responsibility/sustainability-a-decade-of-meaningful-contribution.html ----- Insights BUSINESS RESPONSIBILITY Building a sustainable ecosystem for our stakeholders through a responsible enterprise has been part of our ethos since inception. This led us to launch the Infosys Foundation in 1996. Since then, the Foundation has worked tirelessly for over two decades to contribute to education, healthcare, rural development, destitute care, and

art and culture. In 2008, we formally launched our Sustainability Policy and committed to the United Nations to become carbon neutral by FY 2018. We pledged to do this by reducing our per capita electricity consumption by 50%, focusing on renewables as our principal source of energy, and reducing our carbon emissions. In 2014, we became the first IT Company in the world to publish a sustainability report in accordance with the (Global Reporting Initiative) GRI G4 (comprehensive) criteria. The Global Reporting Initiative is the world's most widely used standard on sustainability reporting and disclosure. It is adopted by over ninety percent of the corporations when reporting on their sustainability performance. In this tenth year of reporting on sustainability, we have achieved 51% reduction in our per capita electricity consumption against the 2008 baseline, a whole year ahead of our target. About 45% of our electricity requirement is being met through renewable energy, and our carbon offset project is well underway. The past fiscal year has brought us several recognitions and strategic partnerships but among our most successful initiatives have been those towards protecting the environment and nurturing 'responsible citizenship' through focused employee engagement. This has enabled us to multiply the impact of our efforts many fold across the larger community./p> A Green Conscience In fiscal year 2016, we became the first Indian company to join the RE 100, a collective of the world's most influential companies, committed to 100% renewable power. In fiscal 2017 we successfully executed an onsite solar photovoltaic plant at our campus in Hyderabad that supports two thirds of our energy requirements for the campus. We also joined the Carbon Pricing Leadership Coalition (CPLC), an initiative by leaders from across government, the private sector and civil society to expand the use of carbon pricing, and set our internal carbon price at US $10.5 per ton of CO_2e. This internal carbon price sets us an ambitious target to reduce our carbon emission and become carbon neutral. We currently have 11.1 million sq. ft. of built-up area across our campuses that are LEED Platinum rated and makes our buildings energy and resource-efficient. We also received the LEED-EBOM (Leadership in Energy and Environmental Design - Existing Building Operation and Maintenance) Platinum certification from the United States Green Building Council (USGBC) for our campus in Pune. With this, Infosys Pune becomes the largest campus in the world to achieve this distinction. Water is a major concern in India, and we at Infosys have steadfastly focused on improving water conservation through the years. We have 270 injection wells and 25 lakes across our campuses in the country. Our smart water metering program is helping us monitor water consumption and plan efficiency programs. We engage in rooftop rainwater harvesting at our campuses, and our combined endeavor has resulted in an 8.33% reduction in per capita consumption of water as compared to fiscal year 2016. Our efforts to meet the commitment of zero waste to landfill and 100% food waste treatment within our campuses have advanced through innovation and automation. At Zero Distance to Client and Community Over 1,35,000 design thinkers at Infosys, at Zero Distance (ZD) to our clients and technology, and have successfully undertaken more than 14000 ZD projects. This has leapfrogged our client satisfaction scores to the highest in the last 12 years since the inception of the survey. Zero Bench (ZB), an engagement to leverage the competencies of Infoscions between client projects has seen 25,700+ small projects and around 280,000 sign-ups from 44,000+ Infoscions. Powering professional and personal aspirations, Compass, our

digital platform with over 110,000 users, also boosts learning and intra-organizational networking. The empathy inculcated in Design Thinking has also benefited employee engagement in the community. For instance, our employee-driven CSR undertakes a host of community activities such as delivering food, water, basic supplies and computer education to underprivileged families and children in villages. In 2016, Sneham, our CSR club in Chennai alone touched the lives of 20,864 people and contributed over 119 lakh rupees worth of commodity items to the community. Our Campus Connect initiative is another example through which we reached out to 416,185 students in 2016. This initiative focuses on improving the employability of engineering graduates across the country by offering training on soft skills and technologies. The many other rich contours of our approach to business responsibility can be found in our latest Sustainability Report 2017. =====================

Sustainability Drives Better Business

----- Arcticle source ----- https://www.infosys.com/insights/business-responsibility/sustainability-drives-better-business.html ----- Insights BUSINESS RESPONSIBILITY Sustainability and Responsible Business are becoming synonymous and why not? Leaders now recognize the power of a purpose beyond profitability that helps them build trust among stakeholders and sustain the enterprise. Powered by the vision to 'earn the respect of our stakeholders' at Infosys, our sustainability efforts are well aligned with our business goals. Read our 11th Sustainability Report to know more. Build Purposeful Business Goals for a Strong Sustainable Organization Organizations that are driven by sustainability don't just 'manage' their businesses, they build purposeful business goals, mindfully, and focus on bringing to life a larger perspective by lending meaning to the work they do, thereby creating opportunities for innovation. Here's how we do it. Expand your eco-system - Your stakeholders aren't just your employees or shareholders. Your business partners, the government, environmental bodies and the larger community are all stakeholders. Identify the social issues that are relevant to your business and stakeholders and build goals that focus on creating shared value. The more shared value you create, the more you make your business sustainable. We also strive to build strategic alliances with industry consortiums at the local, national and international levels to strike a balance between achieving successful profitable business outcomes and maintaining a sustainable world. Manage your risks by taking audacious goals - Businesses don't work in siloes, they depend on resources that most often come from the environment or the social community they operate in. Ensuring that you minimize the negative effects of resource depletion actually aligns very well with the broader profitability goal of an organization. In 2011, Infosys voluntarily committed to the UN to reduce it's per capita electricity consumption by 50%, move to 100% renewables it's electricity requirements and become Carbon Neutral by 2019-20 and we are well on our way to achieving the goal. Innovate - Environment and social issues are constantly evolving and often throw up challenges that require

out of the box thinking and solutions that help solve client issues and lead to new product designs. Aligning to sustainability goals compel organizations to innovate. Our focus on Research and Development (R&D) helps us stay ahead in the ever changing technology landscape. Collaborations with academia, research organizations and start-up innovation ecosystems help augment our solutions. Value your employees - Sustainability practices infuse a sense of pride and belonging to employees motivating them to be more productive, responsible and pro-active. Responsible businesses serve to inspire the future generations of workforce Make Your Clients Proud - Investing in sustainability builds trust and a great brand reputation. With increasing awareness around environmental and social issues, clients want to be associated with a company that delivers not just a well performing product but one that has been produced responsibly. The current digital disruption across industries is raising further questions around ethics, making it even more challenging for organizations to keep up with their sustainability efforts. Business executives must take this as an opportunity to further innovate and leverage the very technology that is disrupting to find new ways of incorporating sustainability into business strategies.
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This Earth Day, Putting the Spotlight on Environmental and Climate Literacy

----- Arcticle source ----- https://www.infosys.com/insights/business-responsibility/this-earth-day.html ----- Insights BUSINESS RESPONSIBILITY 22nd April is World Earth Day, and each year on this widely commemorated day, millions of us pause to review the state of our fragile earth and what more can be done to protect it. Even with the recent Paris Agreement - the treaty to cut back on greenhouse gas emissions- action on conservation and protection is still wanting. Thus I feel that this year's theme, 'Environmental and Climate Literacy', calls on citizens, corporations and governments to continue efforts to build awareness and protect the planet in quantifiable ways. A study by scientists of the UK-based Centre for Ecology & Hydrology (CEH) and the Natural History Museum, London found that there is a significant increase in citizen science around the world. In 1970, there were just 20 ecological and environmental projects that were undertaken by citizens. By 2014 that number had shot off to 509. It seems there has been a year-on-year increase of 10 percent during the 1990s and 2000s, in the number of citizen science projects that were undertaken. What is even more heartening is that technology powered this citizen's intervention in ecology. More specifically, the increasing availability and innovative use of online databases, digital cameras and smartphones spurred this spike. The whale shark is an endangered species, and the 'Wildbook for Whale Sharks' project set up by Jason Holmberg put this little studied mammal on the 'protected' list. While diving, he noticed that whale sharks have a unique set of spots located behind their gills, equivalent to an individual's finger print. By collecting photographs of these spots, and feeding them into a computer,

one can identify each unique whale shark. He set up a 'citizen science' protocol, where volunteers could take pictures of the spots located behind the whale sharks' gills and upload them to a web-based photo identification library. This has made tracking and recognizing whale sharks much easier and the technology has since been used in conservation efforts for cheetahs and manta rays as well. Another environmental concern that has attracted much attention the world over is water. Its pollution, depletion and growing scarcity. In 2016, the Global Risk Report by the World Economic Forum identified the water crisis as the greatest societal and economic risk facing the world in terms of impact through 2025. We see this predicted scenario playing out in Bangalore. The population of this metropolis, has grown from 5.1 million in 2001 to 11.5 million in 2016. This is an increase of 125 percent in 15 years. And as a landlocked city, its biggest concern is water. Without a perennial source of water, Bangalore depends on the Krishna Raja Sagar (KRS) dam about 144 kilometers away. However, this is a needless dependence, as the city abounds with 262 lakes. These have historically been the natural catchment for the 859 mm freshwater that comes down as rain each year. Unfortunately the city has lost 79% of its water bodies and 98% of its lakes have been encroached upon. There has been an increase in concretization by 925%, notes a study by the Indian Institute of Science (IISc). It also reveals that 75% of the city is paved and rainwater harvesting has taken a backseat. 1.4 lakh consumers should have installed a rainwater harvesting system, but as of March 2017, only 62,000 had done so. Before becoming the silicon valley of India, Bangalore was famed as the garden city. Can the citizens and companies of this metropolis play a proactive role on water conservation and take Bangalore back to its days of plenty? I believe they can, by recycling grey water for gardening, practicing rainwater harvesting and stringently monitoring the use of water so as to reduce consumption. Part of the answer lies in continuously educating the citizenry on water being a depleting resource, the need to engage in ground water recharge and the need to clean and optimize the use of the city's water bodies. With tools such as interactive apps, websites and online forums this is doable. Infosys recognized early the need to conserve water. Our water strategy is based on the 3R's, Reduce, Reuse and Recycle. This has enabled us to reduce water consumption at all our campuses by 41% between 2007 and 2016. We managed this significant achievement through a number of methods. Our new buildings are constructed to be super-efficient, and have water-efficient fixtures and pressure compensating aerators to optimize water consumption. While older building are retrofitted for water harvesting. We have also adopted a 'zero-waste water discharge' policy. This means that all grey water on the campus is treated at our onsite sewage treatment plant, and reused in toilets, cooling towers and landscaping. This has enabled us to create an 85 acres green area that complements our architecture and allows local fauna to flourish. We have also implemented rooftop rainwater harvesting and surface runoff harvesting, and have over 50 recharge wells on our Bangalore campus, with a capacity of approximately 2.5 million liters/day for groundwater recharge. Through our pro-environment initiatives, not just on water but on energy too, we seek to influence our 2, 00,000 employees to be responsible citizens, take the message of conservation not just to their home, but their community as well and become conscious catalysts of change. Learn more about the sustainability efforts of Infosys >> =====================

We Innovate. Therefore We Are @ Zero Distance To Customers

Insights Business Responsibility What does it take to make innovation mainstream in a large organization? What does it take to make innovation business as usual? Not just for a think tank of designated innovators. But for all. Not by issuing top-down mandates and monitoring progress, but by somehow making innovation intuitive ground-up - almost an organizational state of being. That would undoubtedly mean an introspection into the enterprise's purpose, a deep dive into the organization's very essence of existence. And most importantly - it would mean that the findings of this introspection resonates with every single person in the organization. We decided to see if there was a way to make this work in our own enterprise, and bring the benefits of this exercise to our clients. We wanted to do this by imbibing the three basic principles - every team aspiring to be closer to end users, closer to technology, and closer to creating value - essentially at Zero Distance to our clients. At the organization's leadership, and within our extended teams, when we thought about who we are and who we wanted to be, our thinking converged at one point. All of us aspired to become more than we have ever been: more curious, greater in spirit, stronger in creative confidence, larger in purpose. We felt that we owed something to ourselves and our potential, not just to our own selves or even our own organization, but to our clients and fellow beings as well. Every day, our customers come to us seeking solutions to myriad problems and with enormous expectations. They issue specific contracts, circumscribed by deliverables and KPIs and SLAs. We set a mission for ourselves - to take all of that and then add one overarching mandate, that through this and every future engagement, we will strive to bring ideas that enable clients to be more than what they already are. By this we aspired to create solutions that will surprise our clients, which could potentially be delivered ahead of expected time; and bring in that 'wow' factor. We started by taking action at grassroots level. Every Infoscion, across rank and file, was immersed in a culture encouraging them to practise everyday, 'personal' innovation. This culture has three tenets: every individual associated with a project shall explore ways to deliver additional value as an increment to stated scope; look to extend the impact of the current engagement to adjacent areas to amplify value; and try to create reusable components that our clients can leverage. As this culture is being assimilated, it is creating a legion of Infoscion innovators, who are deploying their talents to add value to clients, in not one or two instances, but across more than 8,000 ongoing engagements. This is innovation at unprecedented scale. The results are unmistakable. For instance, a young engineer working on a project for a specialty footwear retailer noticed that the retailer's promotional campaigns were rarely ever based on strong product combinations that could up campaign response rates. Our team quickly applied an analytics solution to conduct a Market Basket Analysis that identified that there is a 77% likelihood that a customer buying a girls' tap shoe will also buy a girls' ballet shoe. And a 50% likelihood that a customer buying a girls' ballet shoe will also buy a girls' tap

shoe. The combined potential gross sales, if this were promoted as a bundled email campaign, was estimated at approximately US$ 95K and nearly US$ 475K if implemented as a direct mail campaign. The retailer is now exploring with us to see how such analytics can be applied across the entire product portfolio. Traditionally innovation cannot be templated. However, in our attempt to make this a movement for the 1,80,000+ workforce, we found that a few guiding principles would prove useful. This framework for innovation that we now live by, and that'll likely fit neatly into your organization's delivery fabric as well, is what I'd like to share with you as a postscript to this post: =====================

Cloud

----- Arcticle source ----- https://www.infosys.com/insights/cloud.html ----- Insights Cloud-Based Application Modernization: Critical for Enterprise Digital Transformation How Private Cloud Can Be an Essential Element of Digital Transformation A Transformation Led Cloud Strategy Brings Success A Cloud Native and Open Source Approach Can Maximize the Benefits of Cloud How The Network Of Teams leads to Workplace Transformation, With A Little Help From Technology Designing the Right Cloud-App Strategies to Win Customers Manufacturing Goes Several Notches Up On the Cloud Need for changing the IT Operating Model in the Cloud Reimagine Your Manufacturing Business With Cloud Evolve Next Gen Telecom Systems to be Flexible, Scalable and Open CNCF. The reason why going cloud native just got a little simpler. For all Digital Transformation: Start at the Core, End with Customer Delight The Power of Cloud at the Core Transformation with Cloud is a Continuum for Traditional Enterprises Blog> Cloud-Based Application Modernization: Critical for Enterprise Digital Transformation Blog> How Private Cloud Can Be an Essential Element of Digital Transformation Blog> A Transformation Led Cloud Strategy Brings Success Insights Insights Insights Insights Insights Insights Insights Insights Insights Insights Insights =====================

A Transformation Led Cloud Strategy Brings Success

----- Arcticle source ----- https://www.infosys.com/insights/cloud/cloud-strategy.html ----- Insights Cloud Most businesses recognize the inevitability of cloud computing in their quest for digital transformation. As a result, they are gradually shifting focus from incremental to transformational benefits from their cloud investments. Infosys recently commissioned a study based on a survey of 876 executives from organizations with over US$ 1 billion in revenues across the United States, Europe, Australia and New Zealand. The respondents were senior executives involved in cloud initiatives representing both technology and business functions. The primary objective of the study was to better understand the specifics of cloud initiatives among these enterprises, both from the strategic and implementation viewpoints. Some of the questions to which they were seeking answers were as follows:

What factors drive cloud adoption? What prevents aggressive large-scale adoption? What is the impact of this reluctance to adopt cloud? What next for cloud? The research found that an overwhelming 94 percent of the enterprises surveyed have a definite enterprise-wide cloud strategy. However, different factors govern decision-making over cloud at different stages. At the launch stage, strategic factors are the biggest drivers. The survey found that respondents picked emerging technologies and opportunities they present (50 percent) and competitive activity (49 percent) as the two biggest drivers. Even though it was the promise of reduced IT costs which first kicked off the cloud, this factor came in at number three, picked by 45 percent. The study also revealed that operational triggers such as data security, the ability to scale on demand, need for high levels of system availability and resilience do matter when enterprises decide to adopt cloud. Choosing the right cloud model Even through there is plenty of information available on the pros and cons of each cloud model, enterprises still need to contend with the choice of the right model for their business. The ability to demonstrate appropriate ROI through reduced costs, increased efficiencies, and collaboration in order to gain stakeholder confidence was a concern for 41 percent of the enterprises. Also, 40 percent of respondents said they were apprehensive about relying significantly on external solution providers to further their cloud journey. Implementation As enterprises launch cloud programs, they face several unanticipated challenges. Aligning of legacy systems (59 percent) was stated as a top challenge; a finding that is not entirely surprising given that the use of legacy systems is still widespread in most enterprises. Legacy systems typically require significant investments from enterprises as they navigate through the process of migrating them to the cloud. It is more complicated than a simplistic "lift-and-shift" of applications. The second rung of challenges which are of equal concern (56 percent) include deciding on the choice of tools and technologies, resources with cloud skill sets, accurate estimation of time and costs, promoting cultural change, and collaboration with external service providers. The way forward for cloud There is enough evidence to show that the absence of a robust cloud infrastructure can jeopardize several programs and overall business performance. Most often enterprises show some reluctance to rely on external partners as evidenced by the study, but the truth is that most of them are not fully equipped to handle the varied set of challenges on their own. External partners present the best path to success with their ability to provide resources with diverse skill sets at the same time. Without a strategy for cloud initiatives, organizations might be potentially exposing themselves to all the issues that typically plague enterprises that are at a more advanced stage in cloud implementation. A well thought of strategy and execution must be aligned to business goals and across business functions. The goal must be to establish a scalable foundation even if it means sacrificing tactical gains in the short-term. A cloud strategy that is transformation led and not transition led has better chances of success. Lastly, it is imperative to demonstrate RoI frequently and retain stakeholders confidence to ensure success. 'Navigate your digital transformation with Cloud' offers some important insights into the factors that drive enterprises at every stage of their cloud journey. The full text of the report is available here. =====================

Cloud Transformation: Making the Enterprise IT Agile

----- Arcticle source ----- https://www.infosys.com/insights/cloud/cloud-transformation.html ----- Insights Cloud IT and business look at cloud adoption very differently. Technology teams in the organization look at the cloud as an opportunity to move from Capex to Opex, reduce data center footprint, bolster agility, modernize legacy applications, and deliver engaging new experiences for their customers. Business teams need to see the whole picture to drive investments that maximize value for the enterprise. However, most enterprises lack a unified view into their entire IT landscape. They also do not have all the skills, software and experience needed to maximize the returns from their cloud investments. In this episode of Infosys Podcast, Infosys anchor Alex speaks with Pradeep Yadlapati, Associate Vice President and Head of Enterprise Cloud Ecosystem Practice at Infosys, about the state of cloud adoption in organizations. Pradeep explains how cloud transformation could enable enterprises to increase their business agility while improving the resilience of their IT landscape. Alex: Hello, folks! Welcome to Infosys Podcast. This is Alex speaking, your host. Today we have with us, Pradeep Yadlapati, as our guest. He is the associate vice president and head of the Enterprise Cloud Ecosystem Practice at Infosys. So, hello Pradeep and welcome to the show. Pradeep: Thank you for having me, Alex. It's a pleasure talking to you. Alex: So, let's begin with how the cloud has evolved over the last decade. Pradeep: So, let's look at what has happened in the technology industry over the last couple of years. We started seeing evolution of people starting using cloud. To start with, most of us are familiar with how a Gmail is used, which is hosted elsewhere, you don't know where is it, but you get to access it and you can send your emails from wherever you are. So, in simplistic sense, that's been the first example of a cloud where you could access from anywhere. From there to today, with all the digital disruption that is happening around, consumers expect information to be available at their fingertips – applications to be changing based on their feedback, transactions to be happening in split seconds, having omnichannel experience irrespective of where they are. And cloud has been a center of all these transformations that have been happening. The initial adaptors, I would call as the initial trendsetters, had started leveraging this opportunity and started moving their applications onto cloud. Although the clear priorities at that point in time have been "how can I save more cost", because running my own data centers would mean I have a capital expenditure, to reduce that a cloud provides me an opportunity to move into an Opex kind of a model, which primarily what it now means is 'pay as you go'. So that's the thing that was very exciting for the initial adopters and they started moving applications onto the cloud. Today, the predicted business for cloud is to be about US$236 billion by 2020. It's a huge market out there. Clearly, enterprises have started looking at it. All the examples that we have heard, the unicorns that we have been talking about – Uber, Airbnb, etc. – have all born on cloud companies where they don't have any infrastructure, they don't have any physical assets, but they run their applications on cloud, and that provides the scalability that you have today.

Clearly, as we see, we expect about 83 percent of enterprise workload to be moving into cloud by 2020. So, there is a huge opportunity that cloud offers to everyone. Alex: So, by 2020 applications on CDs will become obsolete and everything will be on the cloud? Pradeep: Oh, yes, absolutely! Not just applications on the CDs. You will not see a lot of physical data centers that exist. Imagine you trying to hire a building at San Francisco. The cost is humungous! Instead, having that in a low cost location, where you don't even know about it, and being able to access that from anywhere is a fantastic thing that you can do to yourself and your company, and it just saves so much cost. Alex: So, you could have a workforce working from home? Pradeep: Oh, you could potentially do that. Yes, absolutely. So, a part of that is your workplace transformation. How you can provide the millennials the access to information, collaborate faster, and all of that is part of cloud adoption as well. Alex: What are the current trends in cloud? Pradeep: Oh! A couple of things that we have started. To start with, moving their infrastructure onto cloud, what we call as a lift and shift, which essentially, although it sounds like physical movement, is actually moving your applications without having to change anything and move onto the cloud. Most cloud providers talk about this as a mass migration – lock, stock and barrel movement. The second one is about how can you re-architecture your applications that can be digital-ready wherein, like we talked about omnichannel experience, how can you bring that by re-architecting the applications. Second one is how do I make sure my legacy assets are digital-ready, and how can I bring the transformation across the applications, infrastructure, data, and platforms that I have within my enterprise. So, all of that invariably is part of the current trend. So in that sense cloud today is something that you cannot live without. Organizations have no choice, honestly, because it offers tremendous potential. The thinking now has to be when and how rather than why? Alex: So does cloud allow more automation? Pradeep: Automation is one part of it. What it allows is a couple of things: One is high availability of information as applications and data. Second is reliability. The third one is performance, which means that you no longer have to worry about whether it's going to be up or down because most of the cloud hosted assets are promised higher availability of 99.95 percent, that's significant. Alex: If somebody is not fully aware of the full potential of cloud, what does Cloud First mean? Pradeep: To start with, the Cloud first is a thinking. Cloud First is a strategy that enterprises would want to adopt. What it essentially means is you are bringing applications faster to consumer. How you achieve it is through different means. You design your applications that are ready for cloud, which essentially means that you no longer develop them on your on-premise technologies that you use but straightaway go to cloud where you don't have to manage the infrastructure, you don't have to manage the servers, you don't have to manage the storage. You can seamlessly develop applications there. And that is the Cloud First strategy that enterprises are looking at. It provides quite a few advantages to the consumers. Essentially, it provides the ability to collaborate better through these applications, reduce your total cost of ownership, bring these seamless experiences across different channels, that is, mobile, online, in-store, etc. All of that can be enabled. So the designing of your applications to be hosted on, to be developed on cloud is your Cloud First strategy. Alex: Sure, so everything is at your fingertips. Actually I wasn't sure but Cloud First is a terminology basically that you are using. Is

that what it is? Pradeep: Yeah, it's kind of a strategy that you adopt. Alex: So tell me how are enterprises exploring the new cloud capabilities? Pradeep: We talked about how the evolution of cloud has happened with the infrastructure-centric conversation. Today, we believe that at a point where we are in time, the cloud transformation is fundamental to the digital disruption that the enterprises are going through. In any enterprise there are different components that constitute the enterprise application landscape. These are called systems of record, systems of innovation, systems of engagement. The way we look at it systems of record are the age-old systems that you have in your enterprise with a lot of business logic in it, so much so that no one knows what is really in there. And it's been maintained and developed over 30-40 years, however long that enterprise has been. In all these companies that we talked to today, one of the key challenges is how do I move that, how can I make them digital-ready, how can I make them part of my cloud transformation. The second part is about what we call as systems of engagement – the mobile apps and everything else are ways to engage with your applications. So those systems of engagement are probably relatively easy, fall in the easy bucket of movement. The third one is about the systems of innovation which is all the analytics that you run behind the scenes, understanding your consumer patterns - what are they liking, what are they not liking, may be look at what Amazon does. That's the analytics that is running behind the scenes for you. That is applicable pretty much in every business today - whether you are online or mobile, you keep getting these interesting recommendations. And all of that is part of your own business-centric logic that is running to enable cross-selling opportunities. And today while most of the enterprises have started looking at systems of engagement, which are easier to move to cloud, the transformation, we believe, has to start from looking at "How can I make my enterprise ready for the disruption that is happening, with the cloud as an enabler". And that is what most of the CXOs are thinking about. Conversations today are more about how can cloud be an enabler for the CIO to achieve the business objects that are set by his business, and that's the primary change that is happening. The second thing is that the transformation itself is a long drawn process and that requires to not just bring in the technology change, but also changing the enterprise behavior. The enterprise change management as we call it is an important element in terms of "how do I educate my own IT community that the way the operations would run today would be different tomorrow when they are moved to cloud", because no longer they have to monitor things on a regular basis. Cloud provides you those capabilities. How do I not develop on age-old technology, but leverage cloud and create applications that are mostly digital-ready? This is where most of the conversations are happening when we look at most of the enterprises that we deal with. So it's about running this large-scale transformation end-to-end. It's not application centric, it is not infrastructure centric, it's actually across the food chain. To enable that to happen, you need a kind of a sponsorship from the senior executives within the organization who can drive this. Like I said, change management is not going to happen easily without a clear sponsorship. And that's where we see the changing paradigm shift in terms of who actually sponsors this transformation. Alex: In terms of the enterprises, are you looking at the smaller enterprises? Pradeep: So traditionally as an organization we are more focused on enterprise segment which is the G2K customers as we call,

the Global 2000. But we do realize that it is important to collaborate where the innovation is happening. So we have a different model to work with the small and the medium - a more collaborative model. In the companies where we think there is innovation happening, we have done a few of those where we could do some initial capital investment to work with them collaboratively. We have built some solutions around that and then taken to our customers. So that is a different model that we adopt, but purely from a customer-focused standpoint we continue to be focused on the enterprise segment, which is the Global 2000 customers. Alex: You have covered a lot of benefits. But are there any benefits that you can elaborate on? Pradeep: One is we talked about the operations – the cloud operations as we call it. See today, the extent of managing the operations, which is from your on-premise environment to cloud environment, happens seamlessly at a low cost. You are no longer monitoring the number of servers up time and availability as you do in your own data centers, that's managed seamlessly. The amount of consumption that is happening – you get a view of that, you have cost predictability, you exactly know where you are spending, who is consuming it, all of that. So, that's a greater advantage that the business gets. Third one is the scalability element of it, which means that in a situation where you know you have a holiday sales happening and you need your applications to scale up to 'n' number of users, that can happen seamlessly today with cloud. Earlier that used to take at least a couple of months for you to plan ahead on time because you have to procure infrastructure to be able to launch your new products. That's not the case today. It reduces the time to market tremendously. We talked about moving from the capital expenditure to Opex. You are not buying anymore servers that you used to do earlier. The agility that it brings is tremendous. Business can pretty much conceptualize their new ideas and take to market in a very short timeframe, with obviously things like DevOps helping in that journey, but cloud being an enabler in that process. So all of that kind of enables an enterprise to be agile, provide the business growth, resilience that they are looking for, cost optimization, and provide seamless customer experience. All of that are the benefits that cloud provides. Alex: As much as we have benefits, there are challenges. So what are the challenges organizations face in adopting cloud? Pradeep: Cloud transformation is a journey. To embark on that journey, clearly there are things that an enterprise needs to understand. It's going to come at a certain cost to start with because you will have to make some investments to make things easier for you as you move. And that requires a better business case articulation. Somebody picking that battle is an important thing. We talked about sponsorship that is an important element in any enterprise to be able to provide that kind of a support and bring the change management. So those are the elements that enterprises land themselves into whenever they embark on this. Being able to provide a constant view to the business in terms of how some of these investments would get realized over a period of time and what's the cost benefit for that. So that's something that they would have to articulate. The second one is to provide the confidence and understand the boundaries and regulatory and compliance needs that the enterprise need. Bring in the required change management which almost means like how will the future of provisioning environments going to look like, who is going to play a role in that, provide visibility into their cost optimization, and almost set the real expectation that this is not going to happen overnight despite all the buzz that is out

there. We are unique and it is going to take time for us. Understanding and setting that expectation because all of this requires a certain change. Everybody aspires to change fast, because that's what they want to do, but understanding that there are situations where they can move things as is with a click of a button but there are also the cases where they are not ready themselves because of certain reasons - because of technology that they have used (sometimes they are outdated, they are no longer available), the applications need a little more attention (they need to be remediated for them to be ready) - so understanding that element of it. The other element is reskilling their own employees, understanding that these new technologies mean learning for their employees. Bring that kind of a change because that requires a grass-root level change. Especially, if you want to move on a Cloud First strategy, it almost means that you're going to change your workforce skill levels and constantly upgrade them to be ready for the future. So all of these are traditional challenges that enterprise face on their cloud journey. Alex: One thing that I'm curious about is generally I think the public now has become accustomed to the cloud without even realizing it. They are actually finding themselves in applications that are not even on their systems, they are on the cloud. So for me it's not so complicated an issue but does the workforce need a higher skillset to adopt cloud? Is there an immense amount of training or is this something which is so streamlined that it is actually quite accessible? Pradeep: The skill availability is a challenge. Reskilling is a challenge that the industry is facing today. It's an important thing that us a service provider and the customers have to address. It's not a technology that's been around for a long time. The change that is happening is rapid. Just to substantiate that - the AWS, one of the cloud providers, sends out thousand plus new services in a year. Imagine that! Someone trying to get up to speed on that is humanly impossible. And the same thing happens with Azure, Google, etc., which essentially means that you need to have a constant reskilling program in place so that you know what is really happening, how can I bring in the new innovation. Now, that requires you to understand which services to use. Imagine having thousands of things available out there. It is like going to a grocery store - you are trying to pick something, and you really need to know where you need to go to, which one you need to pick. That's something that requires constant upskilling and it probably requires a bit of help from partners like us who could tell them "your focus should be in these specific areas". That's what we should be looking at. So, yes, reskilling is going to be a constant change, developing applications is going to be very different. It no longer requires the same time and the same research that they used to do, but you need to know which one to pick and from where, and that's not going to be easy unless you are being trained on those things. So that's an important challenge that we are dealing with. There aren't so many people available out there who know all of these. It's a huge investment that we need to make, and it's the investment that each individual needs to make to themselves to be relevant in the current world with the rapid changes that are happening around us. Alex: We have discussed the challenges, but how does Infosys help businesses overcome these obstacles? Pradeep: Enterprises today need a partner who can help and execute their cloud strategy, which is not just about transitioning or migrating their applications, what we call as the non-differentiating applications to cloud, but also leverage this tremendous opportunity that is out there to transform

for their enterprises to be digital-ready. So Infosys plays a pivotal role in showing enterprises the whole picture and help them realize the whole potential of their cloud investments. The way we do that is taking an enterprise-centric view of what is relevant to that particular customer, bring the experiences from what their peers are doing within the industry, what is more what we call as the 'cloud-ready applications', what is their disposition, taking a business-centric view of looking at their entire value chain, and almost telling them which of them are suitable for cloud. The second thing is drawing that roadmap for them and looking at the kind of transformation that they need to go through, whether it is what we call as the mainframe modernization or legacy modernization or whether it requires a modernization across their application landscape, looking at bringing micro-services, APIs, etc. all of that is part of our transformation roadmap. Just to quote few examples, for one of the largest airline manufacturers, we have kind of digitized their operations so much so that they were able to leverage that and monetize it within their industry. Similarly, for a car manufacturer, deploying analytics, telematics, so that they can get a real-time information of the driver behavior and that data can be monetized from insurance purposes and other things through cloud as an enabler. And that's the different approach that we take. Alex: So a driverless car would rely on cloud as well to navigate itself? Pradeep: Absolutely! There is a lot of information that is getting captured in real-time and there are a lot of decisions that are happening in real-time. To have that kind of a computing power, all of that requires real-time scalability and all of that invariably is possible on cloud. Alex: Does there have to be an acceleration in technology, speed of accessing information, or is it working to an optimal level? Pradeep: You bring a very fantastic point which is what we call as edge computing, which means not everything needs to go all the way, for as the servers are sitting somewhere else, actually there is a computing that is possible on the edges. And that's the new investment that's happening in terms of how can you bring analytics at the edges. And that's the new technology, new trend that we should all be looking forward to and be excited about. Alex: Well, that's something that we are looking forward to in the future, but is there anything else that you foresee for the future of cloud? Pradeep: Today we talked about how cloud is at the center of digital transformation that is happening. If you look at, a lot of buzz around AI, analytics, machine learning, etc. is available for us to explore. What we have to start seeing is real-time predictions in terms of how your environment is going to behave, how will you react to it? So, it's pretty much the predictive analytics around it, bringing the machine learning elements into your operations, seamlessly spinning up, spinning down of environment without human interventions, understanding that there is a potential problem that can come up and address that proactively without having a human react to it. These are tremendous opportunities that are out there that we can start seeing. The exploration of blockchain is another area where we will see cloud being utilized. We can look at some of the newer technology trends such as containerization, moving to more of a SaaS (software-as-a-service) based approach. Today, we are all talking about building applications, but there is also potentially a SaaS based approach to it where you don't have to build anything, just buy the application that just does things for you. So that will be the future where there will be a lot more that will happen around SaaS adoption. Enterprises will have to start looking at domain-centric

solution that will help them. For example, can I have a merchandizing solution that can help me? Can I have a retailing solution? Can something manage my supply chain seamlessly? Instead of spending enormous energies in terms of re-architecting my applications, is there a way that I can do a plug and play? That reduces the time to the market, but at the same time the cost. That's going to be some of the things that will evolve over a period of time. And the thing that we talked about edge computing is also something that is an exciting thing that will start showing some traction as we move. Alex: I want to take you back to the '90s. In the '90s we had a mobile phone which had very few functions. The thought of people saying, 'one day everything will become amalgamated in your phone - you will be able to watch, play, and watch films, and can create so many things, can even have documents', which I know, now cloud enables documents to have in your phone. So that was an amalgamation on a simple device, which is a phone. Do you see IT amalgamating its different like, for instance, do you see AI amalgamating with cloud and seeing a greater kind of concentration in technology in future? Pradeep: There is already a lot that is happening right now with AI on cloud. What the future holds is tremendous leverage of that to different use cases, which probably none of us are thinking about at this point in time but that provides a greater opportunity for all of us. Today, an interface like an Alexa or Google Home, is your window to what is happening out there through a voice-based interaction. That to an extent does few things - it can tell you your schedule, it can play a song for you, it can almost tell you what's happening around you based on your interest. It can get so personalized that it can pretty much tell you what did you buy last year and what you should be thinking about, or it could even tell you which location you may be interested in, provide you recommendations in terms of what car you may like and what the cost of that could be. So the number of opportunities and use cases and interfaces that it provides is enormous. Alex: So it's actually making our choices simpler, in a sense. Pradeep: It is taking away your thinking power and putting it into a machine. Alex: It has been an incredible pleasure to sit and discuss this and actually learn so much from you. Thank you, Pradeep. And thank you all for listening. If you would like more information, please visit Infosys.com. We look forward to you tuning in the next time. Thank you!
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Cloud-Based Application Modernization: Critical for Enterprise Digital Transformation

----- Arcticle source ----- https://www.infosys.com/insights/cloud/critical-digital-transformation.html ----- Insights Cloud The COVID-19 pandemic disrupted how enterprises operated, but not all were affected equally or in the same ways. Companies' risks were often exacerbated by the legacy technology that once provided the foundation for their success. Modernizing core business processes and applications has been a priority for years, but such initiatives assume a far greater importance now. Cloud technologies

have emerged as a critical ally for enterprises striving to meet changing customer demands and to stay relevant in the market. Application migration and modernization in the cloud have proven that they can increase resiliency and agility to address changing business requirements. Infosys Cloud Radar 2021 found that the highest financial performers were the companies that migrated at least 60% of their systems to the cloud and adopted more sophisticated applications. Only 17% of the respondents in our survey said they had reached that level, but 41% projected that their firms would cross that threshold by 2022. Incumbent enterprises are now looking at cloud-led modernization as an important lever to compete effectively, stay relevant, and improve agility. The Forrester WaveTM: Application Modernization and Migration Services, Q3 2021 report explains that the application modernization and migration market continues to shift toward the use of cloud-native technologies and a lower emphasis on pure infrastructure-led lift-and-shift migration. While necessary, the transformation of legacy applications is both difficult and time-consuming. For modernization programs to be successful, enterprises need to select the right modernization strategy based on their specific organization and business goals. The market now is leaning toward a platform-led modernization approach. When well executed, this can make an enterprise more resilient, responsive, and relevant by: This approach allows enterprises to optimize cost, improve time to market, and enhance the end-user experience. Infosys has helped clients navigate these changes with our zero-disruption modernization approach and Infosys Live Enterprise Application Development Platform, part of Infosys Cobalt, to reimagine and modernize their legacy IT landscapes. In The Forrester WaveTM: Application Modernization and Migration Services, Q3 2021 report, the research firm evaluated 14 providers across 26 criteria and grouped them into three high-level categories: current offering, strategy, and market presence. Infosys received the highest score possible in the service capabilities, execution road map, performance, and investments in training and skilling criteria. The report acknowledges Infosys' Live Enterprise model, in which enterprises armed with knowledge and data-enabled insights can adapt rapidly to changing business conditions. The report also recognizes Infosys as a good fit for most modernization and migration opportunities, especially application reimplementation within an existing installed base and in the banking sector. The report further notes that Infosys boasts a broad range of assets for service delivery and vertical industry solutions relative to other providers. Last year, Infosys was named a "Leader" in The Forrester WaveTM: Multicloud Managed Services Providers, Q4 2020, which we believe is a recognition of the strong performance of Infosys Cobalt. The report recognizes Infosys as a long-standing player in cloud management technology and a good fit for companies seeking particularly strong migration and modernization services to assist with a smooth and speedy transition. Enterprises have known for years that they needed to reinvent and reimagine themselves to keep up with rapidly changing market conditions. The recent acceleration of those trends during the pandemic has proven that companies will struggle to keep up — let alone succeed — with the technology that helped them reach this point. Companies that continuously modernize their IT landscape via the cloud will make their enterprises more resilient. More than just a tech strategy, this shift will add valuable business capabilities that were not previously possible and allow

companies to sense market changes and react in real time — and essentially become a live enterprise. =====================

Designing the Right Cloud-App Strategies to Win Customers

----- Arcticle source ----- https://www.infosys.com/insights/cloud/designing-right-cloud.html ----- Insights Cloud Today's business is where the digital customer is, and enterprises must go the extra mile to create contextual, online user journeys for their customers. Data about every click, like, view, and share can be the catalyst for creating better offerings. Cloud-native solutions around Internet-of-Things (IoT) and blockchain need massive processing capability churning large volumes of data. Real-time data gathered from every device is essential to enhance product performance, and the need is to shift from data centers, to putting 'data at the center'. The expectations from cloud technologies are changing and expanding beyond cost. There is a shift in approach to cloud adoption -- from infrastructure-centric to application-centric. By creating new, cloud-native applications and integrating them with existing legacy Systems of records / engagements, enterprises can transform user journeys quickly and accurately in the digital era. There is also a massive drive to create standalone cloud native applications that can scale massively, are agile, and address new functionalities. While 'born in the cloud' companies had this advantage, leading enterprises have also taken a step in this direction. Capital One, an American bank holding company uses Alexa to enable customers to bank through mobile voice-based queries. Customers can now check credit balances and pay bills through the Alexa app. Adobe too has migrated its entire Creative Suite to the Creative Cloud. Through lower prices, faster innovation, and effective features, Adobe is trying to up the customer experience via applications on cloud. Customer-experience gains priority over applications and IT infrastructure for enterprises aiming to go digital. Applications need to undergo change continuously to address new functionalities and enhance customer experience. DevOps brings in technology innovation with zero-touch automation across the IT value stream, offers process transformation using lean and agile practices and enables people transformation through an integrated team model. To improve customer experience significantly, every enterprise's focus has to be at the intersection of apps and infrastructure. This is the new normal to keep digital customers engaged online. By deploying apps on the cloud, enterprises can reduce the time required to set up infrastructure, experiment with functionalities, and go-live. Cloud-native apps can function automatically and optimize features to ensure continuous business operations. GE, for instance, uses the Digital Twin to execute 'what if' scenarios and analyze data to create outcomes. This ensures that enterprises can minimize risks of unplanned downtime and optimize human resources for more valuable work. Behind every engaging digital user interface, the integration of numerous products, multiple marketing offers, complicated pricing structures, several business rules, and more, must happen in real-time. Through multi-cloud environments, businesses can rely

on more than one cloud service provider to simplify large-scale operations, avoid vendor lock-ins, manage varied workloads, gain agility to address new requirements, and isolate system failures. This implies minimal downtime, greater reliability, and faster operations for customers. In a study conducted by 451 Research, it was estimated that 49 percent of enterprises will invest in business applications across ERP, CRM, and more; in the next two years3. For organizations that want to fast-track digitalization, adopting 'application-centric models' across functions is the next big step forward. A robust cloud platform is the prerequisite for every successful application-centric infrastructure. So, what is the ideal approach for application migration to the cloud? Should all applications be re-engineered? For many businesses, a convincing proof-of-concept can combine the following three cloud migration models to drive effectiveness: Applications are recreated on cloud as-is, or without any change in architecture or functionality. This reduces infrastructure costs in the short-term, and organizations can focus on improving security and functionality of their applications. Applications are recreated on the cloud. They are also tweaked to increase scalability and efficiency. In most scenarios, the application is migrated to open platforms, such as Linux, to ensure applications perform better and are more reliable. Applications are rebuilt from scratch to suit today's digital imperatives. It involves deploying the latest technologies as microservices. With extensive experience in migrating applications to cloud, I believe that 100 percent re-engineering of applications need not be the only option. Effective cloud migrations have been structured around an 80:20 ratio For enterprises to reap the benefits of futuristic technologies, they should not limit their investments to cloud alone. The next big thing is to simultaneously invest in platforms of advanced technologies such as blockchain, IoT, analytics, and more; and drive seamless interoperability amongst these. To deliver simple, yet engaging experiences, applications are the oxygen that businesses need. Managing these applications on-premise is guaranteed to incur huge costs to every enterprise sooner or later. Thus, while the need to migrate applications to the cloud is well-established, the right approach is beyond re-hosting or re-engineering. =====================

Digital Transformation: Start at the Core, End with Customer Delight

----- Arcticle source ----- https://www.infosys.com/insights/cloud/digital-transformation.html ----- Insights Cloud Only one of the top five companies on the 2011 Financial Times Global 500 list, namely Apple, makes it to the current top five, all of which are high technology companies with huge platform businesses. Less than ten years from now, a company on the S&P 500 will most likely live only for 14 years. Biggies like Kodak, Sears and Blockbuster have fallen by the wayside, swept away in a wave of digital disruption that is sparing no one, least of all traditional incumbents. As longstanding organizations attempt digital transformation to avoid being disrupted, many of them are finding that their biggest adversary is at the

core – a monolithic legacy infrastructure that lacks the agility to support their growth ambitions. Often trapped in islands, their systems, which are typically built on past technologies, and their processes, which are often outdated, have been messily linked up to run extensive business operations. Loath to disturb the status quo, incumbent companies shy away from making large investments into new technologies and changing organizational culture and skills, both of which are essential in a digital makeover. Another important marker of digital transformation is experience that results in consumer delight. Creating such an experience is not simply a matter of bolting on a shiny new interface or application at the front end. It requires deep-rooted change at the very core of the organization, the place where problematic legacy systems happen to be. What this means is that all digital transformation must start by fixing the enterprise core. While this is a daunting prospect, we believe that by choosing business priorities wisely and modernizing the core in phases, organizations can successfully navigate digital transformation. Infosys has helped a number of clients make this journey by taking the following approach: Massively simplify core systems: The first step towards transformation-readiness calls for modernizing monolithic, silo-based ERP systems into platform-led, lightly tied components built on open source software. This is exactly what we are doing for an Asian bank, where we are in the process of transforming their three and a half decades old mainframe system based on proprietary technology into a loosely coupled, extensible architecture. Early indications are very encouraging and point to a 30 percent reduction in loan processing time, as well as noticeable improvement in customer experience. Carve out fire lanes of microservices and APIs: One way to make the core amenable to digital transformation is by firelaning Application Programming Interfaces (APIs) in the legacy systems to create microservices to allow the organization to share data both internally, and externally with its ecosystem. A case in point, we helped a client, a direct seller of personal care products, achieve this by helping them develop a sound API management strategy and robust microservices architecture that now supports a new website and a social selling platform featuring more than 230 applications that serves markets in more than a hundred countries. Start by migrating non-core elements to the cloud: The cloud is a major enabler of core modernization as it helps to overcome many limitations of legacy systems. But it is not enough to simply lift and shift those systems to the cloud; they must first be made cloud-capable. A number of decisions need to be taken, regarding the type of cloud to use, renewal of core assets, the processes to reengineer, and so on. A key question before enterprises is which legacy systems to migrate first. We recommend starting with the non-core aspects of the legacy landscape to develop both the right approach, and necessary confidence, before porting core applications to the cloud. Recently, we guided a mail-order retailer on this path by helping them to move their mainframe-based merchandising and supply chain system to AWS. The result is a 35 percent reduction in running costs and huge improvement in order processing and shipping volumes. We have now implemented this non-disruptive, phased approach to core modernization enough to know that it is effective at reimagining the business of incumbent organizations as well as improving existing operations. The main aim is to renew and optimize the existing technology infrastructure to generate savings that may then be ploughed into next-generation digital capabilities. Here, our deep digital and domain skills are a

huge source of differentiation. Implementation success is also greatly influenced by our modernization toolkits that help identify technical debt and weakness, as well as multiple viable options to build business and technical assets. Using DevOps and Agile play, integrated with open source advantage, we deliver a high degree of IT automation, yet another marker of transformation. Our core modernization strategy is proven, and its implementation is customized to the needs of individual clients to maximize their opportunity to refresh both their core and their consumer experiences on the road to true digital transformation.
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How Private Cloud Can Be an Essential Element of Digital Transformation

----- Arcticle source ----- https://www.infosys.com/insights/cloud/essential-digital-transformation.html ----- Insights Cloud Cloud computing has evolved from cutting-edge to industry standard as companies move more of their data offsite. However, as companies gain better understanding of their application workloads, they have increasingly found that a hybrid approach can lead to even greater benefits. Economics and performance data have persuaded them to re-evaluate how they store and manage data. This is leading companies to on-premises private cloud solutions to formulate better strategy to host and manage critical data and workloads. Here are some of the factors influencing private cloud usage. Software-defined everything The use of software to convert every element of the data center into a service has changed the IT industry. However, this software-focused approach reaches an even higher level when extreme automation is integrated with composable, converged or hyperconverged infrastructure. These integrated stacks deploy infrastructure as code solutions, while software-defined storage and networks provide the agility companies want and need. These factors make the private cloud equal to public cloud infrastructure in the most important ways, including cost and ability to scale up and down. Advanced computing Specialized computing workloads demand large amounts of resources on a continual basis and have altered how the cloud operates. The computing horsepower needed to design an aircraft wing differs greatly from the capacity required to process warehouse inventory. Many application workloads demand greater memory, bandwidth, and CPU and graphics specifications. When handling data-intensive tasks, private cloud solutions have shown they can manage these needs well, while also offering better performance at a better price. Optimized usage Container, microservices and serverless architecture usage has expanded and become a de facto standard. These have boosted resource utilization levels, decoupling them from the underlying infrastructure. The result is optimized usage and seamless migration from one cloud to another. Software-defined features, which are dynamically managed, have enabled these technologies to operate in the private cloud with minimal issues. Price structure Private cloud services are built with operating expense-based pricing and flexible

models. Previously, hardware leasing was the way of spreading costs in this model. But now there are options like on-demand capacity additions, pay-as-you-go models and standardized charging of resource units. These provide cost certainty as well as flexibility. A 2019 Infosys cloud research report found that cost was the top reason (46%) that companies selected a private cloud option. That's particularly beneficial for companies that have applications with predictable requirements. Co-competitive Global activities require a global data presence. Distributed data centers are becoming required for many enterprises. Thanks to increased edge computing and integrated hybrid cloud management, interoperability is a must. The competitive cloud ecosystem is seeing increased collaboration among private cloud company and hyperscale cloud providers. Some of the notable collaborations are the Azure strategy to support Linux and VMware on Amazon Web Services, Azure Stack or Google Anthos. Competition is still intensive, but flexibility and collaboration are also an important part of the ecosystem. Regulations A private cloud provider is better positioned to meet data residency requirements. With many countries and states passing or pursuing strict data regulation, data residency has become an important part of the IT decision-making process. Many businesses will be forced to keep some of their data within specific countries to comply with industry and geography-specific regulations. This is enabling an increased adoption of the private cloud. Infosys research last year found that more than one-third (36%) of companies chose the private cloud for its regulatory benefits. That was the third most common reason, trailing only security and cost. Cloud decisions Business need to look both inward and outward to determine their best cloud approach. Technology advancements, such as 5G and its increased speed and low latency, are predicted to fuel the growth of edge computing and benefit private cloud adoption. In a 2019 Infosys Knowledge Institute 5G research report, 93% of respondents were investigating or defining use cases, or defining a service portfolio and establishing supply chains. Decisions about how to utilize the cloud will be unique to each business. However, there are important questions to ask when choosing an approach. The answers to these strategic questions create a starting point for organizations to review long-held assumptions and determine their cloud future. =====================

How The Network Of Teams leads to Workplace Transformation, With A Little Help From Technology

----- Arcticle source ----- https://www.infosys.com/insights/cloud/how-the-network-of-teams-is-disrupting-the-workplace.html ----- Insights Cloud Consider this: A student at the Massachusetts Institute of Technology was so bothered by reports of the refugee crisis around the world that he got together a bunch of his mates to work on the problem. Vick Liu, a sophomore at MIT, and his team, designed a sleeping bag that can withstand

temperatures as low as 15-degrees Fahrenheit, has waterproof pockets that can hold important travel documents, and even comes equipped with a shoulder-strap. Up until very recently, a student would have had to scrape together funding, often with considerable difficulty, to take an idea such as this to market. Or wait a few years until he graduated and was hired by the giant XYZ Corp. But Liu didn't have to do any of that. He created a GoFundMe account that raised $17,000 – enough to manufacture and mail the first 250 sleeping bags to resettlement zones in Syria. Think about it: A college sophomore created a business network from his dormitory room in a matter of days – not years – and got his product to market. Granted, Liu's story is more on the lines of a not-for-profit venture, but it illustrates the power of the network of teams. Something that for-profit enterprises are trying hard to create and leverage. Today, successful companies are seeking to shift away from traditional organizational structures and are instead encouraging individuals to connect in an open workplace, share information transparently, and move from team to team based on their alignment to the problem that must be solved. The cause to be served can be anything ranging from innovation or delivering great customer experience to simply getting to market quickly. It's all about teams being formed quickly and disbanded just as rapidly to move on to new projects. High-performing companies are learning to nurture and leverage this network of teams. They are quickly realizing that it takes a) free flow of information and feedback b) transparent goals and projects, and c) shared values and culture to make it work. And not surprisingly, they are turning to technology to lead this workplace transformation for them. To bring in never-before productivity by: Connecting everybody: Disintermediate processes and activities to speed it all up, and thereby achieve an uninterrupted, on-demand connectedness between teams, teams and partners, teams and customers, and even teams and competitors, in some cases, to help move the entire industry forward. Supporting talent mobility: With talent requiring to move in a more agile career model, the mobile enterprise must be made accessible anytime from anywhere so team members can fluidly connect to their home base or project teams in a different location – as their need may be. Pervasive collaboration: Standardize and implement collaborative tools to complement the organization's core ERP or HRMS infrastructure. Transparency of organizational performance: From reward systems and career paths, to work allocation and project choices, make it fully visible to all, and chart the way for a more agile, meritocratic model for business. Feedback-based performance management: Provide reliable feedback to people based on pervasive analytics and immediate input on their performance – as individuals and teams - to enable meaningful goals setting, project change, and behavioral mentoring. But beyond the productivity gains, lies a larger intent – to direct this new-found people bandwidth towards innovation and higher value work that is more relevant for customers. Doing so will require the network of teams to learn, continuously and lifelong. The ask, then, is for technology to play a lead role in enabling the learning and teaching too. To make us not only productive but also purposeful. And it's possible. Time and again, following my many interactions with clients, through helping them accelerate their workplace transformation and learning from their journeys, I am convinced that when we are focused and amplified by technology in our purpose, there are no limits to what we can achieve. In performance, and more importantly in progress. =====================

Easing Employee Assessment

----- Arcticle source ----- https://www.infosys.com/insights/cloud/management-system-across-globe.html ----- Insights Cloud The days of multinational enterprise units operating as quasi-independent organizations are numbered. Most enterprises are swiftly realizing the benefits of working as a single entity to achieve common goals. But this has proven to be easier said than done, given the heterogeneous conditions and diverse factors influencing different regions. An agency of an intergovernmental organization with a presence in more than 100 countries was facing a similar situation, when they decided to integrate performance management of all employees on a single system. See how Infosys helped and the five key takeaways from the project. =====================

Managing Middleware Complexities

----- Arcticle source ----- https://www.infosys.com/insights/cloud/managing-middleware-complexities.html ----- Insights Cloud Business Challenge A leading global brewer was struggling with multiple middleware tools for application integration, leading to complexities and higher costs. Infosys View A coherent middleware implementation and integration strategy can deliver: Business Outcomes And more... Read about the client benefits and the 5 best practices drawn from this engagement. =====================

Manufacturing Goes Several Notches Up On the Cloud

----- Arcticle source ----- https://www.infosys.com/insights/cloud/manufacturing-goes-several-notchesup-cloud.html ----- Insights Cloud The history of manufacturing can be divided into two eras: before and after the advent of cloud computing. The industrialization revolution spurred the creation of manufacturing hubs and ancillary industries leading to production of goods that enhanced the quality of life for generations. Manufacturing enterprises innovated at the plant and process level by adopting 'lean' and 'just-in-time' approaches. Mass production led to economies of scale helping manufacturers scale up and become global companies. At the end of the twentieth century, with the advent of the internet, there was a shift from core manufacturing to a service-based economy. The internet became the new epicenter of economic activity, facilitating the decoupling of business functions and processes. While traditional manufacturing was centralized and labor-intensive, a suite of complementary technologies enabled manufacturing to be decentralized and be automated, which increased productivity and boosted unit-level economics. No more mass production; it's all about mass customization

Cloud computing dramatically changes the technology landscape of manufacturing by moving legacy, on-premise applications to the cloud in a pay-as-you-use model. At the same time, high speed internet coupled with advanced sensors harnesses product and consumer data, which enables enterprises to gain insights into product performance as well as consumer behavior. The cloud has emerged as the catalyst for the manufacturing industry to understand consumer preferences and become more responsive to market dynamics. Let us explore how a cloud-first manufacturing enterprise can chart a digital transformation journey that enhances its competitiveness and ensures sustainability. Informed decisions The cloud is the computational glue to connect the manufacturing enterprise. The ecosystem generates a huge volume of data during production, while smart products embedded with intelligence generate consumer insights. Significantly, the rich and varied data enables constituents across the supply chain to make prompt and accurate decisions. Optimizing performance The cloud allows manufacturing to go beyond production of finished goods. Progressive manufacturing enterprises can monetize products long after the sale of goods by having a stake in product ownership and servicing the product across its life span. Smart products enable manufacturers to capitalize on a rich trove of product information on the cloud and open new revenue streams related to service and proactive maintenance. Personalized services The cloud provides manufacturers with an opportunity to serve customers based on their preferences and product usage. Manufacturers are developing smart and connected products that complement the lifestyle of digital consumers. The consumer and product data harnessed by manufacturers on the cloud can be used to better understand the consumer, and deepen engagement with custom-built products and service. Is yours a cloud-first enterprise, yet? Read more here.
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Need for changing the IT Operating Model in the Cloud Era

----- Arcticle source ----- https://www.infosys.com/insights/cloud/need-for-change.html ----- Insights Cloud Every industry is being disrupted by digital transformation either from within or by niche technology start-ups. Cloud, machine learning, AI, analytics, IoT are key enablers for this transformation. These technologies change the way businesses are being conducted today and digital transformation is reshaping the way IT fulfills the needs of business. The entire lifecycle, processes, tools, and technology are changing, with the cloud as the core enabling technology. IT serves Business in new ways Businesses want to start small and grow big with fast fail and success Business owners are experimenting with new ideas, they would like to start small and grow big as products mature, or fail fast. They also have a good understanding of new technological capabilities and aspire to leverage them to drive better customer experience and business growth. With a customer-centric approach to product development and domain-driven design method to realize them with IT applications, the business and IT teams work in close collaboration in defining the product backlog, following an iterative

development cycle and rolling out features regularly. Application development cannot wait for fully defined requirements that lead to long implementation projects. They need to work with continuously evolving user stories, define an architecture, and choose technology stacks that would allow them to adapt to evolving needs and growing volume. Changing responsibilities of platform teams In the traditional application development environment, the resiliency of applications was largely derived from infrastructure and platforms, hence the platform teams spent more effort and time on operations to ensure that their services were always available. However, with the new cloud-native architecture and technology stack, the resiliency of the application is largely derived from the application architecture and patterns (e.g. micro services, reactive programming, circuit breakers) and platform services (e.g. container management platform, PaaS). In a traditional IT landscape, multiple applications are deployed on the middleware platforms (e.g. WebSphere Application Server), and so the resilience of applications was dependent on the application server. However, in cloud-native applications, light weight application runtimes are used to build applications like NodeJS, Spring-Boot, .NET Core and are deployed in individual containers as the overhead is very low. The container management platforms are largely self-managing and effectively manage reliability issues with underlying VM/ infrastructure as well. In the new context, the responsibility of the platform teams would be: Application and platform teams working together With agile ways of working and DevOps being an integral part of the software development lifecycle, the application team is now responsible for application development, building, deploying, and managing the application end-to-end. So, apart from programming languages and application frameworks, developers need to be skilled in DevOps tools scripting, test automation, packaging, and deployment automation. With the responsibility for deployment and a large part of the operations moving to the application teams, they now handle application and platform support services, while the platform team focuses more on the engineering and automation of platforms. For legacy enterprises, this change in the IT structure and operating model is major but necessary to remain competitive in the cloud-powered digital world. Infosys Cloud advisory services specifically focus on the various aspects of change management to ensure that the organization not only has a well-defined IT strategy, business case, and roadmap, but also has the right working model between business, application development, and platform teams.
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A Cloud Native and Open Source Approach Can Maximize the Benefits of Cloud

----- Arcticle source ----- https://www.infosys.com/insights/cloud/open-source-approach.html ----- Insights Cloud As per industry reports, we can expect more than 80% percent of enterprise workloads to be on the cloud by 2020. That certainly is a very encouraging statistic, especially since cloud also lies

at the foundation of most digital transformation efforts. Yet, we hear about how a majority of digital transformation exercises fail to meet their stated objectives. The primary reason is that most enterprises do not think through all the dimensions of change when it comes to cloud adoption. They do not realize that moving to the cloud is only the first step of their digital transformation journey, and not the last. Digital Immigrants: Caught Between the Old and the New Most enterprises today have two types of applications. There are applications that represent the 'old world,' which could include the underlying ERP systems, Systems of Engagements, Systems of Innovation etc. Then there are 'new world' applications that are by and large, born cloud native to support digital business models of enterprises. The development of these cloud ready applications involves modern concepts such as DevOps, containers, server-less infrastructure but forms a very small component of the infrastructure that needs to be managed. Legacy or the old world applications still drive the bulk of the business for most enterprises and a majority of them are simply not built to be naturally cloud ready. When these are ported to the cloud in the existing format, it sometimes becomes a pointless exercise because you are not really embracing the true benefits of cloud. When infrastructure moves to the cloud, it definitely offers benefits since it acts in the form of a scalable, cost effective, agile Infrastructure as a Service (IaaS) platform. But these benefits are short-term and limited. As long as the infrastructure continues to operate in the same monolithic fashion and is tightly coupled with the cloud platform, it doesn't really matter if you move to the cloud or not. You will still be at square one. How to Be a True Cloud Enterprise with a Legacy Portfolio For an enterprise to truly accrue the benefits of cloud, the important thing is to ensure that all the applications come with an adaptive cloud architecture and get to a cloud native state. One way to achieve this is to disintegrate the applications such that they are in the form of microservices and decouple the same from any vendor platform dependency or infrastructure, making them more fluid and cloud ready. These can then be leveraged at a functional level as a service. They should have the ability to expose their functionalities through APIs so that they can be integrated with other sets of applications. It is only by doing these steps you would be able to bring in the inherent agility that cloud promises. This also gives you a real sense of availability by leveraging cloud capabilities. As cloud adoption becomes increasingly mainstream, a cloud first, cloud native, open source approach will be the new normal of application development within every enterprise. Unless enterprises take concrete steps to make their infrastructure completely cloud ready, they cannot hope to benefit from cloud adoption in a way that leverages its full potential.
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Cloud

Digital Quotient: Lodestar for Future Ready Talent

Insights Human Potential No matter how they started, all organizations are now digital organizations. However, as they develop their digital capabilities, skills gaps quickly appear. In addition, skills are moving targets, as technology rapidly evolves. To understand where those gaps lie, organizations need to assess both enterprise and employee digital capabilities. They then need to find ways to address gaps that have the potential to limit a company's success. To address these gaps and to build the required capabilities of both enterprises and employees, companies should develop and measure the digital skills — or the digital quotient — of their employees. Organizations need to put learning at the core of talent development to close the digital skills gap. The Fourth Industrial Revolution and new capabilities The Fourth Industrial Revolution is characterized by digital transformation in all industries and across societies. Keeping up with the latest technology is central to the success of every organization. Companies worldwide have recognized that adapting only their business and technology strategies is not enough — they need to build digital talent as part of building a digital organization. Understanding what talent is necessary starts with awareness of the digital capabilities that the organization needs. Although the requirements vary by company, most successful organizations have common traits: They operate like digital natives; they are customer-centric, flexible, and agile; and they can leverage the broader business and technology ecosystem. Employees are at the heart of a company's digital capabilities. Talent is thus the fuel for digital transformation. Employees must not only be adept at the needed digital technologies but also should have multidisciplinary strengths, be able to innovate and to co-invent solutions, and deliver exceptional customer experiences. As technology becomes increasingly central to business, organizations must cultivate these new skills. Employees must be able to use their creative potential for digital products, services, and organizational success. The half-life of skills Almost a decade ago, the half-life of professional skills was about five years — that is, a skill loses half its value in that period. The half-life continues to fall, placing a huge demand on organizations and employees. Both run the risk of falling behind on the capabilities needed to succeed in the digital age. It is the responsibility of organizations to keep a future focus and remain vigilant in tracking emerging technologies. At the same time, businesses also need to guide employees toward these new skills. Organizations can help workers by informing them about what skills are expected to be in demand, encouraging them to pursue those technologies, and providing them with the avenues to learn. Digital Quotient: Personal guide for digital preparedness Infosys introduced the Digital Quotient (DQ) to objectively assess and classify the digital readiness of individuals, teams, and enterprises. DQ is data driven and provides a comprehensive score — a single, simple metric that tracks the digital maturity of talent. It helps them traverse a value chain of competence (building breadth and depth of skills), measuring the skills they possess, their proficiency in those skills, their digital exposure in adjacent

areas, and their expertise in working on actual projects. Individuals then leverage the competence gained to drive impact and value for teams, clients, organizations, industries, and other stakeholders. Individuals learn on the job — beyond courses and certifications — as they build new capabilities for the digital world. Infosys conceptualized a digital continuum of learning new skills: building depth and breadth, venturing into adjacent areas, and expertly applying these skills to deliver high-quality solutions and create value to the organization and the industry. DQ is the vector that employees follow through their learning and career. Competence typically happens at the entry stages. It is about gaining knowledge and exposure to existing and new skills. Impact is the next leap, where employees apply skills to influence clients with the knowledge and experience gained previously. Innovation, effectiveness, and creating an impact through teams are key markers of this midpoint. The leap beyond this is that of generating value. Value includes the core leadership quality of identifying new opportunities of revenue creation, optimum industry positioning, and creating new solutions to generate value for all stakeholders. DQ: Valuable for employees and enterprises For employees, DQ is a personalized guide through their digital skills and career journey — it continuously measures where they stand in the digital continuum and provides them with a single score as an indicator of their digital preparedness. Using the score, employees can understand how their skills compare to others' and how to be a more competitive candidate. A target DQ score that employees set for themselves serves as a beacon as they navigate their careers toward high-impact technology areas and complex client projects. DQ assists employees in mapping their paths toward high-demand careers, jobs aligned with their aspirations, and jobs that people with similar skills are pursuing. At the team and enterprise level, DQ is a strategic tool that can gauge the digital preparedness of the business. It helps enterprises understand their digital capabilities, shows them areas that need to be strengthened, and then tracks their progress in gaining these capabilities — giving enterprises an advantage. As an example, a U.S.-based client of Infosys used the DQ framework to increase their employee's future readiness. This framework helped them enhance their employees' skills and reskill them for emerging technologies. The company first identified their skills gaps and then assigned employees a target DQ. To aid employees in achieving this target, they provided hands-on training, focused training programs, and on-the-job learning. As part of this initiative, more than 4,500 employees completed more than 31,000 courses over the span of a year. Further, 47% of employees enhanced their expertise in one or more skills, and more than 1,200 employees were redeployed in the upgraded skills — with improved margins because of higher billing rates. DQ is very highly correlated with all key talent parameters. For instance, employees with high DQ are deployed on projects faster. They are also more engaged and better retained; they perform better on projects; and they advance faster in their career journeys. The most important enablers for maximizing use of DQ are a flexible and agile infrastructure, a clear focus on reskilling, and a digital-first mindset. Skills-led talent management practices can also help in this process. At Infosys, we are building a skills-led organization so that careers, learning, and rewards are all based on skills and are self-navigated. We are identifying which digital areas are accelerating, and we are training our employees to work with these technologies. Skills tags are one of the components of this framework; they

function like skills badges to identify and nurture reskilled employees who have the required knowledge and expertise. We also provide career avenues for employees so they can specialize in technologies and industry domains as they continue to learn new skills. Keeping up with change is essential to business resiliency, enabling fluid and fast responses to disruptions. DQ is one way to measure whether organizations — and their most important asset, their employees — are keeping up with how fast technology and business change. ======================

Where's the Safety Net for Digital Refugees?

----- Arcticle source ----- https://www.infosys.com/insights/human-potential/digital-refugees-safety-net.html ----- Insights Human Potential The concept of a workplace refugee is not new. But the idea of 'digital refugees' takes it a step further, as it has become a global concern, and a pervasive one. Here we look at how the issue has evolved, and what we can do to tackle it. Watching the digitization of work and life over the last couple of decades, some clever pundit coined the terms 'digital natives' for millennials who seem to have technology in their DNA, and 'digital immigrants' for the boomers and others who have had to embrace technology. These have proven apt descriptors of segments in our workforces and communities, and when we plan recruitment, training, and deployment. Today, as technology-driven disruption renders entire companies obsolete with artificial intelligence and pervasive automation, we see the emergence of a new segment: 'digital refugees'. Like political refugees, digital refugees too are displaced and in many cases struggling and adrift. Social and governmental forces are starting to wrestle with the unique challenges they pose, leading corporations are starting to assess the impact they have on the economy, and communities are starting to wonder if – and how – this wave of disruption will reach their own doorsteps. But the concept of a workforce refugee is itself not new; thousands of workers have been displaced by automation or globalization over the past several decades, particularly in manufacturing. Some have retooled and entered other careers, largely in the service sector. But many have languished, losing hope in their nation's ability to offer them a future. The 'rust belt' is filled with stories of shattered dreams. The case of the digital refugees may be even graver, however, for three significant reasons. First is scale; our best estimates suggest that digital refugees will not be created in isolated pockets of displacement, but rather in massive waves. The 'intellectual rust belt' is likely to be broad and borderless. Second is permanence; just as many manufacturing workers were unable to retrain themselves into knowledge-workers, many digital refugees will be unable to step up to the even higher-order technology jobs that are likely to be created as part of the digital/AI boom. Yes, jobs will be created – but they are unlikely to be jobs that displaced workers can hope to fill Firstly, the intellectual "rust belt" is likely to be borderless. Secondly, it might become pervasive, as workers find it hard to retrain into knowledge workers. Third, and perhaps most significant, is societal and governmental readiness to take on the challenge. There is a bit of a "We have seen this

before and we are not going to let it happen again" sentiment. This bodes well for workers – but it may be problematic for corporations. If we are ready to provide a social safety net, whether in terms of retraining, guaranteed wages, or economic stimuli in other sectors, the question is, who pays? Some argue that corporations will need to foot the bill. Preliminary dialogs last fall in a World Economic Forum council on the Future of Education, Gender and Work surfaced the notion of a global 'cap and trade' policy for AI-driven job loss, similar to current 'cap and trade' provisions for carbon generation. In other words, if a corporation leverages AI and automation to disrupt its business model, radically improve efficiency, or enhance service or operations, and if worker displacement is one outcome, then the corporation should pay to provide the safety net. This topic will be taken up at the spring dialogues on the Future of Education, Gender and Work. In February 2017, Bill Gates took a similar position, suggesting that robots should pay taxes. While a robot tax could replace revenues previously generated by employee income taxes, the approach clearly shifts responsibility for filling the tax coffers from the individual to the corporation. On the positive side, this approach could fund the creation of a broader social safety net for displaced workers. In an interview with Quartz, Gates noted, "A tax on robots could help fund the training needed for jobs such as caring for the elderly, teaching in schools, and helping kids with special needs -- roles that robots can't fill." But it will be at corporations' expense. Corporations that are politically savvy, as well as those that subscribe to compassionate capitalism, are trying to get in front of this wave. They recognize that they have to manage the inevitable disruptions. They are starting to consider ways of managing massive displacements, whether or not to proactively retrain displaced employees, and what their new, post-AI organizations need to look like. Some are finding that AI may not so much target the blue-collar layer (which is already pared to the bone) as the lower white-collar layer – lower and middle management. This creates secondary challenges – not only "What do we do with these workers?", but also, "If we eliminate these positions, where is the training ground for the next generation of executives?" Technology companies are finding the retraining challenge somewhat easier, and are aggressively moving to retrain tech workers with new digital and AI skills. Business Standard (March 7, 2017) reported that Wipro plans to reskill 10,000 employees in cloud, digital, analytics and DevOps, among other high-demand skills. Tata is reportedly targeting another 100,000 in digital technologies. Infosys is not only reskilling employees in newer technical skills, but has also completed training over 70,000 technical employees in design thinking, to go along with its Zero Distance initiative, driving technology improvement and innovation. The challenge will be greater for traditional brick-and-mortar organizations with employees who are less tech-savvy, whether at factory floor or line manager levels. Reskilling weighs heavily on executives we have been speaking to, those who are driving AI, automation, and digital disruption initiatives. Organizational redesign is also on their minds, including rethinking career paths and competency models for leadership development. Governance is top priority; how will businesses and IT govern pervasive AI and take accountability for its benefits – and risks? As a leader in corporate learning at scale, and as a business partner deeply experienced in helping clients lead technology-driven business transformations, Infosys is developing new offerings to help our clients wrestle with the human side of

AI, digital and automation. We are combining human-centric design with technological innovation to come up with better answers – whether it is for reskilling displaced workers in a leading CPG firm, designing a more empowering culture and physical work environment for a financial services leader, or rethinking career paths for a technology leader. If firms don't want regulatory intrusion (think cap-and-trade for digital refugees), they need to find innovative solutions for human challenges on their own, and lead workers to new roles and help them accommodate into an AI-driven business environment. Looking at this shift against a backdrop of rising nationalism, we realize that there is a lot more at stake. Many of the countries that are witnessing a rise in nationalism – including the US – actually do not have sufficient skilled IT workers to meet domestic demand. So could a technology company, renowned for technical training at scale, provide training and development to help create a skilled domestic workforce? Instead of being merely a purveyor of AI and automation, could Infosys provide solutions for massive reskilling of digital refugees? We think the answer is yes, and we are actively pursuing this agenda, starting with our recent announcement that we will set up a new development center in Indiana and create 10,000 new jobs in the US. Responsible employers need to think not only about reskilling digital refugees, but also about developing the skills of future generations. If basic technical proficiency increasingly divides the haves from the have-nots, one answer may be making digital literacy as much a part of primary and secondary education as 'reading, writing, and 'rithmatic'. Leading technology companies are collaborating with the Code.org Advocacy Coalition to reshape education and make computer science an integral part of the K-12 curriculum. Supporters of the coalition are working toward fundamental changes in classroom content as well as professional development of educators. It is heartening to see academic transformation taking place ahead of government intervention. While some detractors argue that early exposure to programming might make children more machine-like, research says otherwise. Introducing children to the fundamentals of computation actually enables them to better understand patterns, recognize underlying relationships, and solve problems. It teaches them to deconstruct complex problems into smaller parts and to address issues with logic – skills which will help both professionally and personally, throughout life. "Computational thinking is thinking in terms of prevention, protection, and recovery from worst-case scenarios through redundancy, damage containment, and error correction," says Jeannette M. Wing, Corporate Vice President at Microsoft Research and former President's Professor of Computer Science at Carnegie Mellon University. She sees it as a fundamental skill. "We should add computational thinking to every child's analytical ability," she recommended in an article published in the Communications of the ACM. At the Eliot-Pearson Children's School in the Tufts University Department of Child Study and Human Development, young children program robots using building blocks with barcodes. earning style of machines as they play with toys, they cultivate a habit of lifelong learning. Introducing computational thinking at a young age will create a wealth of talent for the workplace and help insulate tomorrow's workers against whatever displacements characterize the next generation. At the end of the day, the challenge for business leaders is not only how to help displaced workers support themselves, but also how to help them maintain their dignity. When AI and automation take away not only

their ability to provide for themselves and their families, but also their productive self-worth, the answer needs to address both the financial and the emotional aftermath. Our solutions to these problems need to address emotional needs as well as physical – which may in the end be the harder problem to solve. Mitigating this risk for future generations, by embedding computational skills and computer literacy at all levels of education, may be one of the greatest gifts we can offer our children and grandchildren.
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Digital revolution and problems worth solving

----- Arcticle source ----- https://www.infosys.com/insights/human-potential/ digital-revolution.html ----- Insights Human Potential For centuries, humankind has been following existing paradigms, solving problems using known and tested methods, and building upon past successes to create new milestones. There have been pockets of innovation, sanctums of academia, scientific experiments, and lives of sheer geniuses, across fields, which have propelled our race forward. However, something else is happening today – several revolutionary technologies have reached their tipping points, and some have converged, promising to pan out at a scale so phenomenal and pervasive, touching the lives of billions, that existing patterns and paradigms will not suffice to maximize the benefits these have to offer. Consequent upon this, several phenomena are creating dramatic shifts: In scale and reach, the Digital Revolution we are currently experiencing can be compared to the Neolithic Revolution, which taught us agriculture; and the Industrial Revolution, which taught us to create and use machines – transforming humanity's way of life. However, the lightning pace of technology today and the rapid blending of atoms and bits distinguish this epoch. Unlike the previous epochs, the Digital Revolution calls for reorienting our thinking, to observe and participate in a future that is being created by the day, yet mentally out of bounds to most of us. Can you wrap your head around combining mobility, AI, life sciences, and robotics, focused on creating computer hybrid human beings? If you can, then you may be starting the company yourself! This is an era of exploring possibilities. Possibilities that we cannot even imagine. This April, Stephen Hawking, one of the greatest theoretical physicists ever, and Yuri Milner, a Russian billionaire, announced a US$100 million investigative project to work on making travel between stars possible. They will build nanocrafts, which are small spacecraft's attached to light sails which use the power from gigawatt-scale laser arrays to reach speeds of more than 20 percent the speed of light. In this way, astronauts will be able to reach Alpha Centauri, our solar system's nearest star (four light-years away), in only 20 years. Using even the fastest spacecraft today, this journey would have taken 30,000 years! Discovering such possibilities requires a new way of thinking. Uncreating existing reference points and examining the problem itself, rather than rushing to find solutions. In the case of the 'Breakthrough Starshot' project, considering that reaching the speed of light or close to it has been a daunting factor for interstellar travel, the question to ask was: Is the speed

of light the 'problem', or the spacecraft size, tools, and methods used, to traverse the vastness of space? This example from space travel symbolizes the zeitgeist today. Technology-driven possibilities abound. Gone are the days when technology only transformed a company, or an industry. While you may be still applauding retail's virtual stores or mobile-first banking – both digital early adopters – the traditionally conservative insurance sector is adopting AI-driven automation to drive efficiencies; life sciences is digitizing parts of clinical trials to address some of the inherent challenges; and healthcare is embracing universal accessibility as a priority, and moving towards personalized and preventive care. The Digital Revolution has two important dimensions – the disintermediation of the supply chain (economics), and the hardware revolution (engineering) that is packing more processing power in computers, and which is doubling every two years (Moore's Law). The disintermediation is minimizing the distance between producer and consumer, and in turn ushering in new kinds of business models. Think crowdsourcing platforms, online marketplaces, branchless digital banks, publishing platforms like Smashwords, and accommodations platforms like Airbnb. The second dimension of diminishing chips and transistors is practically enabling all the disruption. Powerful, embedded computing is making the pervasively digital experiences possible, and raising our expectations irrevocably. At Infosys, we find ourselves in the midst of all this excitement as a significant participant. We have been working with global majors, through the decades, to help them transform themselves and their client experiences, with software. Today, we are partnering with them for some of the greatest transformations cutting across industries. Recently, we collaborated with GE, the digital industrial company, to embark on a journey of creating a 'digital twins' universe, where we will digitally recreate the entire life cycle of any product, from conceptualization and development, to marketing, sales, and maintenance. This way, stakeholders can better understand and manage the underlying structure, design, and functional issues, at any point in time. As the next step, micro services can be built on top of any digital twin. We are working at the intersection of material science and engineering to help create lighter aircraft fuselages, and applying artificial neural networks to enhance the efficiency of aircraft engines. We are using our open-source analytics platform to glean near-real-time insights for ATP to amplify the experience for tennis fans and players. Until now, the highest governing body of men's professional tennis had decades of rich data stored up in silos. Today, we are able to process 12 million data points, and growing, in near-real-time for them to generate insights. Our digital oilfield solution is helping companies in the oil and gas industry to collect and analyze oil well data in real time, predict field equipment failures, reduce unplanned downtimes, enable remote monitoring and faster control of field equipment, and so on. As an organization, we have reoriented our thinking to the new reality. By using tools and methods, primarily Design Thinking, which teaches an empathetic approach to problem finding and problem solving, we have been able to make a cultural shift. Today, all our client projects undergo the filter of how close we are to the client's need (desirability), engineering possibility of the solution (feasibility), and the economic value it can bring (viability). More than one-third of our 190,000-plus employees have already undergone Design Thinking training, and we have conducted more than 250 Design Thinking workshops for our clients. Why are we solving what we are

solving? What more can we do, beyond the stated requirements? How can we make it even better? How can we bring the learnings from other similar projects? These are some of the mandatory probes in our Zero Distance framework, inspired by Design Thinking, and which dictates the approach to 95 percent of all our client engagements currently. Like the previous epoch-making junctures in human history, the Digital Revolution will amplify the potential of humankind. This is actually a human revolution, where epitomic technology will help us to unleash our creativity, unfetter our imagination, and awaken our problem-finding instincts, both individually and collectively. The mundane, repetitive jobs will be left for the machines to do, rather for the less-intelligent machines, giving us a new space to explore possibilities. In this issue of Infosys Insights, we bring you snapshots of such possibilities of some of the larger problems worth solving.
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The Human Side of the Digital Workplace

----- Arcticle source ----- https://www.infosys.com/insights/human-potential/digital-workplace.html ----- Insights Human Potential The spread of the coronavirus has taken an enormous toll on human life around the world and violently rattled the global economy. The impact is changing how people live and work while unveiling the full potential of digital tools and those who use them. As entire cities and regions were quarantined, tech conferences were quickly transformed into virtual events by digitally advanced companies, including Google and Microsoft. In the workplace, virtual meetings and working from home have become the rule rather than the exception. A Gallup poll found that 62% of U.S. employees worked from home during the early months of the pandemic.1 In Brazil, nearly half of employees said they were working remotely.2 Meanwhile, more than one-third of workers in the United Kingdom were performing their jobs from home by early April.3 This crisis is teaching many companies the importance of an agile, digitally enabled workplace that can manage such emergencies. Not long ago, this type of remote work was still relatively rare. It was a way to manage work-life balance, promote diversity, or address talent shortages. Now it's a necessity that saves lives and jobs. Executing in a crisis Organizations had almost no time to brace for one of the most disruptive global economic crises in decades.4 When quarantine and stay-at-home orders were issued, businesses knew generally what was required. Well-prepared companies already had continuity plans in place, but at this unprecedented level, a rapid digital transformation wasn't easy to institute. In a snap poll by Gartner, 54% of human resources leaders said that poor technology or infrastructure was the biggest barrier to effective remote working.5 Enterprises need to examine their core capabilities and answer some fundamental questions to assess their digital workplace readiness: In times of crisis, a digital workplace not only amplifies human potential but also actually protects people. Today, chief executive officers and other top executives have an appreciation of the needs and benefits of a digital workplace. While realization is a crucial first step, it's far easier and faster

than execution. Based on CXO interactions, here are a few notes about the state of their readiness: Future of the workplace Even when the world and economies have stabilized, the need to digitize will grow as the workplace of the future approaches. The blend of employees, gig workers, and robots will define a future where our digital workplaces continuously evolve, learn, and innovate to become live enterprises with sentient capabilities. As machines take over mundane tasks and grow intelligent enough to learn, it is imperative to ensure humans are empowered and remain central to our workplace. Responsible artificial intelligence requires humans to govern the decision-making process. It is incumbent upon us to ensure the human side of the digital workplace is preserved as we transition into the new normal. 1U.S. Workers Discovering Affinity for Remote Work, Megan Brenan, April 3, 2020, Gallup. 2Measures employees expected their employers to take in response to the coronavirus (COVID-19) outbreak in Brazil in March 2020, March 6-10, 2020, Statista. 3PandemicEX: How UK Employees Feel About The Pandemic, Martin Gill, April 8, 2020, Forrester. 4Flatten the curve, flatten the recession, Isaac LaBauve, Chad Watt, April 2020, Infosys Insights. 5With Coronavirus in Mind, Is Your Organization Ready for Remote Work?, Jackie Wiles, March 3, 2020, Gartner. 6Millennial Careers: 2020 Vision, Manpower. =====================

How Much Do You 'Care' in a Digital World

----- Arcticle source ----- https://www.infosys.com/insights/human-potential/digital-world.html ----- Insights Human Potential There are only two constants in the world. The first one is constant change. This idea that you, I, and the world are changing every moment. The second constant is man's search for happiness, respect, and love. It is no longer enough for organizations to sell a product or service; they need to win the client's heart. Consumers are demanding more… they want to be part of something greater than just buying a product or a service. They want to buy from an organization that is honest, loyal, trustworthy, and caring. How do we share these human emotions in a digital world? It may sound bizarre, but the simple human act of caring can be a huge competitive advantage in today's marketplace. If you want a successful online business these days, it's not enough to simply close the sale. You've got to help your customers fall in love with the way you do your business. I live in a small town called Trumbull, CT where there is little other than trees, houses, schools, and kids. There is a special store in town called Gaetano's Deli, which is located way off the main street and has limited parking. However, no matter the time of day, the line is out of the door. Gaetano's is not selling anything different than any other deli in the world but you have to realize people are not there just for the food, they are there for the "love". The team behind the counter are funny, super nice, carefree, and fun. They know your name and understand what you want. It is a place where everyone belongs, everyone is someone and the hero and cold cuts are the added benefit. This is a world class caring/ loving customer experience… now how do we bring this to our customer's digital world and enhance it? THINK LIKE THE

CUSTOMER Customer experience really boils down to the perception the customer has of your brand. You may think your brand and customer experience is the best in class but if the customer perceives it differently, you need to work on improving and enhancing it. Listen to your customers well. It is what the customer thinks, feels, and believes that matters. Companies need to make the customers 'feel' they are being cared for. Seek out "truth" tellers in the client's organization - leaders who are open and honest and tell you what you are doing well, what you "stink" at, and where you need to improve. The truth may hurt, but it will save your business and help you grow. Another way of obtaining honest feedback from your customers is to develop customer surveys that are short, simple and provide an incentive. "Cranky customers" may be hard to deal with, but they are a great source of truth to identify customer experience areas that need improvement. Here are a few things that can help drive positive customer perception - don't make false or inflated promises, and communicate quickly, clearly and frequently. Never get complacent, and always keep pushing forward with new ideas, suggestions, and innovations to engage clients. KEEP IT SIMPLE Make it and keep it simple. Simplicity starts with a clean, clear, and intuitive design that requires few mouse clicks or screen touches to meet the needs of the customer. The main functionalities are easy to find and well explained. The language is concise, simple, and easy to understand. Apple offers a wide range of products aimed at different customers, but its product information and support websites use a very clean, pared-down design with key information presented clearly and additional detail available with a minimum number of clicks. In financial services, companies such as PayPal have dramatically simplified online payments, in many cases requiring only the recipient's email address or mobile phone number as identification. These organizations show they care for their customers by making it easy for them to transact, and saving them precious time. Caring/ loving makes great business sense. SEDUCE YOUR CUSTOMER Enticing your customers to fall in love with your products and services is not unlike a romantic seduction. The art of seduction requires careful planning, skill and understanding. We need to help our clients understand who their ideal customers are. If you want to give your customers and prospects what they want most, you have to first find out what they want, when they want it, at what price point and on what channel, and then give it to them at the right time with the right message. This is where data and data analytics are critical for romancing the customer. Leveraging the power of data using Facebook, LinkedIn, Twitter and client customer information, we can build an accurate profile of the desires of our customers before they ask for what they want. I call this the "mom effort". Every mom knows what her children want for their birthdays... kids don't have to ask or say anything... mom just knows on the day of the birthday the gift they receive from mom is the one they always wanted. It becomes important to understand the mind of our client's customers as thoroughly as possible and to deliver what they need and desire most in as seamless a way as possible. The more detailed and data-driven the customer profiles, the more useful they are for engaging them. SURPRISE Exceeding customer expectations was the foundation of GE-Money's 6 Sigma training. An organization exists to make a profit. However, every now and then it doesn't hurt to show a little love and offer something extra as part of the digital experience (waive a fee, offer a discount, or give the product away free) without your client having to ask.

The critical point is to delight and surprise your clients with unexpected and unprecedented service all the time, every time. RECIPROCATE YOUR CUSTOMER'S LOVE There are many ways to show our love in the real world - through a hug, a kiss, flowers, a message - but how do customers show their love for your product or service in a digital world? In the digital world, the greatest proof of organizational love is the customers who keep coming back. Another sign is when customers showcase their love of your product and service on social media (FB, LinkedIn, Twitter, and Blogs) and yet another is positive word of mouth. All of these activities need to be captured, monitored and studied in the digital customer journey to understand who the customers are and what they expect from the organization. All organizations are driven by new opportunities and profitability, but finally it is the quality of human to human interaction that determines their fate. We may adopt all the latest technologies in the world and be the smartest with our business strategies but unless we are driven by human values like care and empathy, we shall fail to make a connect with our customers. And without happy, profitable, growing customers, our businesses mean nothing. =======================

Infosys Using Distributed Agile for Continuity of Delivery in Face of COVID-19

----- Arcticle source ----- https://www.infosys.com/insights/human-potential/distributed-agile-continuity.html ----- Insights Human Potential Agile development has been growing in importance over the last several years as enterprises prioritize responsiveness and agility in their IT services. In various NelsonHall user surveys of large enterprises, around 60% of respondents globally have reported that increasing the agility of their core production applications is a high priority, and around half are placing a very high priority on reducing new application time to market. Having capabilities in agile development methodologies has accordingly become a key criterion in vendor selection. Initially, agile development typically involved co-located delivery, with client and vendor employees working together at client locations. This was primarily driven by client concerns about control and visibility as well as the use of higher touch processes such as design thinking and collaborative planning early in the SDLC. As agile delivery has matured, there has been an increasing use of distributed agile, which is needed to achieve scale. NelsonHall estimates that around two thirds of vendors' agile skilled resources are located remotely. The COVID-19 pandemic and the resultant dominance of work from home (WFH) has accelerated this shift to distributed agile. Infosys has been building out its distributed agile capabilities for several years; in addition to focusing on building a skilled workforce it has put in place tools, assets and methodologies to ensure distributed agile is as productive and transparent as wholly co-located agile is. With the onset of the pandemic, Infosys was able to augment its existing delivery methods and continue to meet client demands. Building a Foundation Infosys began its focus on developing

comprehensive distributed agile capability around two years ago with a major investment building agile capabilities and DevOps infrastructure. In parallel it has augmented these capabilities by introducing innovation hubs and design studios proximate to the client base, expanding experience design through the acquisitions of WONG DOODY and Brilliant Basics, and introducing its digital learning platform, Wingspan. The company has trained ~150k employees on agile capabilities while modernizing its delivery network to support agile team structures. Infosys' current client footprint demonstrates why it has been important to invest in agile development capabilities. It estimates 70% of its ADM delivery engagements use agile, of which 90% include components of distributed agile. At the core of its agile development and DevOps capabilities, Infosys has a distributed agile operating model covering seven aspects that shape delivery (see below]. When the COVID-19 pandemic began to hit operations, Infosys analyzed how scrum teams globally were being impacted to identify issues and challenges for different delivery personas. It then adapted its existing models to be able to operate effectively in a 100% remote model. This included both tangible enablers such as ensuring remote access to systems and collaboration tools and intangible enablers such as ensuring engagement, social bonding and conducting collaborative ideation sessions. Infosys augmented its assets to operate in a WFH model, looking at these seven delivery components and modifying them to operate in a fully remote model and address client expectations such as how to maintain visibility of progress, quality of delivery and team productivity, and manage standard agile ceremonies. Augmentations to the operating model have included: Rapidly Applying Changes for Clients The adaptation of the distributed agile methodologies rapidly in response to the pandemic has varied based on the maturity of the clients in leveraging remote operations. For some clients, such as an Australia-based telecom, digital boards were already in use and four to five hour overlap between Australia and India delivery meant teams already had remote interactions in place. Infosys has been able to minimize the impact of the pandemic on service delivery, including achieving the following delivery milestones: Adapting to a changed environment After the immediate crisis of the pandemic passes, there will not be a full reversion to previous heavily co-located models. While clients may revert to critical new products or applications being delivered through locally located agile teams, the majority of work will remain in distributed models. Infosys is accordingly continuing to invest to further develop its capabilities to address these changing demands. The Lex digital learning platform enables rapid training and communication of new methods for talent development. And, while many IT services providers are dialing back or freezing hiring, Infosys is recruiting agile transformation consultants to drive further adoption of agile principles. Other focus areas where it is investing for the post-pandemic world include: As the world emerges from lock-down, Infosys is laying the foundation to continue to evolve how it delivers distributed agile development services. While there will be no going back to the pre-pandemic business environment, there also isn't a single end state target either. Distributed agile will play an increasingly core role in application development services and Infosys is looking to ensure it has the capabilities to meet client needs, regardless of the form they take.
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Education Industry: Set the Curriculum With the Right Technology

"If we teach today as we taught yesterday, we rob our children of tomorrow" – John Dewey, educational reformer The education industry is turning John Dewey's vision into a reality by investing in technology that is enabling them to deliver learning that is truly modern, innovative and meets the next generation needs of the industry. Changing demands for education: Open to All, Any time, Any place Learning is no longer restricted to formal structured programs or to the young. Learning throughout one's career to keep pace with new concepts has become a necessity. Connected devices are transforming the learning experience with people learning seamlessly and collaboratively via different channels, through their phones, laptops and via social media. Rise in mobility and flexibility owing to global work environments, is creating demand for learning that can be availed on the go. The above trends have led to new disruptive services like virtual classrooms, digital assessments, advanced learning tools, digital tutoring, gamification of learning, adaptive learning and hybrid learning environment. Technology to Help the Education Industry Realize the New Business Trends Reinventing credentials for effective matching of skills and jobs Digital Credentials using Blockchain Student success and personalization Predictive analytics and nudge technology to "push" students into making better decisions Cyber Security in Education Next Generation Security to address challenges of privacy and security in a data driven ecosystem that is dominated by new mergers and business models Robust education ecosystem that benefits students, teachers and parents Conversational AI can be anything from a teacher's assistant to a campus buddy Universities graduate to offer more value New expectations have encouraged universities and education providers like Khan Academy and Coursera to invest in technology to provide learning like the MOOC (Massive Open Online Courses) that is available on demand, can be customized and adapted to the pace of the learner thus providing greater value for money to the students and creating new revenue streams for the providers. The acquisition of Kaplan University, an online learning platform company, by Purdue University in 2017 is a good example of a new business model where a state funded institution is attempting to widen its reach in unconventional ways. Another American institute, the Brown University is investing in Digital Classroom, Cyber Security, and Analytics to offer tools that are more user-centric, collaborative, and innovative in powering greater levels of engagement throughout the university. Universities are also revisiting their curriculum, making them more consumable, addressing the needs of the non-traditional learners' for individualized learning, and promoting collaborative learning that is better aligned to the job market. New delivery models are coming into play including online, on campus, and hybrid. Use of web based tools and methods to design new online courses, developing new teaching practices to help include digital content into regular curriculum and

exploring alternative teaching channels are strategic decisions that education providers are taking. Newer Technologies for better education and business outcomes Though slow to adopt, educational institutions have finally started to embrace technology, however there is still a lot they can do. Key technologies such as Digital Credentials, Digital Assessment, Next-gen Security, VR/AR, Blockchain, and AI conversational interface (ChatBots) can help them do more. Know more at the Infosys - Navigate Your Next. VR and AR open the door for interactive learning with 3D models giving students as near an experience to 'doing' things. Gamification makes learning fun and easy encouraging healthy competition amongst learners. Digital Assessments are learning oriented, encouraging student participation and peer reviews. ChatBots assist teachers to focus more on giving personalized attention to students while it takes over tasks like grading tests or designing personalized learning programs. Innovation in education is not restricted to only providing new ways of learning but it also includes applying technology to solve business problems in the industry. For example, using cognitive intelligence to predict which students enrolled on a trial subscription are more likely to convert to paid subscription, in order to plan more ad-spend to achieve higher retention rates. Another example is identifying students who are likely to struggle in a graduate school, based on their financial background, nationality and academic record to tailor intervention programs that can help them during the application process. To deliver next generation needs, universities will have to invest in implementing or upgrading their aging technology infrastructure. This opens up opportunities for education service providers in the areas of: SAAS solutions for managing Universities/ Schools – IT departments of educational institutions are usually small; SaaS provides an option to scale up without the additional burden of management. SaaS solutions offer virtual management of academic processes that is cost effective and supports cloud-based learning accessible on any platform connected to the internet. Learning platform connecting students, teachers and parents – Learning platforms are key to managing the education workflow. It allows sharing of content (submission of work, giving out grades), drive discussions (on forums), host live videoconferencing (via mobile phones). New age platforms are offering higher interoperability, native web hosting capabilities, mobile support and more. Universities should take a relook at the options available today. Case management for Student Lifecycle Management or Student Information Systems (SIS) – The average SIS in any institution today is old and hinders the adoption of new models. In many places, operations work in siloes threatening data integrity. Integrated systems that can provide end to end solutions to enhance efficiency are emerging as a popular choice. Online, hybrid, and pervasive learning techniques - Educational institutions and platforms are collaborating to deliver education through different channels and formats and addressing needs like cultural sensitivity, learning through authentic situations, micro learning, problem-based learning, learning by playing etc. At Infosys we believe, education is a catalyst to creativity, innovation, and finding new ways to solving problems. Educationists need to learn new ways of driving not just delivery of education but driving better value for the whole industry.
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Fourth Industrial Revolution: Calling For A 'Growth Mindset' Over A 'Task Mindset'

----- Arcticle source ----- https://www.infosys.com/insights/human-potential/fourth-industrial-revolution.html ----- Insights Human Potential The World Economic Forum predicts five million jobs will be automated by 2020 (The Future of Jobs, Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution, 2016). Furthermore, research by Frey and Osborne (2013) predicts, 47 percent of the total jobs in the US are in the high-risk category and could be automated or computerized within the next 20 years. Some of the facts, figures, predictions, as well as Hollywood productions (Westworld, Transcendence, Interstellar), have many of us fearful of the impact of artificial intelligence on the future. However, never underestimate the power of human potential. The debate about technology impacting work is one that goes back hundreds of years. In 1776, Adam Smith wrote 'The Wealth of Nations' in which he described the division of labor - a separation of different tasks for different people in order to improve efficiency (1776). During the (first) Industrial Revolution (1760-1820), jobs were being 'automated'. Productivity increased with the invention of the steam engine and by allocating specialized tasks to workers. Now, one can only imagine the fear in the 1800s of "what will happen to me with this new technical advancement?" But indeed, society survived and even thrived. In the Second Industrial Revolution (1870-1914), the railroad, telegraph and machine tools were invented. In 1930, John Maynard Keynes noted, "The increase of technical efficiency has been taking place faster than we can deal with the problem of labor absorption" (Keynes, 1933). Keynes predicted "widespread technological unemployment due to our discovery of means of economizing the use of labor outrunning the pace at which we can find new uses for labor". And yet, here we are approaching the Fourth Industrial Revolution. Scholars (Levy & Murname) pose four questions for this new age: Key skills, the World Economic Forum has identified will be in demand in 2020 are: complex problem solving, critical thinking, cognitive flexibility, mathematical reasoning, and active learning. And I would add, beyond skillsets the need to bring about a shift in the mindset, encourage a 'growth mindset' over a 'task mindset', and increase an individual's agility to learn. But how? How do we all become learners? One of the ways is to actively experiment, make, and create. The mindset and behavior of design thinkers are geared to focus on human values, have a bias towards action, embrace experimentation, to show and not merely tell, craft for clarity, be mindful of the process, and be radically collaborative. With the understanding of the trends on the future of work and impact of AI, and an invitation to make with robots at the World Economic Forum - Annual New Champions Meeting in Dalian, China, I set out with a Hummingbird kit to build a robot with the help of my 10 year old niece. The Hummingbird Kit by Carnegie Mellon that I will use to coach executives in China is 'child's play'. Although children often learn by experimentation, we adults like to have a plan. (Spaghetti and Marshmellow challenge anyone?) But it's through experimentation, in a safe place, that we can actually learn. When we first opened our Hummingbird kit, the

directions were not included, and so we installed every sensor, server, LED light and turned them all on to figure out how it worked. We googled 'hummingbird robots' to gain inspiration on what others had developed, and then together set out to develop a robot designed for and by a 10 year old girl, with the help and awe of a leader in tech. Change is always a bit scary - imagine seeing the first steam engine. The invention of the switchboard, electronic typewriter, spellcheck, home computer, etc. You may have been one of the individuals that crossed the technology chasm as an early adopter, or you may have waited and watched the on others and then joined in. Innovation and invention happen because of people, our unique creative abilities to grasp change, and improve upon it. As we enter the Fourth Industrial Revolution, may we all reach our own next level of potential - let the robots do some of the routine work and let us be creative and have a bit more fun. #YayRobots. =====================

Digital Transformation and the Forgotten Frontline Worker

----- Arcticle source ----- https://www.infosys.com/insights/human-potential/ frontline-worker.html ----- Insights Human Potential The need to re-engineer the workplace has never been greater as businesses try to navigate the current pandemic. However, companies too often miss one critical aspect: the frontline workers. Comprising nearly 80% of the workforce, these employees are the foundation of almost every industry. They range from luggage handlers, receptionists, hospitality staff, and other customer-facing service workers to on-the-run task workers, such as drivers, shop floor supervisors, and factory employees. Despite the critical role they play in the success of their organizations, these core workers are largely left out of technological innovation planning. A Forrester study found that only 23% of frontline workers say they have access to the technology they need to be productive. Most solutions designed to make office workers more agile and provide them with secure access and collaboration tools rarely account for the needs of the rest of the workforce. This often creates a disconnect between the corporate vision and frontline results — reducing the digital dexterity of frontline workers and restricting their ability to collaborate. Furthermore, many workplace transformation initiatives are planned and executed in silos, without input from the entire team. When important stakeholders are excluded, the change-management committees make decisions with an incomplete — and sometimes misleading — understanding of their organizational structure and workforce requirements. This can lead to dueling governance between managers and the transformation team — a tug of war that no one truly wins. A more inclusive and comprehensive approach can not only head off these disputes but create new opportunities for cost optimization, productivity enhancements, and overall profitability. To succeed, however, managers need to understand both the roles and capabilities of their workers before they design, prototype, test, and deploy solutions. Organizations need to address the following questions: After addressing those issues, companies can deploy chatbots, voice assistants, machine translation, and mobile device management. These technologies —

often provided through subscription-based software services — enable employee applications to be smart, agile, and context-aware. In addition, they launch intuitive interfaces at the required time, often without user action. Advanced technology, combined with comprehensive vision, can truly transform a workplace. Examples include: Unified experience for frontline workers Almost every industry benefits from an increased commitment to technology that empowers frontline workers. Infosys implemented this approach for a leading mining company that lacked the digital collaboration it needed, particularly among its field workers. Those frontline workers were traditionally disconnected from the organization in a number of areas, including communication, adoption of enterprise applications, and access to company information. The result of this partnership was an app that provides a one-stop solution for offline viewing of document repositories, communicating with managers, and logging timesheets. The app's personalization features, location awareness, and voice commands provide an improved user experience. When the app was updated with low-latency features, such as offline content viewing, adoption by frontline workers increased by 40%. Reimaging the workplace The true impact of workplace transformation can only be unlocked if the best interests of frontline managers and employees — however big or small their contribution — are aligned with those of senior executives. To succeed, leaders need to ensure that their initiatives take into account the entire workforce, address their organization's specific needs, and can be scaled up effectively. This is particularly crucial now as companies speed up their efforts to launch products, expedite processes, and match the pace of the evolving market.
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A Window to the Future Workplace

----- Arcticle source ----- https://www.infosys.com/insights/human-potential/ future-workplace.html ----- Insights Human Potential If you go back twenty years, the technology we had at our workplace was far superior to what we used in our personal lives. However, today the tables have turned. My personal devices are far superior to my workplace devices and one of the key reasons is the mammoth undertaking that organizations have to take just to remain current on technology platforms and devices. Let's talk about one of the most fundamental software pieces we use at work. The Operating System (OS). Specifically, Windows because even while it is thirty-three years old, it is still the most popular OS for desktops. With ten major version updates, Windows has managed to keep pace with workplace modernization. But does it cater to the new millennial employee or the workplace transformation strategy of the new digital enterprise? With 'Windows as a Service', upgrades are no longer an evil necessity but a background process that can be managed with ease. Stopping to Change the Tires In the digital world, employees take technology for granted. They expect the latest tools as part of their work environment to help them work better and faster. Not just that, digital makes them impatient and demanding. They seek new features and functionalities as they find new needs or areas of improvement in the workspace and they are not willing to wait for years. They also don't like being interrupted…..they hate to stop to change old tires. Similarly, a

digital enterprise would rather avoid a full scale upgrade project for something as unassuming as an OS, when they could actually be spending the time on something that brings more value. Unfortunately, every few years, the IT department is compelled to send out mails to employees asking them to switch over to a new version of the OS. Teams complain through weeks of migration. So how would it be if the system could be updated on a continuous basis with minimum interruption and more frequent updates. Windows as a Service for Non-Stop Employee Engagement and Productivity In any digital transformation, the 'as a service' model has worked well when it comes to using hardware and software. The use of Windows and the related workplace technologies is now available as a service, enabling organizations to modernize their workplace on a continuous basis with maximum security and the best user experience. Traditionalists may argue about the good old days of buying and forgetting a software product for years before the next version change came along. But in a world that's changing by the minute because of new demands and possibilities, moving to a technology that allows you to not just add new features more rapidly and frequently but also lets you participate by way of testing and providing feedback opens the door to new opportunities. The rise of multiple devices, hacking incidents, need for data-driven insights, flexibility in communication and easy management capabilities call for an intelligent and integrated workplace technology. Unfortunately, while Windows as a service absolves companies of driving time consuming upgrade projects, it still requires managing the upgrade as a process. Organizations need to think about managing the frequent releases and rollouts, application compatibility and impact, and change governance and management. The Windows 10 & Office 365 Pro Plus continuous servicing has to be managed as a seamless process for organizations with a well-defined governance and change management. Fortunately, that's a lesser challenge that can be addressed by collaborating with the right technology partner. To know more about how you can modernize your workplace landscape on a continuous basis, look out for our upcoming Infosys PoV on Windows as a Service at Infosys.com.
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A Quick Cloud Solution

----- Arcticle source ----- https://www.infosys.com/insights/human-potential/getting-global-learning-double.html ----- Insights Human Potential While 'move to cloud' has been an industry catchphrase for several years now, most enterprises are still waking up to the mainstream opportunities cloud can offer for digital transformation. With lower costs and speed requirements growing in importance, the shift of enterprise workloads to the cloud is only just starting. An oil and gas company wanted a nimble, easy to use hosting solution for content for a global learning fair that had to be operational in two weeks. See how Infosys helped and the five key takeaways from the project. =====================

How Can Workers Stay Relevant In A World Dominated By AI?

----- Arcticle source ----- https://www.infosys.com/insights/human-potential/how-can-workers-stay-relevant-in-a-world-dominated-by-ai.html ----- Insights Human Potential Just like life on earth, the world of work has been changing down the centuries. Most of the time the change is so small, incremental and slow, that we are oblivious until it takes the shape of something that we are able to grasp, and we begin to 'see' the evolution. But every once in a while, into this landscape, comes a sudden 'Cambrian Explosion' – a relatively short geological period over which a rapid diversity of new lifeforms appeared – that demands our attention, and more significantly our ingenuity, to adapt to it. The advent of metal tooling, the discovery of electricity, the spread of machines that industrialized labour and the advance of computing - each of these leaps has demanded that we adapt as workers, learn new things, pick up new ways to be productive and reap the rewards. Today we stand at the brink of another dramatic change, the advent of artificial intelligence (AI): software-driven machines that have learned to process unstructured information meaningfully, something that until recently we imagined was the domain of humans alone. Think, just a decade or so ago, how impossible it seemed that driverless cars would navigate safely alongside unpredictable humans through the winding roads of our cityscapes. Today the spread of AI barely raises an eyebrow, to the point that we are growing increasingly comfortable with keeperless shops, tutorless classrooms, bankerless trading and even doctorless surgeries. So, as enterprises and businesses, what do we do with our people now? What do we all need to learn and teach in order to equip our people with the skills necessary to remain relevant in a world in which AI has just ushered in another Cambrian Explosion? There are no pat answers. But smart, nimble-adapters have a plan. Mind the skills gap To become future-ready, it's obvious that as organizations we must look at emerging areas in AI and other advanced technologies that can create competitive advantage and generate value. And this must be mapped within specific individual contexts, so we can create our own framework with which to evaluate which skills we need to disinvest in, and those in which we need to strengthen and deepen our expertise. This is best complemented with a skills-forecasting model to generate an estimate of skill-wise, demand-supply dynamics that can aid in preparing a talent plan and then making build vs buy decisions for each skill. Cultivate expert generalists As a culture, we must welcome, appreciate and reward the expert-generalist so that they begin to populate our workforce in greater numbers. These are people who study widely in many fields and then apply it to multiple expertise areas. They are highly trainable, volunteer for challenging and diverse project assignments, find connections between seemingly unrelated concepts and are curious and open to new experiences and uncharted territory. From having depth of expertise in one area, and a broad breath of knowledge - the T-shaped profile - our workforce must in future be led by these expert-generalists, who have a more comb-shaped profile - a broad interest base along with multiple expertise areas. Grow more teeth for those combs To help the workforce evolve from being T-shaped to comb-shaped, we must create

structured learning paths and then reward progress made along them. Learning-related skills must become a necessary criterion for career progression, and skill levels must be actively measured in terms of the impact generated. Client feedback, industry endorsements, patents, research papers, the ability to train others and demonstrable instances of cross-pollination of ideas are good indicators of proficiency. Stitch learning into work Many emerging skills of value cannot be easily taught in a classroom, let alone online. Making learning an integral part of all processes and encouraging employees to share this learning is likely to work better; think of it as instituting a 'learning bank', crowd-authored by the workforce. Learning can then be self-directed, bite-sized and continuous. Massive open online courses (MOOCs) and Open Educational Resources are powerful tools that can aid in this process. When combined with internship projects and job shadow opportunities, people can put their new skills to test in practical ways. Keep 'em moving Talent mobility greatly accelerates skill development. We need to build programmes, support systems, rewards, and tools to help people move from job to job within our ecosystem. Some first steps can be as simple as: The Cambrian Explosion was a 56 million-year period that saw unparalleled growth in the formation of new species. One possible explanation for why it took place is the evolution of the eye. The ability to spot an opportunity - and to see danger approaching - might have been the reason for this explosion of new lifeforms. It is within us all to see and succeed. And learning – continuous and deep – can help us see beyond our todays, and pave the way forward into a tomorrow where our continued relevance will make us more purposeful. This blog post was first published on the website of the World Economic Forum>>
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Learning to Be More Human: A Skills Mandate for 2020

----- Arcticle source ----- https://www.infosys.com/insights/human-potential/human-skills-mandate2020.html ----- Insights Human Potential There is a tectonic shift in the hiring landscape, with employers set to favor 'human' skills like creativity over process-oriented skills like quality control. We explore its potential effects and how organizations can respond to this new paradigm. The services industry is undergoing a radical, under-the-radar transformation of its skills and capabilities. Amid the market changes triggered by the Fourth Industrial Revolution, we are witnessing a notable shift in skill-priorities as the line between the roles of people and technology in organizations continues to blur. This is more than just an observation. In its 'Future of Jobs' report, published in February, 2016, the World Economic Forum (WEF) detected a change in the skills requirements of the digitally-enabled service economy as follows: While the two lists look similar, the few differences between them are critical to changing the job market over the next few years. Amid constants such as 'complex problem solving' and 'people management,' we see skills like 'quality control' (number six in the 2015 list) and 'active listening' (number nine in the 2015 list) — which are currently in demand — becoming far less important by the end of the

decade. On the other hand, by 2020, skills such as 'emotional intelligence' (number six in the 2020 list) and 'cognitive flexibility' (number ten in the 2020 list) are expected to be far more critical to business needs. This shift in required skills is not about developing new capabilities in order to use technology, but rather a reflection of the growing autonomous role that technology will have in the next few years. Rather than devaluing the importance of quality control, the WEF data reflects the increased role of machines and technology in dealing with quality control functions autonomously, with artificial intelligence enabling self-diagnosis and self-healing. Companies are veering away from paying humans to perform 'checking' and 'fixing' functions now that they can be reliably and efficiently handled by machines. Similar scenarios apply to skills like 'active listening.' Companies now realize that listening must be paired with the appreciative and empathetic responses that characterize emotional intelligence, rather than being a skill in isolation. Future service delivery will require a combination of physical behavior (listening), intellectual activity (analysis and problem solving), and on-target emotional response to be truly effective and to help companies stand out from the crowd. Superior service demands agility, which is why we are seeing 'cognitive flexibility' emerge as a top 10 skill for 2020. Who hasn't been infuriated by a call center agent who seems capable only of reading a script, rather than answering your specific question? The user experience all of us now expect is an on-demand, personalized, and conversational one. Service providers must be able to think on their feet and seamlessly shift gears between intellectual activities and possible solution sets. While some industries are rising to the challenge, it is not enough. These are not skills that can be easily taught in a classroom, let alone online. They require on-the-job training in order to establish context and real-world cognitive responses. Shrinking training budgets are mostly targeted at issues of scalability, speed, reusability, and automation in learning programs. These are good attributes, although not conducive to developing deep, compound, multifaceted, experiential skills such as emotional intelligence and cognitive flexibility. Millennials have extremely short attention spans for in-depth training, and most new technologies are so intuitive that they eliminate the need for it. Consequently, companies are getting rusty in developing and delivering complex, in-depth training curricula. Collectively, we are now finding innovative solutions to our tactical training needs. Today, we use 'Massive Open Online Courses' (MOOCs) to enrich our employees' knowledge, gamification to drive near-term tactical changes, and even artificial intelligence to power interactive online content with many of the same attributes as personalized instructor interaction. However, things like emotional intelligence or cognitive flexibility are closer to a 'practice' than a skill and so require a degree of instinctive reaction or 'muscle memory.' They are built through successive cycles of insight, application, feedback, and internalization. A current Infosys learning program for a similarly complex area — Design Thinking — offers some ideas on how to achieve this in organizations. Like emotional intelligence or cognitive flexibility, Design Thinking requires a shift in personal mindset alongside retraining conditioned responses. It insists that before rushing into problem-solving, we pause to reflect on and explore the real needs and emotions of users. This is so that we can approach the designing of solutions from a human-centric angle, rather than a process, technology, or financial one. It also

requires us to abandon our fear of failure and criticism, and open ourselves up to successive cycles of prototyping, testing, and feedback. This, in turn, allows us to optimally tune a solution to the real-world needs of the target user. It is a complex, compound skill that combines listening, empathy, creativity, facilitation, prototyping abilities, and more. It is also something that Infosys has trained over 100,000 employees in, over the past 18 months. We have not only taught them how to complete a design exercise, but also sought to reframe their entire approach to problem-solving and client interaction. Doing this called for a combination of face-to-face instruction, continuous on-the-job practice and application, and creation of a supportive and reinforcing environment. Design Thinking has enabled our organization to remove internal roadblocks, improve client service, identify new technological innovations, and help clients improve their own agility and innovation. We believe this four-part approach — involving instruction, practice, ongoing application, and creation of critical mass in a supportive environment — is essential to building this complex skill. A similar approach is necessary when organizations tackle the development of emotional intelligence or cognitive flexibility skills. On a final note, we see one other fascinating influence on the development of deep, compound skills — mindfulness. It inherently helps develop intellect, emotion, self-reflection, curiosity, openness, and other attributes, all of which fuel emotional intelligence and cognitive flexibility. A decade ago, the topic of mindfulness was reserved for a spiritual or meditative practice. Today, there are entire conferences dedicated to mindfulness in business, and mainstream companies are investing in introducing mindfulness training in their organizations. Google, LinkedIn, Facebook, Aetna, Ford, Eileen Fisher, Twitter, Slack, and Kaiser Permanente, for starters, have all spoken publicly on this topic and on the positive impact it has had on their organizations. These companies alone showcase the mainstream nature of mindfulness in modern business. The top 10 skills the workforce and employers require as we approach 2020 are not in the realm of technology. Instead, they reflect the need for better interaction between people. It's a great time for all of us in the world of business to rethink how we will develop the complex, compound skills required to meet customers' rising expectations on service and user experience, and to support our employees in building them. Saadia Zahidi Member of the Executive Committee and Head of Education, Gender and Work Initiatives, World Economic Forum, Geneva "Regardless of the job you are in, expect to face pressure to constantly modify your skills. Across nearly all industries, the impact of technological and other changes is shortening the shelf-life of employees' existing skill sets. What's more, in this new environment, a change in business model often translates to a disruption in skill set almost simultaneously and with a minimal time lag. Even jobs that will shrink in number are simultaneously undergoing change in the skill sets required to do them. On average, by 2020, more than a third of the desired core skill sets of most occupations will be comprised of skills that are not yet considered crucial to the job today. In addition, technical skills will need to be supplemented with strong social and collaboration skills. The pace at which this evolution is progressing will require everyone to adopt a new training mind-set, requiring to upskill or reskill through lifelong (continuous) learning." =====================

How Large Enterprises Find Their Entrepreneurial DNA

Insights Human Potential Such statements comprise the common lore around entrepreneurship. But these are premised on a fundamental lack of understanding of the term. Entrepreneurship represents the ability to find and solve grand challenges with unwavering commitment and the zeal to surmount obstacles. It is not a product or privilege exclusive to startups but a quality that large companies can nourish. Some of the most venerable Fortune 100 companies continue to pride themselves on their cultures of entrepreneurship. Lockheed Martin jealously guards its famous and now eponymous Skunkworks. Corning, founded in the early 19th century as a glassmaker, has thoroughly reinvented itself with entrepreneurial thinking and now manufacturers technologically advanced fiber optics; Apple continues to woo the market with new products and experiences, even as pundits argue that the company is at the end of the road of innovation and growth. In the wake of technology-driven disruption of business models, large organizations the world over, are trying to reinvent themselves by invoking the 'can-do' spirit that fills the offices of scrappy start-ups. This involves unearthing the entrepreneurial DNA in established and sometimes stodgy enterprises. But what is this entrepreneurial DNA? How does one find it? How does one establish it and cultivate it in a large organization? Before finding the answers to these questions, it is important to examine, even if briefly, the different forms of entrepreneurship that exist today and some lessons we can learn from each of them. Everyday or Operational entrepreneurship is about identifying and exploiting opportunities for value creation. It is not the prerogative of a chosen few in the organization but needs to be ingrained across the board. Here are a few simple examples of Everyday Entrepreneurship: Needless to say, Everyday Entrepreneurship thrives in a culture that is driven by a spirit of experimentation, a reasonable tolerance for failure, and an earnest desire towards identifying the right problems that needs to be solved. And such a culture, like any organizational culture, cannot be limited to pockets. This is easier said than accomplished. Only a few companies such as IBM, Motorola and Cargill have successfully established formal organizations within themselves to pursue business interests that lie outside their immediate horizon, and in turn have grown their topline. To illustrate the case, let's take IBM. In 2000, it started the 'Emerging Business Opportunities' or EBOs to identify and go after business opportunities in the offing, even those that represented the completely uncharted waters for the company. Project EBO was started at the behest of top management, in response to IBM's inveterate inability to leverage emerging business trends, sometimes despite having had a head-start. The leadership realized that it was essential to establish a systematic approach to identify and focus on new business opportunities. A rigorous process was put in place and some of the star performers in the company were summoned to execute Project EBO. In order to acquire the status of an EBO, a potential business must fulfil a number of strict criteria: It must closely align to the company's strategy, leverage cross-business opportunities, explore new business models and

capabilities, show billion dollar potential revenue within two to three years, hold explicit potential of market leadership, and profitably sustain itself. EBOs worked like a charm and reinstated IBM as a market leader. A lesson to note from the IBM success story is that frameworks, tools, systems, along with senior management intervention are essential to instill a new culture in a short timeframe. Corporate entrepreneurship could very well be the shot in the arm for large organizations, which have become bureaucratic over time. Such entrepreneurship is all about constantly exploring the frontiers of business and technology. America's DARPA – the Defense Advanced Research Projects Agency, which has fostered the creation of everything from the Internet and GPS to night-vision goggles and freeze-dried dinners is the epitome of breakthrough innovations in a sustained manner. It is widely held that DARPA's success is near impossible to clone in large organizations. Characterized by three coveted tenets – taking on grand challenges, creating world-class "special forces" teams, and maintaining significant autonomy from its parent organization – DARPA's model is challenging to replicate, but certainly not off limits for large organizations. Motorola has successfully deployed the DARPA model in its Advanced Technology and Projects (ATAP) group – or the "Mad Science" department. Instituted within Motorola in 2012, ATAP's famous inventions include the highly customizable Moto X phone and a modular phone with 3-D printed parts. With murmurs about ATAP diversifying into other areas, including digital tattoos and sensor pills, it is no surprise that Google chose to retain ATAP while selling Motorola Mobility to the Chinese electronics major, Lenovo, early last year. The world of technology is filled with brilliant innovators, whose products or services stand to create huge new markets. That is when larger enterprises, sitting on significant cash hoards, swoop in and acquire the innovative start-up – usually with a codicil that dictates the start-up's autonomy and entrepreneurial culture be preserved at all costs. The social media giant Facebook, for instance, acquired Oculus Rift for $2Bn. Facebook believed that beyond playing first-person shooters and flying spaceships, the virtual reality device could reinvent meetings, messaging, social events, and more. Facebook was willing to place a big bet and make the acquisition. Likewise, Facebook paid over $19Bn for WhatsApp because they saw immense value in the messaging service. Facebook is demonstrating that it is willing to pay a premium and take a risk with firms that are sometimes unproven or untested. The value of these acquisitions are based on a vision of the synergies to be realized between the two firms and the time to market advantage the acquisition creates. However, these are big bets and could go wrong as well. Success in such acquisitions depends on how well the acquiring company executes on the vision for the product and how smoothly the two companies integrate. In many cases, like in the case of Oculus Rift, the acquirer may let the acquired company retain independent operations. While the existing forms of entrepreneurship discussed so far have achieved various degrees of success, none of them suffices by itself to transform an organization into a truly entrepreneurial one. Everyday Entrepreneurship may, over time, be relegated to incremental innovations; Divisional Entrepreneurship and Corporate Venturing will only create niche success stories, excluding the rest of the organization; acquiring an entrepreneurial venture will also be wrought with similar issues, including inadequate cultural integration between the two companies. Based on our work across industries, we

believe that unleashing the entrepreneurial DNA uniformly across an organization calls for a holistic approach, which span three important aspects. Examining thriving startups and similar ventures reveals that a healthy balance across four key dimensions of business is instrumental to their success. An organization with highly motivated and talented employees can do little if the overall business focus is not balanced across these dimensions: As organizations envisage their teams to unleash entrepreneurship, it is critical to ensure that the teams working on key problems leverage the complementing competencies of Desirability, Viability, and Feasibility. Entrepreneurship is not merely about finding solutions to existing problems, but also about finding the right problems to solve. Design Thinking, which has been leveraged by designers for many years now, provides an empathy-led, customer-centric method for enterprises to discover the real problems facing end-users. Design Thinking is also a methodical approach to increasing the creative confidence of employees who are operating in an environment filled with ambiguity as well as opportunity. Design Thinking introduces tools to break the shackles on imagination, and build conviction by moving quickly in small steps, by learning from failures, and by building on successes. When a person has creative confidence, she is not only able to leverage her domain knowledge, but is also able to articulate a vision, engage rapidly with stakeholders, make quick decisions, and succeed in new opportunities without being discouraged by early failures. At Infosys we have embarked on a unique journey of embracing Design Thinking as a fundamental way of doing business – every consultant rethinks how she can deliver breakthrough value to customers, every developer rethinks the way she writes code, every employee in finance/accounts rethinks how every interaction with employees can be made delightful. We are also conducting Design Thinking workshops for our clients. In the end, finding your organization's entrepreneurial DNA is a journey that is not only about solving the business problems of today but also about ensuring that the firm flourishes amidst business disruptions that are yet to happen. There is no single formula that will work like magic for all - every organization needs to discover the solution for itself. However, this solution must encompass the aforementioned Right Business Focus, Right Environment and Right Approach to Finding Problems. Download article ======================

How Impactful is Your Organization's Learning

----- Arcticle source ----- https://www.infosys.com/insights/human-potential/ impactful-organization.html ----- Insights Human Potential "An organization's ability to learn and translate that learning into action rapidly, is the ultimate competitive advantage" by Jack Welch, former General Electric CEO The structure of organizations and jobs are changing as artificial intelligence, machine learning, robotic process automation and other digital capabilities are overwhelming the workplace. We can no longer be certain of the jobs we will be doing in the future or the kind of organizations we will be working in. It therefore becomes imperative for employees to constantly learn new skills

and develop capabilities that will make them ready for the jobs of the future. Fortunately, the same technology that is causing this upheaval in the world around us, can be a great enabler in maximizing the impact of learning initiatives. An intelligent learning solution that is flexible and convenient to use, supports interactive and intuitive learning experiences can transform the talent of an organization to be more productive. Sadly, training in its current form, is most often viewed as an 'interruption' to an employee's work. Enterprises regularly have shiny new courses designed to meet the demand of a business unit that is focused more on content than on competency and is driven primarily by organizational mandates than by motivation. We must remember that learning has no impact unless it translates into successful employee engagement and change in learner behavior which, in turn, furthers an organization's business objectives. The need of the hour is therefore to bring learning into the workplace as a continuous process that is convenient, relevant, and appealing enough to inspire employees to be self-motivated lifelong learners. How can we seamlessly incorporate learning into an organization's ethos such that it becomes a continuous structured process that is well integrated into the work of an employee? Where leaders are not just 'sending' people to get trained but where the organization fosters an environment of continuous learning, inspiring employees to self-initiate their own learning paths. An Evolving Learning Experience for Maximum Talent Productivity In business and learning, time is of essence. The success of an organization is determined by the ability of their talent to learn, unlearn, and relearn as business models and technology changes by the minute. Enabling learning at an individual's own pace, place, and convenience frees the learner from the boundaries of classroom and time while optimizing productivity. Employees have different learning needs. Some need only information, others need help with understanding. Hands on application of skills work the best for some, while simulations provide the necessary platform for others. Using machine learning and AI capabilities to identify the right mix of these needs to provide appropriate recommendations and tailor a dynamic and personalized path of learning for individuals based on their job roles, existing talent, and skill can make learning a very engaging experience, thus creating maximum learner impact. It is important to recognize that learning can happen outside the training rooms. Collaborating with peers and interacting with subject matter experts can sometimes be more insightful than presentations. Similarly, it is important to look at a content curation approach that will help leverage the internal enterprise content and best in class external content and channels for more holistic learning. A learning program that offers a choice of different formats, learning mechanisms, and collaborative platforms can maximize learning effectiveness. Infosys is reputed for its world class training infrastructure in all its locations with the highlight being the Global Education Centre, Mysore where approximately 14,000 employees can be trained. The Education, Training and Assessment team offers over 1500 courses for its employees and has been catering to the evolving learning needs for over 3.5 decades. With this background, Infosys developed the next-gen learning platform imbibing these learning principles and launched it for our employees in April 2018. We have encapsulated the success of our learning platform and workplace transformation in a new next-gen business transformation solution, Infosys Wingspan, to help enterprises transform their existing talent into the next

level of skill and productivity. While we may put in place a learning strategy that takes into consideration all the above mentioned dimensions, it is important to understand that providing all the features alone will not help them drive their learning agenda. An objective-driven approach is essential to help learners stay focused on their learning goal. Analytics-based insights to assess performance and realign the learning path vis-a-vis the learning trends is something organizations cannot ignore. Last but not the least, learning should be fun. As the poet Alfred Mercier said, "What we learn with pleasure we never forget." Features like gamification, challenges, contests, choice of different plug and play modules can drive employees to seek more and more learning in different ways, motivating them to excel in their chosen field of knowledge. ======================

Infosys Offers Learning that Maps to the Industry Demand

----- Arcticle source ----- https://www.infosys.com/insights/human-potential/industry-demand.html ----- Insights Human Potential Various studies indicate that India produces almost 1.5 million engineers every year, almost 25 percent of the world's total output. While these numbers look impressive, unfortunately, in the recent past, questions have been raised on the employability of these new engineers. An assortment of studies shows that somewhere between 75 -95 percent of Indian engineering graduates fail to meet the industry's quality criteria. Interestingly, even with this low employability, India is recognized as a leading contributor to the IT industry, delivering both on-shore and off-shore IT consulting and services to global clients. Consider the impact India can make if these 75% to 90% of the graduates who have been labelled unemployable are up-skilled and join the workforce as industry-ready talent. We can boost not just the IT industry but drive growth and innovation in all allied industries as well. A Digital Learning Platform for the Next-gen Employees Infosys' extensive, world-class training program in technology for entry level hires is something that has emerged in response to the need to prime up the existing skill-levels of this important talent pool. We have digital platforms which offer learning seamlessly to our employees anytime, anywhere and on any device. We ensure our training stays relevant with content that is curated, contextual and dynamic. With the use of telemetry and statistics, we help learners track their progress and reach their daily learning goals. However, our next-gen learning platform imbibing these learning principles was available only to those who joined Infosys. We decided to take a radical approach to challenge this and the result is InfyTQ, a next-generation digital platform for skills training and corporate engagement that is available to every engineering student in India. An Opportunity to Learn Directly from the Industry InfyTQ, which is designed primarily for engineering students in India, seeks to establish talent readiness at an industry level by offering learning programs in IT along with assessments and certification. The courses and assessments are designed to train and enable the students on technology and professional skills such that they are truly industry-ready when they first join the workforce. Students not only get a chance to experience the Infosys'

training program first-hand but they can also get a view into the world of Infosys, with access to employee experiences, alumni stories, contests, news and other insights. They can access the platform both through mobile and desktop, although certain components such as active hands-on coding lend themselves better to a desktop. For Infosys, it's an opportunity to interact with the future technology workforce of India, provide them with training for skills that the industry needs and familiarize them with Infosys while still in college. We also have an opportunity to assess the capabilities of these students, so we are better equipped to make hiring decisions. Download InfyTQ from https://play.google.com/store/apps/details?id=com.InfosysIT.MyInfy =====================

Shaping a Better Tomorrow for Tech Talent with Infosys Industry-grade Certification

----- Arcticle source ----- https://www.infosys.com/insights/human-potential/industry-grade-certification.html ----- Insights Human Potential It's a widely acknowledged fact that there is an urgent need for bridging the skill gap that pervades the IT industry today. Skills currently being taught in engineering schools have a shrinking shelf-life. Upskilling is the only way forward in an industry that is constantly clamoring for more advanced technical knowledge. There is also growing consensus that the onus of grooming engineers to be job ready doesn't just lie on formal educational institutions. The industry too needs to play its part. Catching them young In an effort to bridge the widening knowledge gap between education and industry, companies are overhauling their recruitment strategies. They are investing copious amounts of time and budgets on training new hires in highly specialized areas that they will require on the job. While this is important, the larger issue at hand is that of catching them young. A strong grasp of the fundamentals of programming is important regardless of the domain they choose in the future. Therefore, the primary goal is to enable budding programmers to master contextualization in coding – the art of infusing their theoretical knowledge into practical solutions for major business problems. This has precisely been our pursuit with the recently launched InfyTQ app, a unique online learning solution with quality material completely developed, curated and provided by Infosys. Through this digital medium, we are successfully disrupting conventional training models and have made inroads by preemptively tapping future engineers to be industry-ready well before they attend job interviews. In just three months since its launch, InfyTQ has garnered nearly 300,000 registrations. Over 2 Lakh are from the batch that will graduate in 2020. On an average 15,000 students are logging into the app every day and are spending an average of 20 minutes learning and engaging with us for mentorship and encouragement. Certification as a launchpad Encouraged by the enthusiastic response, we have introduced industry-grade certification assessments to the course. Our courses have been designed taking into cognizance the fact that learning has made its way beyond the bounds of the classroom and millennials learn

best with flexibility and time on their side. After the completion of a series of real-world assignments in the course, students will put the amalgamation of their learnings to the test at the time of certification. The first of these kicked off in early June at the Indian city of Vijayawada with participation from over 1,000 students from across the country to earn the title of Infosys Certified Software Programmer. Other examination centers in the country include major cities in the states of Gujarat, Telangana, Tamil Nadu, Maharashtra and Uttar Pradesh. The team also organized several sessions to answer queries from the registered students to boost their chances of achieving certification. Learners on InfyTQ also have an advantage over others for the certification exam; the certification assessments will be based on the four foundation courses available on the app. These, we believe are the most essential foundational areas that students need to know in order to chart a promising career in the world of IT. There are myriad training institutions in the marketplace that offer certified courses in specific subjects. In comparison, InfyTQ offers curated content in a learning-by-doing mode and in an anytime, anywhere environment. The in-depth knowledge imparted in most essential areas that students need to build on, along with assignments and multitude of interim assessments help them find their feet in the competitive marketplace, helping them get ahead in their careers. While the certification is in fact endowed by Infosys, candidates are free to use it as a springboard to wherever their careers take them. After all, our commitment towards upskilling the next generation of Indian tech talent is not just for ourselves, but for the industry as a whole. Click here to download InfyTQ. Read more about the Infosys Certification in our FAQs section here. =======================

Experience a new breed of 'humane' systems with Infosys at WEF 2018

----- Arcticle source ----- https://www.infosys.com/insights/human-potential/ infosys-one-with-digital-lab.html ----- Insights Human Potential If you plan to visit the World Economic Forum #WEF18 at #Davos, whether physically or digitally, the book "Shaping the Fourth Industrial Revolution" is a perfect read. It not only educates you about the emerging and new technologies that will change our future but also brings thought provoking ideas on the steps we can take as business leaders, government bodies or just citizens to play an important role in shaping the impact these technologies may have on the human race. Lessons learnt from the 2nd and 3rd Industrial revolution show that we often pay for development with an unequal distribution of wealth or other 'inhuman' impact. We must learn to create systems that don't just think about saving costs or time but take into consideration human values in order to ensure development that is more inclusive and sensitive to the overall human welfare. Infosys One with Digital Lab at WEF18 presents a cool opportunity for people to check out their emotional mapping to the new/emerging technologies. Are we really making 'progress' when half the world is deprived? We need to learn quickly as the world is set to change

dramatically because of the rapid technological advances. According to a study, 50% of today's work activities can be automated by 2055. This could possibly impact human beings adversely compelling them to cope up with learning new skills. Klaus Schwab, Executive Chairman of the World Economic Forum, makes an argument that we can reduce the negative impact of technology right at its root by designing systems that are human-centric with bake in values as a feature and led by a process of Design Thinking. This is quite profound and extremely challenging to put together in practice. One could argue that Design Thinking led system development approaches can come to the rescue as a good foundation to begin with, but I believe there is much that is desired and needs to be built on top. We were eager to make a start and made an attempt at human-centric design and empathy - the two most difficult aspects of Design Thinking that is extremely hard to quantify and even harder to visualize. 'Infosys One with Digital Lab' – Rewire machines for a human feel We built the #OneWithDigital Lab to quantify and visualize human empathy. The purpose of the #OneWithDigital Lab is to begin a process and spark a debate about how we reconnect humans and systems focused on human values and empowerment. When we build digital systems, it's easy to just focus on maximizing profits and lose sight of their purpose: to amplify and extend human potential. Let's be more humane in our quest for development and this is the first step towards that. We illuminate what's happening at the cutting edge of technology by engaging our audience with content that aims to provoke an emotional reaction. We capture that reaction using emotion tracking technology and use it to discover how people feel about the next wave of technology. Are they comfortable with where we're heading: happy, angry, sad? The visualization of that emotional data is the endpoint of the experience. Each participant's experience generates a unique piece of art which they can explore and share online. This is only a beginning. Many such techniques need to come together to help us design and build systems that will help us achieve the benefits of the #4thIR without falling into the traps that our previous generations fell into. If you are attending #WEF18, stop by Infosys at The Escher, Promenade 115 to experience this first hand.
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A New Approach to Leading a Digital Enterprise

----- Arcticle source ----- https://www.infosys.com/insights/human-potential/leading-digital-enterprise.html ----- Insights Human Potential Digital leadership is a strategic mindset, a set of critical behaviors, a way of being and doing. Digital leadership creates a meaningful, transparent, and engaging learning culture. It considers ubiquitous connectivity and open thinking that dramatically shift how organizations are run and structured. It challenges the current models of leadership where knowledge and experience rule and title or position are key to making a difference. The old school of leadership is about the leader and not the organization or the team. The leader 'rules' and creates an environment of people-drones who are not encouraged to think but are expected to execute what the boss

wants. This impacts the most powerful potential of human minds namely the ability to think and create new ideas and solve problems. It is important for leaders in a digitally enabled enterprise to rethink their approach to leading a workplace where data is democratized and decision making is decentralized. Some key factors that leaders should take cognizance of to be successful in a digitally disruptive world are: A digital leader is first a human being.Though born in a technology enabled world which is typically devoid of human empathy or emotions, digital leaders need to come from a place of caring for the people in the organization. The most important part of an organization is its people. Leaders serve the people and not themselves. A digital leader, when bringing digital changes in the organization, needs to think about what they can do to make their teams better, happier, more productive and engaging in the new environment. Digital leaders are teachers, mentors, advisors; someone you strive to be and emulate. Digital leaders must be visionaries. Something successful leaders have in common is vision, and the ability to inspire others to believe in it. Digital leaders aren't just following technological trends; they are envisioning possibilities that don't exist yet. Sharing their visions and beliefs enable them to get the early adopters on their side, while giving the sceptics enough time to acclimate themselves to the new technology. A digital leader needs to walk the talk. They need to define organizational transformation within the organization's strategic vision. Be the beacon of all things digital… show, educate, share what the transformation will be like in the future. Leaders who are experts at communication and storytelling throughout the digital transformation process build engagement and win over employees. A digital leader's story needs to be compelling and relevant. Stories carry emotions, which help digital leaders connect to and motivate others. Digital leaders must be agents of change management. The "why" of a digital program within an organization must be integrated into the organization's overall vision and purpose. Digital is often perceived as an unwelcome disruption, as people fear the changes will affect their jobs, their future and the future of the organization. They need a convincing reason to get on board. They need to believe before they engage. They need to realize digital is the present and future. The leader can play an important role in managing and "selling" the change. Digital leaders must make digital a priority for the whole organization. Competing priorities have long been a top obstacle in digital transformation programs, which are in competition with other enterprise initiatives and as a result, are not always sufficiently resourced. Digital leaders must clarify the role of digital, secure the required funding and drive the organizational vision and long-term strategy. Digital leaders must aspire to inspire. Digital offers a world of opportunities for organizations to become more efficient and drive greater revenue streams, but not enough companies are capitalizing on it due to lack of digital leadership. Innovation in a digital world requires creative thinking, aspirational thinking and cheerleading. It is the job of the digital leaders to keep the team motivated and engaged while tackling the big challenges that at times can seem overwhelming. Digital leaders must facilitate a culture of support and risk taking. Digital leaders must support and encourage experimentation. Many enterprises have taken the cautious first step of creating innovation labs where dedicated cross-organizational teams work on new ideas. The labs become showcases for visitors and internal staff and are intended to show new, innovative ways of working. The labs need to

produce real, meaningful new products and services that drive revenue, and make the organization and the world a better place. A critical component of encouraging this experimental mindset is to break out of bureaucracy. The digital leader can play a major role in this. Making processes and policies intrapreneur-friendly is a still deeper change. Digital leaders are not only leaders of digital but leaders of data. Data is critical to driving digital initiatives. Digital transformation requires that organizations look at data in an entirely new way so they can identify ways to monetize it and reinvent business models to create new revenue streams. This requires leaders who will invest in and implement "new" data platforms of the future – platforms that can bring together data effectively as needed, from wherever it is stored, whether inside or outside the organization. It also requires a new understanding of customer experience and how to use customer data to deliver personalized experiences. =====================

Lifelong Learning: Today's Tool for Tomorrow's Workplace

----- Arcticle source ----- https://www.infosys.com/insights/human-potential/lifelong-learning.html ----- Insights Human Potential Digital transformation has been a near universal goal for companies worldwide. However, striving to be more like a digital native isn't always enough. Infosys' 2020 Digital Radar research report found that two-thirds of businesses surveyed had hit a digital ceiling. Many of these large enterprises struggled to reach the visionary tier where companies focus on employees as well as their technology and customers. To better understand these dynamics, the Infosys Knowledge Institute collaborated with the University of Melbourne on a global study about the information technology sector. The objective was to project the industry's outlook, understand the role of employees, and identify how to solve potential talent gaps. More than 2,000 IT industry professionals, from all levels, participated in the online research. The survey was conducted before COVID-19. The pandemic accelerated some trends identified in the research, but most insights have stayed the same. The positive impacts of emerging technologies Automation is a foundational tenet of digital transformation. But there is often a negative perception since it is closely associated with job loss. Our findings, however, showed that IT industry workers had a more positive view of change. These employees said digital technology's top two effects in the next five years would be creating new kinds of work and helping people perform their jobs better. (Figure 1). Those benefits accounted for half the responses. Organizations can create a more positive atmosphere around change by helping workers learn new technologies, and most importantly, understanding how they address business challenges and opportunities. "Technology is all-pervasive, and the rate of change of technology is faster than what an average person can consume," says Ferose VR, senior vice president and head of the SAP Academy for Engineering. "This creates anxiety, stress, and a fear of missing out. Becoming a lifelong learner becomes the most critical skill to remain relevant in today's world." Figure 1. The positive outlook toward digital technologies Source: Infosys Knowledge Institute Increasingly, digital

technology also provides greater flexibility for worker and employer. COVID-19 accelerated the trend toward working remotely on a large scale, including with external partners and not just with co-workers inside one's own organization. Enterprises now better understand that many more roles can be performed both remotely and effectively. The results can save the employers the cost of some office space and the employees the cost of commuting. Australian telecom firm Optus, for example, decided to make its customer service center employees work permanently from home when the arrangement worked so well during COVID-19. Post-pandemic, more than half its employees are expected to work from anywhere they choose. The motivating factors for coming to work It's not enough to hire the best talent: business leaders must understand what drives their employees. This study shows that the two biggest motivators are opportunities to learn and challenging work that allows them to put those skills into practice (Figure 2). Both of those ranked higher than what are perceived as stronger motivating factors, such as better pay and appreciative managers. Financial benefits finished third. Employees are well aware of the accelerated technology changes happening in the workplace and are ready for the extra effort required to meet those challenges. Figure 2. The biggest motivators for work are challenges and opportunities to learn Source: Infosys Knowledge Institute "The most important skill required is the ability to adapt to new technology quickly, master it, and ride the wave of progress," said N.R. Narayana Murthy, Infosys co-founder. "Only those companies that do this can indeed succeed." For example, the COVID-19 pandemic has made contact tracing into one of the world's fastest-growing employment opportunities — one that no one expected. This demand for diverse, multidisciplinary skillsets created unexpected opportunities for workers who were able to deploy quickly. In April, the Johns Hopkins University Center for Health Security estimated that 100,000 would be needed in the U.S. The University launched a six-hour online course in contact tracing a month later. Google and Apple released APIs for developers to create contact tracing application on Android and iOS operating systems. However, some contact tracing skills might find application post COVID-19. For example, a form of contact tracing could help with root-cause analysis when a poor quality part arrives at a factory. Several industry and function specific use cases — particularly for audits — demand the traceability of people and goods. For organizations to survive, they must have the right technology in place. Those that want to thrive need to have the right people to take full advantage of that technology. "I have always used the past to predict the future," said Anant Agarwal, Massachusetts Institute of Technology professor, and founder and CEO of edX. "Older jobs have given way to new jobs. This wave is no different." A desire to learn and excel are factors that bring IT professionals to work every day and keep them returning. Business leaders need to use that knowledge to design new work and develop key performance indicators and incentives. A learning ecosystem with motivated employees will ensure that organizations are ready for evolving opportunities. Technologies have a finite shelf life. Motivated lifelong learning for employees will be the way organizations stay competitive and at the leading edge of technology. =====================

Education & Entrepreneurship for Youth Employment Imperative

Insights Human Potential Global unemployment among youth is about 13 percent and the future of employment is in dire need of attention from political and business leaders. This was the prelude to an intense discussion organized by the Global Shapers, an initiative of the World Economic Forum, where I was a panelist. The discussion was part of their effort called 'Shaping Davos'. Be it Azerbaijan Hungary, Mexico or India, many countries are staring at a serious crisis of employment, not sometime in the future, but right here and now. For India, the imperative is to provide gainful employment to a large workforce that will add 1 million new people every month, for the next 20 years. Kuwait faces a similar 'youth bulge', compounded by the problem of unemployment rising with the level of education. Hungary is losing its best talent to 'permanent' brain drain. But underneath their cultural nuances, the countries represented on the panel are grappling with the same issue - that of addressing an archaic and inadequate education system, and encouraging entrepreneurship to support the job requirement of the future. These are clearly the top two areas deserving executive attention. The discussions on education reforms and the need for nurturing entrepreneurship have been on for decades. Unfortunately, the disparity between thought and action has perpetuated a paradigm that is no longer relevant to the aspirations of the millennials. The education system in many countries continues to value rote learning, rigid structures and conformist solutions over learning by doing, creative thinking and problem solving. One panelist observed that we are "busy creating solutions in the dark, without figuring out if they are relevant to the needs of today's youth." For instance, millennials have different aspirations from its preceding generations. For millennials, the true purpose of life is not to amass material wealth but to unleash their personal potential. So today we need to recalibrate the metrics of measuring educational success to include curiosity, creativity, thinking, empathy, collaboration and innovation. We also need to build education systems which promote lifelong learning. Building entrepreneurship is more about creating the right culture than about providing infrastructure, systems and skills; many Governments are doing a commendable job with the latter and even private entities are setting up 'maker spaces'. It was the unanimous opinion of the panelists that the entrepreneurial spirit is a victim of culture and attitude - stability over flux, assured returns over unknown rewards, certainty over experimentation. But the biggest concern is the stigma attached to failure. One panelist quoted a popular saying that reflects the Hungarian attitude to any admission of ignorance, which goes somewhat like this, "If you stay silent you appear smarter." We have to strike at the roots of such attitudes. A fellow speaker shared an interesting viewpoint acquired through experience: he said the antidote to fear of failure is extreme optimism, which is born when we instill resistance, persistence, and self-efficacy among young people. And the best way to do this is to connect them with role models they can identify with - typically people from their community or social milieu that they look up to.

Another point, is the need to improve the access to education and jobs for women. In India, for instance, the number of women in the rural workforce have been falling from 49% in 2005 to 36% in 2012. Hungary might sport better figures, but male dominance is very much the norm in the workplace. Gender inequality at school and work is a universal malaise that needs urgent attention. So, who should be accountable for reforms in education? Governments no doubt, and industry to an extent. However, citizens also have a role to play - as students, parents, teachers, learners, and employers at different stages of life. They must take some responsibility for changing it. For instance, as employers, what is the criteria on which we recruit, merely good grades or on skills and merit? These are monumental changes and difficult to implement. Finding the right direction is the most important part. Then we need to support this with the right policies, the right resources and the right execution. Here, technology can play a useful role by making education accessible to all, through mobile devices, and thus lowering the cost of education. Technology will also create the jobs of the future, and enable people to excel in them. With automation taking over an increasing number of mechanical jobs, technology will prepare the workforce to unlearn old skills and learn new ones. In doing so, it will force people to reimagine 'work'. That's a definite silver lining in the future of employment. ========================

Meeting the Youth Employment Imperative: Education and Entrepreneurship

----- Arcticle source ----- https://www.infosys.com/insights/human-potential/meeting-youth-employment.html ----- Insights Human Potential at 2:13 PM | Approx. reading time 5 mins. Global unemployment among youth is about 13 percent and the future of employment is in dire need of attention from political and business leaders. This was the prelude to an intense discussion organized by the Global Shapers, an initiative of the World Economic Forum, where I was a panelist. The discussion was part of their effort called 'Shaping Davos'. Be it Azerbaijan Hungary, Mexico or India, many countries are staring at a serious crisis of employment, not sometime in the future, but right here and now. For India, the imperative is to provide gainful employment to a large workforce that will add 1 million new people every month, for the next 20 years. Kuwait faces a similar 'youth bulge', compounded by the problem of unemployment rising with the level of education. Hungary is losing its best talent to 'permanent' brain drain. But underneath their cultural nuances, the countries represented on the panel are grappling with the same issue - that of addressing an archaic and inadequate education system, and encouraging entrepreneurship to support the job requirement of the future. These are clearly the top two areas deserving executive attention. The discussions on education reforms and the need for nurturing entrepreneurship have been on for decades. Unfortunately, the disparity between thought and action has perpetuated a paradigm that is no longer relevant to the aspirations of the millennials. The

education system in many countries continues to value rote learning, rigid structures and conformist solutions over learning by doing, creative thinking and problem solving. One panelist observed that we are "busy creating solutions in the dark, without figuring out if they are relevant to the needs of today's youth." For instance, millennials have different aspirations from its preceding generations. For millennials, the true purpose of life is not to amass material wealth but to unleash their personal potential. So today we need to recalibrate the metrics of measuring educational success to include curiosity, creativity, thinking, empathy, collaboration and innovation. We also need to build education systems which promote lifelong learning. Building entrepreneurship is more about creating the right culture than about providing infrastructure, systems and skills; many Governments are doing a commendable job with the latter and even private entities are setting up 'maker spaces'. It was the unanimous opinion of the panelists that the entrepreneurial spirit is a victim of culture and attitude - stability over flux, assured returns over unknown rewards, certainty over experimentation. But the biggest concern is the stigma attached to failure. One panelist quoted a popular saying that reflects the Hungarian attitude to any admission of ignorance, which goes somewhat like this, "If you stay silent you appear smarter." We have to strike at the roots of such attitudes. A fellow speaker shared an interesting viewpoint acquired through experience: he said the antidote to fear of failure is extreme optimism, which is born when we instill resistance, persistence, and self-efficacy among young people. And the best way to do this is to connect them with role models they can identify with - typically people from their community or social milieu that they look up to. Another point, is the need to improve the access to education and jobs for women. In India, for instance, the number of women in the rural workforce have been falling from 49% in 2005 to 36% in 2012. Hungary might sport better figures, but male dominance is very much the norm in the workplace. Gender inequality at school and work is a universal malaise that needs urgent attention. So, who should be accountable for reforms in education? Governments no doubt, and industry to an extent. However, citizens also have a role to play - as students, parents, teachers, learners, and employers at different stages of life. They must take some responsibility for changing it. For instance, as employers, what is the criteria on which we recruit, merely good grades or on skills and merit? These are monumental changes and difficult to implement. Finding the right direction is the most important part. Then we need to support this with the right policies, the right resources and the right execution. Here, technology can play a useful role by making education accessible to all, through mobile devices, and thus lowering the cost of education. Technology will also create the jobs of the future, and enable people to excel in them. With automation taking over an increasing number of mechanical jobs, technology will prepare the workforce to unlearn old skills and learn new ones. In doing so, it will force people to reimagine 'work'. That's a definite silver lining in the future of employment.
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Uplifting Remote and Rural Communities Using 5G

Insights Human Potential One of the biggest problems we face in our times is the fast rate of urbanization, in both developed and developing nations, leading to large migration of rural population towards cities for better life. This makes it an uphill task for governments and local councils to plan and provide quality services to their own citizens. According to UN urbanization data, currently we have 7.6 billion people in the world, of which 4.2 billion live in urban areas and 3.4 billion reside in rural places. By 2050, global population is projected to be at 9.8 billion, with 6.7 billion and 3.1 billion distributed between urban and rural areas respectively. The sudden increase in population across cities is bound to widen the gap between the rich and the poor leading to creation of slums, and problems in health care and transportation. Information & Communications Technology (ICT) has positively impacted human lives, particularly in developing rural areas. Almost every adult living on the planet, irrespective of his urban or rural status, has a mobile phone and is connected via voice and/or data but the real question is - has it improved the quality of life for remote communities in a meaningful way – the answer is probably not! We see a lot of buzz about ICT, particularly 5G and how it is going to bring innovation at an industrial scale in both urban and rural areas leading to development and growth. A simple Google search of "5G use cases" brings hundreds of active use cases cutting across industry verticals. At Infosys, we are always encouraged to think about adopting technology to create better societies and this blog is an attempt to think and innovate about using 5G as a technology platform to solve the urbanization challenge. The Way Ahead with 5G We can create smart solutions to solve the problem of large scale migration to urban areas. To give an example, service providers in Australia are making endeavors to work with government agencies and also with leading universities to co-create solutions using 5G as a backbone in areas such as sustainable farming and remote health care services. Telecommunication companies are also investing heavily in 5G. As per news reports in August 2018, Telstra announced it had switched on 5G technology in Toowoomba, making it the first regional community in Australia and one of the first places in the world to be 5G ready. Here are some ideas around 5G: At Infosys, we have verticals for communications, financial services, healthcare, insurance, mining, agriculture etc. to provide dedicated industry based focus to serve our customers better. Our Communications vertical can potentially act as a conduit or a "Vertical of Verticals" by enabling the enterprise use cases to be extended to the rural sector through internal and ecosystem collaboration leveraging the benefits of 5G Technology. Our industries (OEMs, Telecoms, System Integrators, Standard bodies) should inherit a culture of not only extending existing ICT and 5G use cases to support remote populations but also create new ones with an objective to develop and enhance the quality of life in rural areas. =======================

What Enterprises Want: Big Expectations from Technology Service Providers

Insights Human Potential There have been several Information Technology revolutions, heralded by breakthroughs ranging from the first computing machine to the mainframe to the personal computer, and then the Internet and the mobile. Each of these revolutions, aimed to create a new paradigm of efficiency, automation, productivity or agility, has left an indelible imprint on the way we do business and lead our lives. But for the first time in its history, technology – the digital revolution to be precise – is poised to fulfill a great destiny. One that will enable ordinary people to transcend their limitations, and examine their creative selves to do extraordinary things. Technologies and concepts such as Artificial Intelligence, Deep Analytics and Design Thinking, will converge to amplify our potential and our ability to deliver purposeful, unprecedented solutions. As enterprises take stock of the magnitude of what this revolution might mean for all of us, they are turning to the experts in technology for answers to questions, such as: What is the way forward? How can we strategically leverage the transformation from a world of atoms to bits? How should an enterprise deal with such massive change? How does an enterprise transform into an organization fit for the digital age? The ask enterprises have is for providers of technology to partner with them strategically to help manage change and create value in new ways in this new world. To assess the mood among enterprises and understand their expectations from the technology industry, Infosys undertook a global survey. The study covered over 3,000 respondents from 500+ companies across industries and geographies. Its findings offer valuable inputs about global business' key expectations from IT service providers, potential opportunities for partnership, and the direction that these enterprises would like the technology industry to take. But the overarching message is that enterprises, across the world, want to see the technology industry evolve from mere executors of projects and solutions to thought leaders, change drivers, value creators and strategic partners. Here are the top takeaways from this global survey: The role of technology companies as useful enablers of business cannot be overstated, nor undermined. However, most enterprises believe that the average provider of technology services is a diligent doer; proficient at basic delivery – application development and maintenance, legacy modernization, process improvement, and the like – but is yet to fulfill the potential for sparking fundamental shifts and assuming a thought leadership-led role offering strategic advice, insights into leading-edge innovation, and cross-industry best practices. This is also part of a larger brief for providers of technology services. Enterprises reinforced through this survey that they are often disappointed when they expect their bid-winning technology partners to come to the implementation table with proactive and strategic advice around new concepts and solutions. Here is an example of a strategic partnership that Infosys has with one of the world's top pharmaceutical companies seeking to fight counterfeit

pharmaceuticals and improve visibility into and management of the distribution of their products. The global serialization track and trace system they co-created with Infosys and SAP integrates into their existing technology landscape and enables third party distribution partners anywhere in the world to check the validity of medicines using an app downloaded onto an Android or iOS smartphone. This single global system will now help this pharma giant meet product security requirements and comply with current and foreseeable legislative requirements for serialization and product traceability in over 10 countries. Co-creation and co-innovation is being rapidly embraced by enterprises and often offers a great opportunity for technology companies to elevate their partnership status within the enterprises they serve. The technology services industry and the technology it deals with are constantly in a state of flux. But here's the irony. Despite being surrounded and driven by change, the industry is yet to master the science of leading change within the organizations it serves. Enterprises keenly seek advice on how to elementally transform their businesses – leveraging digital tools - to deal with and benefit from the change around them. This demands the technology industry to fundamentally rethink the effort and success metrics for technology projects. Often, technology service providers visualize project deliverables and success in terms of pure IT metrics – number of tickets closed, processes rationalized, bugs fixed, cost incurred per FTE, and so on, whereas their client enterprises are eyeing the bigger prize of shareholder returns, customer acquisition, service and engagement, revenue growth, regulatory compliance, risk management and competitive differentiation. The differing perspectives lead enterprises to hire agencies, such as advisory firms, to reshape, redirect and sharpen business focus in what are essentially technology implementation programs. Let me share an experience of a transformational project with one of the biggest and best-known retail chains in the United States. The retailer, along with Infosys, embarked on a program to transform their supply chain and fulfillment capabilities to beat new competition, especially from digital ecommerce giants. Infosys played a strategic role by defining and designing the solution, besides implementing it. In less than a year of going live at nearly 130 stores, the solution has made its mark by lowering fulfillment cost offering more channel choices, to the great delight of customers. And that is really the nub of the matter. Today, if enterprises are hiring external management consultants to participate in their technology transformation initiatives, it is because their technology partners are not rising to the challenge. As part of the global survey, enterprises echo in one voice about their experience of technology service providers' inability to assume end-to-end ownership of large, complex, strategically important programs. And their inability to drive consensus among key stakeholders. Enterprises believe that most providers are unwilling to exit their comfort zone of modernization and process improvement projects to explore edgier, more business value driven strategic territory. This means that they end up playing at the fringes of any engagement – even the most transformational ones. Often, technology providers servicing enterprises do not take an integrated communications approach to their projects, even concurrent ones. This means that there is no – or at best, there is inadequate – sharing of knowledge, experiences and practices among different implementation teams serving the same client organization. As a result, enterprises don't receive the full benefit of

accumulated wisdom, and also end up spending more time and effort than they would like to, in communicating with technology project silos. Often all it takes is a bit of imagination and innovation, tempered with adequate viability checks, to fix the problem. At one of our strategic engagements, the program team set about implementing an innovative agile, open-source architecture for content delivery for a leading digital entertainment service provider. Ensuring that all participants from the business and technology side worked cohesively as one team, helped to build an environment of mutual trust and alignment, and was a major factor in the project's success. While indeed there is a certain gap between what enterprises expect and what providers of technology are largely delivering, this view is not so much an adverse pronouncement as it is an expression of the hopes that enterprises have from the exciting new developments in technology and their expectations from a partner that can help them succeed in this shifting landscape. Technology providers must shift gears from not only implementing technology systems, but also leading technology thought. That calls for pioneering the use of concepts such as Design Thinking while visualizing systems and applications, cross-pollinating learning from across verticals, and continuously improving known best practices. There's also a need for greater strategic business orientation in any technology endeavor. That not only means gauging technology transformation in terms of business metrics, but also securing commitment to such initiatives by building consensus within the client organization. It's taking the broader and deeper view of how technology can help businesses evolve in synch with new realities and stay relevant. It is up to the providers of technology and technology services to lead the change that is imperative for enterprises to succeed in the digital revolution. That means making changes to existing systems – renewing them to perform faster, better, cheaper, because even today cost optimization and system modernization rank as top organizational priorities – as well as creating new innovations that are absolutely unprecedented in scale, impact, vision, and ambition. This can happen by harnessing every opportunity to accelerate the adoption of Cloud, leveraging Artificial Intelligence, Automation and Analytics within their own and client enterprises. The fine balance between renewing the old and uncovering value from the new can enable the technology services industry to create the value that enterprises seek so ardently. That would then be a fulfillment of the industry's responsibility towards catalyzing the benefits we all are destined to gain from the digital revolution unfolding around us. Download article =====================

Enable your Retail Employees with a Modern Workplace

----- Arcticle source ----- https://www.infosys.com/insights/human-potential/retail-employees-modern-workplace.html ----- Insights Human Potential Technology adoption in retail has been happening at a breakneck speed. While customer experience has been the primary area of focus for retailers, there is also a growing awareness of the role that technology can play in improving productivity and employee engagement. This becomes more

important in the context of retailers seeking future store experiences. Engaging customers better necessitates enabling employees more effectively to deliver such experiences. Technology can provide retail employees with unprecedented flexibility and empower them to find new ways of working. Given the dynamic retail environment, the right digital technologies can help retailers develop the necessary business agility and competitive edge, with happier customers and an engaged workforce. Here are few technologies and solutions that are transforming the way the retail industry hires, manages, and engages with its workforce. Cognitive HR The growing popularity of cognitive technologies including AI/ML is also impacting HR processes and operations in the retail industry. HR management can often be complicated, especially in an industry like retail, where the workforce is dispersed across multiple locations. Cognitive tools such as AI enabled chatbots can play an important role in enabling easy accessibility and round the clock support to employees. They can also play a role in supporting onboarding procedures, training and development programs specific to retail industry. AI can help measure performance accurately, in an unprejudiced manner, based on pre-decided metrics. Cognitive technologies can also effectively support HR employees by helping them discreetly run a sentiment analysis etc. to gauge and identify underlying issues. Moreover, the power of digital can create new channels of interactions without expending vast sums on deploying people across stores for first and second level issue resolutions. Store Command Center Empowering associates with real time analytics based on machine learning is gaining significance. Use of technologies such as camera based vision for planogram, shelf and store execution, deployment of experimental PoCs using AR/VR and bringing in the culture of immediate corrective actions based on new technology led indicators are becoming common. This means a rethink on how back office systems assist the store associate and the approaches needed to transform such systems by blending the core with the new. Remote Interactive Training In retail, training and development can be especially challenging since it is a fairly dynamic industry. Also, because the workforce is usually geographically dispersed in a developed retail landscape, bringing the entire workforce into a single physical location for training is challenging since it has a direct impact on revenue and productivity. The answer lies in deploying cloud-first and mobile-first solutions that are designed to provide a seamless interactive learning experience. One big advantage is that these are accessible anytime, anywhere and on any device. A great example is Infosys Wingspan, our next-gen learning solution that can help retail organizations accelerate their talent transformation journey. Users can access best-in-class curated content from multiple sources. Each learner can map their individual learning journey that is tailored to their skills, roles, and goals. The solution is ML-enabled and provides relevant learning recommendations and guidance throughout the learning process. Real-time Talent Talent requirement in retail is not static and vary based on time, day etc. For example, stores need more staff during weekends and evenings since they get maximum footfall during these times. Holidays and shopping seasons also have an impact. Retailers can maximize productivity by matching demand and supply more accurately, using the right technology tools. For example, Adia, a mobile-first, cloud-based, end-to-end online staffing platform launched by Adecco helps find the right talent in real time. Adia's

algorithm helps find the perfect job for workers not only as per their skills and level of experience but also takes into consideration things like how close do they stay to the place of work and what is the real-time availability of the job applicant. Retailers can use this platform to not only hire new staff, but also to plan shifts, issue contracts and approve timesheets etc., all in real time. Smart and Modern Retail Workplace A smart and modern workplace is an important factor in facilitating employee engagement, productivity, and retention across industries, including retail. It also helps in making the right impression on prospective customers and visitors and enhances brand perception. Employees greatly appreciate an environment that helps them work better and gives them an opportunity to grow their professional skills. Therefore, a smart workplace that leverages modern technologies such as cloud, IoT, AI, analytics etc. needs to be a central focus area for all retail employers and people interacting with the brand. We have also partnered with niche startups to bring the latest employee experiences on mobile with regards to facilities management, room reservations as well as visitor management. Cognitive HR The growing popularity of cognitive technologies including AI/ML is also impacting HR processes and operations in the retail industry. HR management can often be complicated, especially in an industry like retail, where the workforce is dispersed across multiple locations. Cognitive tools such as AI enabled chatbots can play an important role in enabling easy accessibility and round the clock support to employees. They can also play a role in supporting onboarding procedures, training and development programs specific to retail industry. AI can help measure performance accurately, in an unprejudiced manner, based on pre-decided metrics. Cognitive technologies can also effectively support HR employees by helping them discreetly run a sentiment analysis etc. to gauge and identify underlying issues. Moreover, the power of digital can create new channels of interactions without expending vast sums on deploying people across stores for first and second level issue resolutions. Store Command Center Empowering associates with real time analytics based on machine learning is gaining significance. Use of technologies such as camera based vision for planogram, shelf and store execution, deployment of experimental PoCs using AR/VR and bringing in the culture of immediate corrective actions based on new technology led indicators are becoming common. This means a rethink on how back office systems assist the store associate and the approaches needed to transform such systems by blending the core with the new. Remote Interactive Training In retail, training and development can be especially challenging since it is a fairly dynamic industry. Also, because the workforce is usually geographically dispersed in a developed retail landscape, bringing the entire workforce into a single physical location for training is challenging since it has a direct impact on revenue and productivity. The answer lies in deploying cloud-first and mobile-first solutions that are designed to provide a seamless interactive learning experience. One big advantage is that these are accessible anytime, anywhere and on any device. A great example is Infosys Wingspan, our next-gen learning solution that can help retail organizations accelerate their talent transformation journey. Users can access best-in-class curated content from multiple sources. Each learner can map their individual learning journey that is tailored to their skills, roles, and goals. The solution is ML-enabled and provides relevant learning recommendations and guidance throughout the learning process. Real-time Talent Talent

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Why Return to the Office?

----- Arcticle source ----- https://www.infosys.com/insights/human-potential/return-office.html ----- Insights Human Potential It's a common refrain heard in virtual meetings worldwide: "I can't wait to see you back in the office." This inevitably leads to difficult questions that most business leaders can't yet answer. When will that happen? Or more pointedly, why should we even go back to the office? Organizations already learned that far more of their work can be accomplished remotely than could have been predicted. The question of "when" is often out of our hands. So much of that answer is wrapped up in local and national restrictions, infection rates, and R numbers. But the question of "why" can lead to answers that will reshape the workplace for decades. Workers are not anxious to get back to the office just for free energy drinks or breakfast bars. They want the in-person interactions with their colleagues and camaraderie that develops after months or years of working closely. Or an environment built through serendipitous encounters, such as the kinds that helped make Bell Laboratories one of history's great centers of innovation. Social capital is an increasingly important factor in the workplace, even if it is hard to quantify and frequently overlooked. These networks of shared values are old ideas that began to wane, and only recently rekindled the attention of executives. The Organization for Economic Co-operation and Development found a reference to social capital as far back as 1916 in a book about how neighbors worked together to manage schools. The impact of social capital is sufficiently strong that the influential book Bowling Alone: The Collapse

and Revival of American Community credited this concept with part of Silicon Valley's success. The late Steve Jobs, one of Apple's founders, also advocated for in-person serendipity as a path to creativity. Social capital creates a sense of belonging and trust that leads to greater productivity, loyalty, and innovation. Infosys has valued that social capital and nourished it, from the ways we organized our campuses and offices to how we developed our company networks. Now executives need to decide how to renew that social capital in a workplace we didn't envision — at least not this soon. Further, we have to consider all the new Infosys employees who are hired, onboarded, and work remotely without ever seeing a new colleague in person (more than 3,000 in 2020 so far). The basic components of the new work-from-home landscape are already established. Ninety-nine percent of the Infosys global workforce of 240,000 is working from home effectively, thanks in part to the social capital that already exists. That move wasn't the easiest part of the transition, but it was the easiest part to quantify. It is now up to us to build a new structure that can nurture social capital remotely. Virtual happy hours or online tea times are a fine start. Funny backgrounds in the right video meeting can boost morale. But those are low-hanging fruit when it comes to building ties that develop relationships and strengthen a workplace. The immediate solution — keeping the enterprise running seamlessly — is already in place, at least for the businesses that have weathered COVID-19 so far. Now our focus must be on the medium- and long-term adjustments. How much longer the pandemic will continue is a mystery. Although promising vaccines are likely to arrive in record time, the efficacy and effort needed to immunize a planet are less certain. Social distancing and other precautions are likely to stay with us for some time, perhaps much longer than we wish. Some workers will return to their offices, though not all of them and not all at once. Infosys is helping clients safely return to the office through effective processes and technologies. But these hybrid workplaces won't look or operate in the same ways as before. How can you connect while keeping your distance? How can we create these valuable, collaborative moments that occur in between bursts of hard work? No one has all the answers. Organizations like ours must research, experiment, and prioritize the building of social capital. Even if initial efforts miss the mark, new approaches need to be queued up. We are increasingly skilled at the new ways of working. Now we must do the same with the new ways of not working — finding those in-between moments in the day that are valuable yet difficult to measure. This is a step toward maintaining the resilient workforce we need in the medium term. In future years, when the pandemic has passed, the exact shape of our workplace will differ considerably but our lessons learned will cover all possibilities. Some employees will always be in the office. Others will always work from home. However, the large middle will likely embrace the hybrid approach to maximize its benefits: building social capital in the office and producing with greater efficiency at home.
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Role of Empathetic Problem Finding in the Digital Age

----- Arcticle source ----- https://www.infosys.com/insights/human-potential/role-empathetic.html ----- Insights Human Potential When I read about all the fantastic innovations being developed across the world, I sometimes wonder if someday we will run out of relevant problems to solve. However, what if we shift our perspective a bit and instead start looking for more relevant, deeper problems to solve - rather than creating solutions to apparent problems? If we consider the scale of digitization and disintermediation today, this is likely to play an important role in our brave new world. For instance, millions of jobs in industries like retail, banking, financial services, logistics, transportation and public services will be automated over the next decade. Should our concern be to locate other industries that will require this surplus manpower, or should we consider how to redefine our concept of 'remunerable work'? Uber is known the world over as a taxi-hailing app. And while offering us great service, the company also reshaped the logistics industry as they found a larger requirement it could help address. This led them to launch services using which parents could book a ride to have their children picked up and dropped to a destination. Or, shoppers could have their groceries dropped to their homes. Uber has tied up with mega event organizers in cities to simplify travel for attendees, and more recently, it has ventured into the food delivery industry. Uber discovered problem finding as a means to expand its services. One method that can effectively help organizations and individuals prise out core problems worth solving is Design Thinking. At Infosys we have been leveraging this technique of creative problem finding and solving for a couple of years now. We have trained over 1, 35,000 employees in it. So what are the aspects of Design Thinking that facilitate problem finding? Design Thinking has five steps: empathy for the person facing the problem, defining the problem, ideating on possible solutions, prototyping the solutions, and finally testing to determine the best solution. The first two steps are critical and can help to locate real problems worth solving. At this stage, we need to ask questions unconstrained by any exiting notions. The third step is a natural progression of the first two. Prototyping should be low-cost and designed to 'fail fast' so that the best solution wins faster than later, and can be tested sooner. A Design Thinking workshop facilitates group interaction, and should ideally challenge the 'business as usual' perspective and break associated assumptions. The most common, tried-and-tested method of launching a business is to identify a small problem and solve it. For example, someone at some point asked the question, "How can I get food to my home when I am too busy, or want to take it easy, or because I suddenly have guests over?" And food delivery as-a-service was born. Taking the same example, if you were led by Design Thinking, you would have synthesized all the information you have on food. Your definition of the problem would more likely have been, "How can I ensure that food is accessible to any household in a particular region, especially during emergency situations." In today's digital age, viable business models are those that have the potential to grow the problem statement and offer an expanding solution, as in the case of Uber. Finding the right problem is backed by extensive research and a deep

understanding of one's audience - who they are and what they need. For instance, when a low-cost incubator (a simple and scientifically designed sleeping bag like warmer) widely used in developing countries was being designed, the product had a temperature indicator to display 37 degrees Celsius - the point to which the waxy substance in the wrap needed to be heated. After a while, it was found that the incubator was not delivering the expected results. This led the innovators back to the field for investigation. They found that many of the users were not heating the warming substance to the stipulated 37 degrees Celsius because the users felt this temperature may be too hot for the newborns. So the designers replaced the temperature indicator with a color indicator[2]. Users now know that when the color is green, they have heated the warming substance adequately. This tiny change alone has probably saved thousands of infant lives. Similar instances of effective problem finding are aplenty. As technology begins playing a bigger role in our lives, I foresee a new age of problem finding which offers exciting possibilities. I see us as being able to take on large, complex problems and concerns that once seemed daunting. I see us pushing the frontiers of our imagination and creativity in finding some of the biggest problems, and subsequently their solutions. I feel fortunate to be part of a technology company that has already taken initiatives to effect an organizational change in this direction of problem finding, involving not only our employees but our clients and other stakeholders. Discussions, debates, and experiences in our thought leadership summit, Infosys Confluence , will dwell on the bigger concerns of our times, among other related topics. These are amazing times when competitors are also collaborators, organizational and industrial boundaries are becoming fluid, and the future is being built with bits and atoms. Infosys Confluence, which starts today, will be in many ways a microcosm of these times, and I am looking forward to all the excitement and the learning. =====================

A Platform to Celebrate Social Innovators

----- Arcticle source ----- https://www.infosys.com/insights/human-potential/ social-innovators.html ----- Insights Human Potential Picture these - A disabled man struggling to cross the road. A child in a government school sitting on the floor hunched over his books. An asthmatic young biker using an inhaler at the traffic signal. When faced with such realities, we often feel empathy but how often do we think of finding a solution that will make their lives better? This story is about people who did precisely that. Social innovators who are attempting to make a difference to the lives of people around us, with their unique solutions. The Inspiration behind Aarohan, a Social Innovation Award Most of us know of Mrs. Sudha Murty as a social worker and an author. As the chairperson of Infosys Foundation, she has spent over two decades running social programs. But she was restless to do more. And that's when 'Aarohan' was conceptualized, a unique program that provides a platform for social entrepreneurs to gain recognition, mentorship, and the opportunity to scale up. Here are a few excerpts from our conversation with Mrs. Sudha Murty and the vision behind the program

that shifts the focus from social service to building sustainable social change. Infosys: Mrs. Murty, please tell us about the driving factors behind the creation of Aarohan and what is unique about it? Mrs. Sudha Murty: Long ago, I had read a book called 'Men Who Shaped the Future" by Egon Larsen that spoke about new inventions that made a powerful impact on the society. Take for example, the sewing machine. With that simple invention, Elias Howe changed the fashion industry forever. The chance discovery of an ingenious roti making device at a community kitchen that I was visiting, led me to think that here was an opportunity to encourage more of social entrepreneurship. So far, the Foundation was using its funds only to run social projects. What if this fund could also be used to uncover the work that thousands of social innovators are already doing across India and enable them to be self-reliant? We decided to launch the Aarohan Social Innovation Awards, It is a competitive platform inviting submissions from individuals, teams, and NGOs who are working on developing unique solutions across India for various challenges in the social sector. Cash prizes totaling to Rs 1.7 crores (17 million INR) were announced for the winners with an 8-week mentorship program at the Indian Institute of Technology, Hyderabad. Through these awards, we are providing institutional support to the winners to help them scale their innovations. Infosys: Tell us about the different kinds of social innovations you saw at Aarohan? Were there any stories that stayed with you? Which are the areas where you think we have the biggest need for innovation? Mrs. Sudha Murty: It was heartening to see a large number of different types of innovations. It is difficult to speak of any one story as special because each of the participants had put in so much passion and personal sacrifice in their work. There were people who quit well-paying jobs in the US to come back to India and pursue their ideas. It was also inspiring to see a lot of young innovators with little experience but with lots of enthusiasm and little regard for their own comfort and growth. We had over 900 entries with a lot of great work being done in the following six areas – healthcare, rural development, education and sports, women's safety and empowerment, destitute care, and sustainability. There is still a lot of opportunity in the medical field, where affordable, small, and simple instruments could make a big difference to large sets of population. For example, we found this young team who had designed an anti-pollution mask that also served as an automated drug delivery device. This was a small invention but it could make a radical impact on people suffering from respiratory ailments. Similarly today, with more and more people abandoning farming, any invention that can help farmers reduce their dependency on physical human labor will bring a lot of value. Infosys: Why do you think providing institutional support to a social innovator is important? Mrs. Sudha Murty: If you see, most of the participants are young, inexperienced, or lack financial strength. They are driven by their passion to make a difference but sadly lack either the direction or the ability to take their ideas to the next level of maturity. By providing institutional support, these innovators will have the necessary monetary resources to invest further in their inventions. In addition, institutions can facilitate further learning and mentorship, helping them pick the necessary skills and knowledge that will enable them to sustain their efforts. Infosys: With over 900 applications, Aarohan's first program has been a huge success. What are your plans for the future of this program? Mrs. Sudha Murty: We plan to continue to encourage social innovators and help them on their journey to

become more self-reliant and sustain their work. It was a massive challenge to sift through over 900 applications and identify the most impactful ideas. It took over six months to conduct the entire program and we also went through a lot of learning. We were fortunate to have a very dedicated team and an illustrious panel of judges who committed their time and effort to the program. We have taken feedback from the participants too and will be reviewing all the learnings from this year's edition. I am sure that with the next set of applications, we will have more new ideas, challenges, and requirements and Aarohan will continue to evolve based on the needs of these social innovators. =====================

Human Potential

The Power of Youth to Create the Next Great Sustainable Business

Insights Human Potential The United Nations' 17 Sustainable Development Goals (SDG) serve as a compass that points toward a more prosperous world. To reach that destination, corporate research and development departments and startups globally are toiling to solve the immense sustainability problems the U.N. has identified. Even with all these resources, not all the answers will come from research hubs at multibillion-dollar enterprises or tech unicorns. Universities often fund the basic research that fuels innovation and futuristic concepts that are not yet scalable. The resources are increasingly immense: Venture capitalist John Doerr and his wife, Ann, recently donated $1.1 billion to Stanford University to fund a school dedicated to solving sustainability and climate change challenges. However, creative and valuable solutions are often developed by students with rich ideas and limited resources. Google emerged from a postgraduate research project at Stanford University, and the idea for FedEx was developed in a Yale University student's term paper. On Earth Day 2022 — April 22 — five teams of students from the University of Texas at Dallas presented their ideas, focused on solving important yet seemingly intractable sustainability problems. The contest finalists emerged from a pool of 200 plus students on more than 45 teams that spent months honing their proposals. Each project was designed to be both financially viable and address one or more SDGs. Figure 1. U.N. SDGs addressed by finalists Source: Infosys The competition — organized by the Naveen Jindal School of Management — included plans to reduce packaging and plastic waste and support India's rural economy. Infosys, one of the contest sponsors, held design thinking workshops and helped the students develop their business plans in line with the spirit of practical sustainability. The winning team, Biostica, and its sustainable packaging solution was chosen by a panel of

judges that included Infosys executive vice president Tan Moorthy. "There was creativity. There was pragmatism in the ideas," Moorthy said. "The fact that students not only came up with these ideas but also had a business plan on how to make it profitable was very heartening. It's not only something that they want to do, but it is something that they can do." The three members of the Biostica team — Parth Hetal Parikh, Yash Shah, and Atul Meleth — developed fully compostable food and drink containers, which could replace plastics that can't be recycled economically. The team's goal is to reduce the production of single-use plastic containers and packaging, which contribute to air, water, and land pollution through their production or disposal. These plastics also injure and kill birds and marine life and leach harmful chemicals into the ground and water. There is already a multibillion-dollar sustainable packaging industry in the U.S., but the Biostica team argued that most biodegradable packaging has too many downsides. It is not cost-effective, not locally sourced, and often not successful at reducing waste. In many cases, the packaging must be sent to industrial composting facilities or is buried in a landfill without the oxygen needed to break down the material. In contrast, the Biostica products can fully biodegrade safely in a back yard within 90 days, unlike many other sustainable alternatives. The Biostica packaging uses a coating that is approved by the U.S. Food and Drug Administration for use with food and drink but still allows it to be fully compostable. The team proposes baking a mixture of fibers and food starches to create the containers at 11,000-square-foot production facilities located close to customers. The packaging can also use a variety of agricultural products, including corn starch and sugar cane. This proposal spreads out job creation, reduces transportation costs, lowers the environmental impact, and lessens the risk of supply chain disruption. The contest's other top finishers addressed two other sets of problems — one happening thousands of miles away, and one focused on campus. The five members of the Agriscape LLC team — Ishwari Milind Gondkar, Parth Kulkarni, Smita Singh, Krishna Bezawada, and Mahesh Jajoo — presented a plan to develop agricultural tourism in India. The business would give urban Indians an opportunity to gain new experiences while also supporting rural economies with new streams of income and job opportunities. The third-placed team, Slate Haircare & Hygiene, designed on-campus refilling stations for shampoo, conditioner, and soap. This team — Navya Gaddam, Hunter Chan, Kevin Jose, and Niyati Palasamudram — proposed a business that seeks to reduce plastic waste and to make products that are manufactured without harmful chemicals more affordable. These projects represent the types of problems the students will encounter after graduation and the types of issues that governments and enterprises now struggle to solve. "It is very good exposure to practical issues that people today deal with," Moorthy said. "If you are to create solutions for clients, there has to be a sustainability angle to it. For us to be able to do that, we need people who understand and think sustainability." The contest was part of UT Dallas's larger Global Sustainability Experience — an event that featured webinars, workshops, and prominent speakers, including Richardson Mayor Paul Voelker and Nobel Laureate Muhammad Yunus, founder of Grameen Bank and a microcredit and social business pioneer. Yunus encouraged students in the audience to view their youth as an advantage, an opportunity to see fresh solutions that are not yet "contaminated by the old thinking." "Today, being young people, you are the most powerful human beings on this

planet," he said, referring to their access to technology. "If you feel you have the power, which an older generation never had, the next question you should ask is, 'What is the use I am making of this power?' ... Decide what it is that you want to do. That's the most fundamental question you will ask of yourself." =====================

Is The Tablet The Classroom Of The Future?

Kong Qui, the Chinese philosopher once said, "If you think in terms of a year, plant a seed; if in terms of ten years, plant trees; if in terms of 100 years, teach the people." 2,500 years later, educational institutions are still experimenting with models of learning that address the needs of students. A vast majority of the world's population, including natives in developed countries, do not lead a productive life due to the lack of basic education and skills programs. More importantly, the educated have not been taught to think creatively. Traditional education systems have not encouraged student engagement in the learning process, thus far. Digital technologies realize collaborative learning and functional literacy. Online learning portals provide personal tutelage across education needs - from primary schooling to advanced technical skill development. Digital learning platforms provide access to quality education at minimal or no cost. Massive Open Online Courses (MOOCs) and Open Educational Resources (OER), the most common forms of Internet-based learning programs, enable students in distant lands to pursue courses of interest, anytime. Elite universities offer free access to course content and rich resources. MIT OpenCourseWare, the OER platform of the Massachusetts Institute of Technology (M.I.T.) provides access to content for 2,150 courses. Enkhmunkh Zurgaanjin, the first M.I.T. graduate from Mongolia and the principal of the Sant School in Ulan Bator, facilitated M.I.T. Circuits and Electronics MOOC lectures for a batch of 20 students. It helped Battushig Myanganbayar, a 15-year-old student, perform exceedingly well at the M.I.T. sophomore class. Udemy offers over 30,000 courses in 80 languages through a team of 17,000 global instructors. Khan Academy offers free access to a repository of 10,000+ videos, ranging from math for primary grades to economics, finance, arts, history, medicine, and computer programming. The University of Pennsylvania, University of Washington, and Coursera, a leading online learning service provider, surveyed 52,000 students who completed Coursera's courses. More than 72% undertook online courses to achieve career benefits, and 87% realized it. Participants considered themselves to be better prepared for the current role or enhanced responsibilities on completion of their online course. Almost 33% individuals realized tangible benefits such as increased pay, a promotion, or self-confidence to start a new business. "Tangible benefits are reported at an even higher rate among learners from emerging economies, in lower SES [socioeconomic status] brackets, and from other non-traditional education backgrounds, signaling that MOOCs are able to help those with great need,"

according to Daphne Koller, president and co-founder of Coursera. So, is virtual teaching an alternative to traditional schools? Are MOOCs and OERs a threat to the hallowed institutions that have built their reputation over centuries? The discussion on the optimal learning methodology remains open-ended. On the one hand, the online medium provides access to millions of students, but may not provide personalized tutoring to address the 'learning curve.' On the other hand, classroom learning encourages debate and blue-sky thinking, but does not reach out to students beyond the classroom. Learning portals have reported high attrition rates, and knowledge retention is poor. In addition, parents and teachers oppose the replacement of face-to-face interaction with screens and social networks. A pragmatic approach may be a blended learning methodology that incorporates experiential learning with online instruction. This approach will enhance learning for school / college students as well as working professionals. Confucius believed that students should learn computation as one of six essential arts. The use of computational technology and in-class learning may just be the answer to sharing knowledge and enriching the learning process. =====================

The Blind Spot in Organizations: The First Line Employee Engagement

----- Arcticle source ----- https://www.infosys.com/insights/human-potential/the-blind-spot-in-organizations.html ----- Insights Human Potential When was the last time you visited a store and found the perfect store assistant? Not only did he know all about the latest designs, features and offers, he helped you make the right choice by asking all the relevant questions. That's an experience that does not come easy because most organizations tend to miss the special needs of the first line employee, focusing largely on the knowledge workers or the back-office staff. The importance of first line workers cannot be emphasized enough. They are the most important yet unrecognized brand ambassadors of the businesses they serve. A survey by Harvard Business Review Analytics Services1 shows that 78% of business leaders believe that connecting and empowering their first line workers is critical to achieving a high level of customer satisfaction, sadly, only a small number of organizations typically act on this. As digital disruption invades our offices and factories, it is time for enterprises to look at including the front line employees in their workplace transformation programs to drive business performance. The front line employees' need to belong I recently met the CIO of a major manufacturing company who was seeking ways to enhance employee experience and productivity. The company had a strong workplace transformation plan in place with the latest state of the art technology, yet adoption was disappointingly low. What went wrong here? Most corporate organizations run periodical engagement programs that often fail to make a connect with the front line employees. Choosing one single engagement platform for the entire organization can be disastrous. Particularly in large organizations, it does not help employees identify with

their workplace needs or connect with the larger organizational vision, causing them to feel isolated. Front line employees are usually positioned far away from corporate offices; therefore, they need to be engaged effectively so that the organization can meet the following needs: To appreciate the above needs, let's take an example of a first line employee of a telecom company. The employee is provided with a mobile device that keeps him posted on relevant information from the back end systems, as well as other events occurring in his local geography. This would help him identify problems and provide appropriate solution to customers reducing complaint resolution time. A notification about a road repair work resulting in broken cable connection is an example. Why workplace transformation is tricky As my conversation with the aforementioned CIO deepened, it became apparent that his workplace transformation program, even with state of the art technology, was not successful because of two key reasons - the initiative did not differentiate between the varied environments and work cultures of its employees and secondly, workplace analytics was not being used effectively. Appreciating different work styles When making a promise to deliver a value driven environment for better productivity, organizations need to be cognizant of the different types of employees and their work styles. A single department could have employees coming from various backgrounds. Millennials, part-timers, contract based. People with different attitudes and attributes – from the self-motivated to those seeking constant support, the digital natives to the digitally challenged. Within the same organization, there are different work cultures, depending on the business units they work in. Factory workers in hazardous environments, knowledge workers engaged with complex data, front line workers at company showrooms and stores or in client locations. Envisioning the digital workplace needs of your workforce is a critical step organizations need to undertake before embarking on their workplace technology transformation initiatives. A collaborative platform that works for the knowledge workers may fail completely with the front line employees because the conversations are not mapped to their needs. Similarly, while millennials are very comfortable with a chat based workspace and social collaboration platforms like Yammer, the mid management comprising of older employees may prefer platforms like emails, collaboration portals & products like Skype for Business. It is essential to create a collaborative environment that facilitates the formation of relevant social hubs aligned to the workstyle of the teams it caters to. This will facilitate effective collaboration and exchange of ideas amongst employees, thus creating focused networks of teams. These social hubs can be interlinked to corporate employee engagement platforms to create networks that empower employees to be more and do more. Understanding and measuring employee engagement The best of workplace technologies will not work, if the organization does not know its workers well enough. To do that, you need workplace analytics. If you know the skill sets, attributes, personality and the competency of your workers, you can give them a conducive environment and job roles that bring out the best in them. You can empower, motivate and influence them to behave in a manner that aligns best with the organizational goals. Analytics in HR has traditionally been low but with recent changes in viewpoints, workplace analytics is now being considered as an important part of the larger business-wide analytics. Organizations are not only using data driven decision making in the field of recruitment, performance, and compensation

but are venturing into interaction analytics, which is the study of employee behavior and organizational network behavior. The challenges of measuring data related to employee engagement and satisfaction is being addressed with new innovative technologies that measure emotions, thus bringing more parameters under observation, which are then used to build different culture models. People analytics are using data not only from HR but other co-related functions like financial or customer service to drive a more holistic approach to solving people related business problems, thereby driving better business outcomes. While the focus of this article is on the front line employee, an organization must aspire to excel at bringing value and enabling each one of its employees. Infosys was recently certified as a Top employer in Europe in 2018 by the Top Employers Institute. It demonstrates our commitment to the employee. As Doug Conant, former CEO of Campbell said "To win in the marketplace you must first win in the workplace". To know more, read our workplace transformation stories on Infosys.com. 1hbr.org =====================

Unlimit May Answer Perplexing Digital Questions

----- Arcticle source ----- https://www.infosys.com/insights/human-potential/unlimit-why-this-word-may-hold-the-answer-to-perplexing-digital-questions.html ----- Insights Human Potential Following a whirlwind phase of annual and quarterly results, clients meetings, and setting up new operations, I cannot wait to be at Infosys Confluence, our thought leadership summit for clients, prospects, and market influencers. Like every year, this gathering pushes the pause button on my hectic schedule - offering a Zen-like stillness, if you will, to ideate, introspect and envision with some of the best minds across industries. This time the theme, 'Unlimit', will add a new dimension to this pause. Exchanging thoughts on unlimiting our innate human potential, empowered by technology; unlimiting traditional boundaries of industries; unlimiting from that past that is baggage. Pondering on the theme, I realize how 'Unlimit' is actually the core force driving successful digital-native organizations today. Here's an example. A Swedish startup, Mapillary, built their database of 130 million images through crowdsourcing. Mapillary Vistas Dataset calls itself "the largest and most diverse database for object recognition on street-level imagery" and offers its data to organizations that need to train their AI systems. Its creators want to represent the whole world (not only streets) with photos sourced through crowdsourcing. While today's startups are digital natives, many large and older enterprises are still grappling with vastly different and changing technologies, consumer preferences, regulations and intense competition from unlikely areas. In my view, digital adoption for an enterprise involves two fundamental tracks - business and technology. The latter of course is about leveraging a wide array of technologies to full potential - from mobile, cloud, SaaS, open source platforms, to big data analytics, social media platforms, and now AI. The business aspect of digital adoption is about infusing the digital philosophy into workings of an existing business and changing if required - thereby, unlimiting itself from trappings

of the past. Although very crucial for an organization's transformation, it is often not given due focus, or is expected to happen on its own. Here are a few pointers that I believe can help larger and older enterprises to truly integrate digital into their business. I'm looking forward to delving deeper, at Infosys Confluence, into how traditional organizations can leapfrog into this digital age by reworking their business strategies. I hope to come back to you with my thoughts, learning, and aha-moments after the event.
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A Competent and Relevant Workforce Can Drive Industry Leadership

----- Arcticle source ----- https://www.infosys.com/insights/human-potential/workforce-industry-leadership.html ----- Insights Human Potential "It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness, it was the epoch of belief, it was the epoch of incredulity, it was the season of light, it was the season of darkness, it was the spring of hope, it was the winter of despair." In many ways, Charles Dickens' description of the world in his iconic novel, 'A Tale of Two Cities' first published in 1859 seems apt to describe our present times too. Our exciting, ever-changing world is undergoing massive transformation, providing us with a plethora of new opportunities. At the same time, these far-reaching changes are altering the very fabric of our society. Automation is increasing productivity by several orders of magnitude. The rapidly evolving technology landscape has thrown up a multitude of new business models and new products/services. Globalization is driving a multi-cultural and multi-lingual workplace. Yet, the same technology revolution has rendered a large number of traditional jobs redundant. The World Economic Forum predicts that new technologies could displace 75 million jobs by 2022, yet these technologies are also predicted to create 133 million new jobs. While new and emerging opportunities and diverse job roles have opened up, they often require drastically different skillsets that are not available in the required volumes within organizations. This technology churn has impacted organizational performance because they find the existing skillsets within the organization do not match the changed priorities. In the future, there will be an increasing emphasis on multidimensional competencies that are very scarce in today's workforce. Driving this change isn't easy. There is a dearth of tools and platforms for rapid re-skilling and on-the-go continuous learning and enablement. Besides, most organizations are prone to inertia and actively resist change. This culture unfortunately permeates into the workforce, making them largely unenthusiastic about embracing new realities. Driving a Change If organizations and their employees want to survive and thrive in the future, a fundamental shift in the mind-set is absolutely critical. Most organizations view change with great trepidation. This has to be addressed, such that organizations not only prepare for change, but celebrate it. Such an attitude eventually filters into the organization and helps make change a seamless and enjoyable experience

for the workforce. Many a time, talent re-skilling initiatives happen in an ad-hoc manner. In other cases, organizations might take a formulaic approach that is not aligned with the overall goals and ground realities. Being clear on organizational goals and ensuring that all reskilling efforts are well aligned is key. The effort needs to focus on refactoring to provide new opportunities for the workforce as well as on enhancing new-age competencies. The ability to learn and adapt to the changing environment will be a major factor in creating a sustainable, future-ready organization. Most traditional models of learning and mentoring are not well-suited to cater to the current pace of change as well as to the millennial mindsets. Agile learning platforms that are designed to drive any-time learning need to replace outdated learning modules. The availability of quality global content matters too. InfyTQ , Infosys' certification program is an effort in this direction. It is designed to establish talent readiness at an industry-level through certification, online assessments, etc. Our workplaces are changing. Soon we will have robots (machines), humans and gig workers working side by side. Our workplace models need to be designed to enable seamless collaboration and hyper-productivity. The leadership needs to inspire confidence amongst employees to share their diverse and multi-cultural perspectives besides encouraging innovation and cooperation. Lastly, the organization needs to function in a collaborative ecosystem of partners across various dimensions – technology providers/leaders, academic community, start-up and innovation ecosystems and lastly, governments. Even in the age of technological transformation, people will always remain the greatest resource for an organization. Therefore, ensuring that your team is fighting fit and equipped to take on the waves of change could mean the difference between success and failure. =======================

Learning in the Workplace of Tomorrow

----- Arcticle source ----- https://www.infosys.com/insights/human-potential/ workplace-tomorrow.html ----- Insights Human Potential Infosys' Digital Radar survey looked at nearly two dozen technologies and how they are used by leading companies. However, the tech-focused research report ultimately concluded that the human factor was the key to becoming a corporate visionary. The pace of technological evolution is a challenge for even the most advanced companies. There is rarely enough talent with the right skills, and the needed skills shift rapidly. Many companies have handled this problem using learning platforms and curated content to train employees — both new hires and veteran workers. However, a follow-up study of information technology (IT) firms conducted by the Infosys Knowledge Institute and the University of Melbourne found that companies and their employees aren't devoting enough time to learning. More than 2,000 professionals across all levels shared their insights in an online survey conducted as part of the study in early 2020. Our study found that employees spend about 5% of their time on learning and about 5% on innovation (Figure 1). That's a total of four hours in a 40-hour workweek. Industry studies have suggested that workers should spend as much as

double that time focused on learning and innovation. For example, LinkedIn's 2019 Workplace Learning Report concluded that "employees who spend over five hours per week learning are more likely to know where they want to go in their careers, find greater purpose, and feel less stressed." There is a demand for learning from a new generation of workers. "Millennials today value professional development the most. If they are provided the opportunity to upskill with pay that matches the role, they can take up new roles," says Anant Agarwal, Massachusetts Institute of Technology professor and founder and CEO of edX. For learning to become a key business driver, companies need to measure the time and effort their employees spend picking up new skills and utilizing them. For decades, the 3M Corp. has made innovation a part of its culture by allowing employees to spend 15% of their time developing new ideas. 3M calls it the 15% culture. Back in 2004, when it needed to bottom-up ideas, Google set a target of 20% of work time — or one full day a week — for its employees to innovate. Learning and innovation need not be seen as two separate activities. Innovation is the implementation of learned topics. To encourage both, they need to be integrated with the goals, objectives, and key metrics used for employee performance appraisals. A previous article based on this study focused on lifelong learning as a business tool to create a sustainable workforce. Learnability in the evolution of IT The IT industry has seen several stages in its evolution in past decades (Figure 2). There has been a gradual, cyclical shift in focus. It started with corporate applications and moved on to productivity, with the internet connecting people and systems, then to the outsourcing and offshoring of modular software, and most recently, a return to innovation. Learnability is expected to become a critical feature that will define the industry in the next five to 10 years. Learning is not limited to classroom sessions about the latest technology; it includes understanding business domains and the appropriate application of technology. More organizations will transform into what Infosys calls a live enterprise — a business that behaves, adjusts, and learns like a living organism. Investments in learning can be costly but necessary adaptations to the shifting business landscape. However, learning does not need to serve only as a support function. This effort to reskill and upskill workers can become a profit-making unit that stands on its own. For example, Wingspan was originally just an internal learning platform for Infosys employees. Now it is available as an external offering too, with curated content from multiple sources and ongoing support. Siemens, for example, uses Wingspan as its experiential learning platform for its 385,000 employees across 200 countries. From our findings, internal learning platforms are the most popular mode of learning used in the technology industry, followed by hands-on learning and massive open online course (MOOC) platforms (Figure 3). Employees have the flexibility to choose the mode they prefer, depending on the quality of both the content and the delivery. "Internal learning platforms, hands-on learning on projects, and MOOCs — all three will have a role to play in the future of work," Agarwal says. "Employees will be provided a buffet of options to choose from. The shift will be from internal learning to discovery, where they are given choices to select from." From digital transformation to a live enterprise Recently, companies worldwide have focused on digital transformation, a trend that has accelerated during the pandemic. Once those efforts are near completion, businesses will find that learning is crucial to their continued progress and

will become a core function. Boards and analysts will assess companies in terms of how much they spend on learning and their organizational commitment to reskilling. Learning will play a key role in filling the skills gap that exists in technology adoption across industries and countries. This effort spent on learning in the IT industry is equally applicable to the chief information officer's office or IT departments in other industries. Organizations that develop a culture of lifelong learning will be able to adapt to changes in the dynamic business world and stay competitive.
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Industry Stories

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Business Transformation How Legacy Can Overcome Digital Transformation Challenges A Vision to Make Insurance Painless with Insurtech Preventive Medicine, the Future State A Telecom DNA with a Digital Personality Technology and Connectivity Set to Transform the Auto Industry Sports Enthusiasts Experience a Fresh Adrenalin Rush with Stadium Technology Mission to Mars: New Frontiers for Media & Entertainment How Can the High-Tech Industry Evolve in a Digital World Building a Citizen-first Government with Technology Blockchain in Telecom and Media – A Game Changer How Flying Can Be 'Business Class' For Everyone Evolving Digital Footprint with Lessons from the Financial Services Industry Culture is a Key Aspect of Digital Transformation in Telecom Content is Still King, But User Experience is the Emperor The Uber Effect On The Food Industry Now is the Time for Digitalization in the Oil & Gas Industry The New Challenge For Retailers: Delivering Online Convenience With In-Store Personalization The Future of Consumption – A Closer Look The Bank Is Open For Business Smart Technology For Sustainable Food Practices The Return of the Big Box Pharma's New Phase Patient centric Innovation That Delivers More than Wellness How are Customers Influencing the Utilities Behavior? Lightning Speed E-commerce Digital Transformation in the Life Sciences Industry How Technology Can Make Healthcare Widely Accessible In Latin America How Entertainment Will Be All About Experiences A Postcard from the Back, Mid, and Front Office of Banking Digital's Next Stop - Farming The Digital Pharma Labs of Tomorrow: A Sample of Things to Come From Darkness to Light: The Five 'Ds' can Lead the Way Performance, Schedule, Cost Conundrum in Large Commercial Aircraft Design Blockchain: What's In It For Your Industry? Nature is Life. With Green Chemistry, You Can Choose Life Building a Cognitive Supply Chain for Optimum Inventory Pumping Intelligence into Retail Operations In-Store Customer Experience Will Define the Future of Retail Engage: Rethink Retail Customer Engagement Insights Blog Blog Blog Blog Blog Blog Blog Blog Blog Blog Article Insights ====================

Ambient Intelligence Can Bring Back Care and Compassion to Healthcare

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/ambient-intelligence-healthcare.html ----- Insights Industry Stories Medical science has seen some of the most amazing advances in recent times, however there has also been an alarming growth of human population in the

planet. Where advances in medical science has improved the quality of life and life expectancy, the number of patients and the severity or complexity of diseases have also increased during the same period. Healthcare services over generations have matured from providing care and compassion, to providing smart medical facilities like advanced/automated diagnostics for reliable and effective identification of root cause of ailments and development of drugs and cures. While all of this looks good, there is a staggering deficit of healthcare workers, physicians, and resources to attend to the immense healthcare requirements. This deficit has started putting pressure on the systems that govern the healthcare ecosystem and in the midst of this struggle the focus on providing care and compassion to the patients has shifted. Unfortunately, while we would like to believe that the very progress made in medical sciences should help address patient care, they have primarily been targeted at enhancing accuracy and efficiency in diagnostics and automating hospital management systems. Moreover, all these advancements have quietly developed within the siloes of their space. So how can we ensure that while we maintain a clinical approach to treating diseases, we include the empathy and compassion required to take care of the holistic well-being of the patient. Ambient intelligence in healthcare could well be the answer to this. Ambient Intelligence (AmL), is a horizon-three technological innovation that proactively and sensibly supports people in their daily lives in a digitally enabled environment. It is a combination of IoT sensors and human computer interaction technologies; which is aided by a pervasive computing environment and AI frameworks; with all the components connected through an invisible intelligent network. What's exciting about this technology is its ability to clarify the entire technology components and harmoniously blend the environment around the user without directly demanding the users' attention. Let us elucidate this with an example. An elderly patient John is staying in an assisted living facility. As a routine, right after finishing his morning breakfast John gets reminded about his medications, even if he gets busy watching his favorite program on TV or if he is talking on the phone. In case John's facial features display puffiness with redness of nose and eyes; the sensors embedded in his clothing indicate a rise in his body temperature, the healthcare nurse gets intimated and a different set of medication for John gets suggested. If the video camera in the room captures John's erratic walk pattern, the emergency team at the facility is alerted and the medical staff is intimated of John's condition. What is noticeable in the above example is that the environment around John is smart, capable of notifying or taking cognitive actions including medical alerts basis the signals the sensors are picking from the behavior and actions of the patient. The smart interpretation of the current signals in conjunction with the past medical history of the patient can be intelligently analyzed through AI/ML based algorithms to provide actionable insights to the staff attending to the patient. Any unattended emergencies can also be intimated to the emergency services; and doctors can be provided with summaries of case histories for quick analysis of patient conditions. Ambient Intelligence has more than a decade of research behind it with various research organizations and industry initiatives investing to develop solutions using the technology. Organizations in the healthcare industry too have started investing in ambient intelligence, exploring use cases. Basis a research paper of Giovanni Acampora, Diane J. Cook, Parisa Rashidi and Athanasios V. Vasilakos the world of Ambient

Intelligence in the healthcare space can be broadly classified into: At a first glance, AmI in healthcare does seem very promising, however because the development of each of the five components viz. IoT sensors, human computer interactions, pervasive computing, AI frameworks & invisible intelligent network are in various stages of evolution, there exists challenges which will impede the adoption of this technology in the immediate future. Added to these will be challenges related to security and infrastructure to sustain such environments, human factors of privacy, radiations from sensors and environmental design. Another important aspect will be the question of societal and ethical issues and the very notion of compassionate healthcare, from where we started this line of thought in the first place.
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AR and VR can Solve many of Core Oil and Gas Challenges

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/ar-vr-in-oil-gas.html ----- Insights Industry Stories The oil and gas industry has always faced enormous and varied risks concerning safety, politics, regulations, fluctuating markets, and physically challenging environments, to name a few. Today, however, the challenge is more complex than ever. The price collapse and volatility of the past five years have ushered in a new normal, characterized by caution. To unlock value, companies are emphasizing efficiency, a goal that depends on highly skilled individuals. Meanwhile, the industry is undergoing a crew change, with large numbers of older employees leaving. As a result, the demands for the dwindling ranks of experienced personnel are escalating, and companies are struggling to leverage their expertise. On top of this, the pace of operational change across the industry has dramatically accelerated. Unlike the past, when upstream assets were viewed through a time horizon of 10, 20 or even 30 years, shale technology has compressed the turnaround time to months or even weeks. This time compression necessitates solutions that require people not to travel to remote locations, but instead to enable them to work remotely. The bottom line: Companies have to do more with less, on tighter budgets, with fewer employees, and at unprecedented speeds. In the past, such a mandate — with so many forces pulling in different directions — would have been impossible to fulfill. However, emerging technologies are changing that. In particular, some companies are beginning to address these challenges with augmented reality (AR) and virtual reality (VR). Many more could benefit from leveraging these technologies more aggressively. AR and VR Explained What exactly are AR and VR? The two technologies are similar in that they both offer virtual visualizations; they enable us to see things that are not actually there. But they differ in important ways. AR overlays digital elements onto the physical world, typically using a headset or tablet that the user can point toward real-life objects. In retail, AR can enable better navigation of big-box stores by superimposing directions onto the physical store or guide a consumer toward a product. AR allows us to see how furniture might look in our home, by digitally depicting a sofa in the desired space. AR enables games such as Pokemon Go, where virtual creatures

appear in the real world. In contrast to AR, where the user still sees real-world physical surroundings, VR immerses the viewer in a virtual setting that shuts out the physical world. Simply by slipping on a headset, VR can virtually transport a user to the driver's seat of a race car or cockpit of a space shuttle, enabling him or her to move around in an immersive three-dimensional environment that resembles the real thing. Applications of AR/VR in oil and gas In industry, AR and VR are used in a wide variety of settings, including training, maintenance, and planning. In the oil and gas industry, AR headsets that clip onto hard hats can project hands-free instructions a technician needs onto equipment to conduct an inspection or maintain a system. Precise AR animations dramatically boost efficiency and reduce errors and uncertainty by showing the necessary steps, tools, and parts. They can also provide checklists and sensor data and can visually demonstrate which parts to adjust, remove or replace. Instead of being dependent on manuals, AR enables this information to be delivered graphically, where and when it is needed. AR can also help technicians plan changes they intend to make to equipment. Faced with the challenge of installing a cable in a complex environment on a ship, one company used AR to help mechanics visualize exactly where the cable would need to go and how it would need to be fastened. This provided a clear idea of the challenges they would face. AR headsets with two-way communications can also enable remotely located experts to communicate with general support technicians and virtually look over their shoulders, in real-time high-definition video. The same technology can record procedures for quality control and future use. Other AR apps can show what goes on within a piece of equipment, letting technicians better understand how to adjust it. Together, these capabilities help companies cope with the shortage of experienced personnel and reduce the need to transport such personnel to remote places. In the event of an emergency, an AR system can dramatically expedite the team's ability to identify and address the underlying cause. A critical application for VR in oil and gas is in training. Instead of studying theory in a classroom or transporting people to remote locales, trainees can use a VR headset to enter an environment or interact with a piece of equipment virtually. As in gaming applications, the experience is entirely immersive: When trainees on a virtual rig turns their heads to the side, they see what they would see on a real-world rig. Given the complexity of refineries, drilling platforms, and processing plants, the opportunity to experience life-like training before entering these environments is invaluable, and companies save money that they would otherwise spend flying trainees to sites. VR apps connected to sensors enable engineers to monitor generators, pumps, compressors and shale shakers in real time, without needing to be on-site. This provides faster, more accurate diagnostics at a fraction of the cost. Geoscientists are also using VR to visualize seismic data, and even to drill virtually, so that they can better determine where to explore. Status of AR/VR in oil and gas As with the internet and mobile revolutions, consumers — and particularly online gamers — lead the field in embracing AR/VR. Yet, these applications have begun to gain traction in numerous industries, including manufacturing, aerospace, retail, real estate, education, sports and healthcare. The oil and gas industry is not yet using AR/VR as aggressively as other sectors. Companies are starting to see success with AR/VR in refineries, especially in maintenance and inspections. Companies are also beginning to see benefits

downstream in retail, using AR/VR to understand their stores in a more detailed and intuitive manner. We believe that the oil and gas industry is uniquely positioned to capitalize on AR/VR for three reasons: First, industrial AR/VR works best atop large quantities of data, which typically comes from sensors. Those sensors have long been commonplace in the industry, whether in wells, refineries or elsewhere. Because of the ubiquity of these sensors, a huge amount of data is available to be leveraged with AR/VR. The second reason relates to how that data is stored. Previously it tended to be stored in a proprietary format that made it difficult to exploit for ancillary purposes. That is now changing. Producers are increasingly integrating their data-centric information technology systems with the operations technology systems they use to monitor and control processes and devices. Because of this IT/OT integration, data is more accessible than it was in the past, facilitating the use of AR/VR, for upstream and downstream applications. The third reason is the rise of digital transformation in the industry, and the shift to a mindset of looking at things from a customer perspective, whether that "customer" is a drilling engineer at a well site, a maintenance engineer in a refinery, or a customer in a retail store. Before, the mindset was to design things according to efficiency, without really stepping into the customer's shoes. AR/VR can, therefore, help managers understand how these customers interact with the machines or the store. Using a design-led perspective, companies can then simplify, streamline or otherwise improve processes to deliver a better experience. Combatting resistance to change As outlined above, AR/VR has the potential to alleviate profound challenges faced by the industry. Moreover, various factors — the abundance of data, the increasing availability of that data thanks to IT/OT conversion, and the trend toward digital transformation — uniquely position the industry to capitalize on the technology. So why has the industry been slow on the uptake? The most critical factor is endemic conservatism in the industry and there is genuine cause for this conservatism. Given the enormous sums of money involved in every aspect and the deep and varied risk profiles, the industry's slowness to change is understandable. If a new technology fails in a retail setting, you may lose a customer or some money. In contrast, in the energy industry, there is the real potential for loss of life or environmental disaster. This requires any new technology to go through a far more rigorous testing cycle and in some cases, additional equipment is needed to ensure that the new technology can handle the adverse environments typical of a field setting. In a lot of cases, there is also a stringent certification process that any new field technology has to go through. Additionally, oil & gas field sites, can be very remote. Far more than in any other industry, which poses the real challenge of how to get the required network bandwidth to access the data critical for AR/VR applications from these remote sites. However, in encouraging clients to consider the technology, we point to success in other industries that face similarly sensitive risks. The prime example is healthcare, where AR/VR is being used in a wide range of applications, from training surgeons to addressing emergencies in remote locations. As an indicator of uptake, a market research found that the healthcare market in AR/VR stood at US$ 933.1 million in 2018 and is expected to reach US$ 3,192.2 million by the end of the forecast period, growing at a CAGR of 36.2% from 2018 to 2023.1 As has also been seen in other industries, a consortium of providers can overcome the challenges noted above. With system integrators, oil field

service companies, network providers, hardware providers and others coming together to craft these solutions for the industry. System integrators, like Infosys, will have to take the lead in this but as executives in the oil and gas sector increasingly understand the benefits of AR/VR, the technology will quickly become a competitive imperative. 1Healthcare AR-VR Market 2019 =====================

Coronavirus Collides with Automotive Industry

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/automotive-industry.html ----- Insights Industry Stories Auto industry leaders just last month feared that COVID-19 would prompt a shortage of vehicles. The large auto parts factories in China's Hubei province had been shuttered for two months, and more than 80% of the world's automotive supply chain is connected to China. Additionally, through the beginning of March, there was no indication of lower demand. Six weeks later, automakers are still fearful but their worries have flipped. It is clear now that their problem is oversupply. This matters because auto manufacturing is commonly used as a measure for the economy's health, given how many industries feed into it and its large number of workers. Analysts estimate more than 8 million people are employed manufacturing automobiles and that each of those jobs supports about five jobs in other industries. The output of the automotive industry would have a GDP of near $3 trillion if it were its own country. But that number is now shrinking. European new car sales slid 52% for the month of March and vehicle registrations were down 56%. Registrations are also lower in the United States and India (Figure 1). Italy's sales in April have declined 98%. In India, March motor vehicle sales recorded their biggest year-over-year drop with a 58% decrease. That is particularly difficult for an industry where car sales have been declining year-over-year since November 2018. Compounding these issues, 26 U.S. states (comprising 56% of the country's retail sales) are allowing only remote or online sales. New car sales in the U.S. for the month of April are expected to be down about 50% compared to 2019. Figure 1. First time vehicle registrations are down dramatically. Source: OECD (2020), Passenger car registrations (indicator). In a typical recession, used car sales see a year-over-year sales increase suggesting a substitution effect. During the Great Recession, dealer year-over-year revenues for used cars in the U.S. increased for the first four months. The economic impacts of the coronavirus are different. In the U.S., used car sales typically peak in March. These used cars sales were flat in January and up 7% in February (Figure 2). Year-over-year sales of used cars have been increasing since March 2019. March 2020 U.S. sales figures will not be out until later in May. However, used car sales in Europe mirrored the drop in new car sales for March in the five largest European markets. This indicates that the pandemic is driving down overall demand for vehicles. Because of the COVID-19 lockdowns, people are driving less and making less use of the cars they have. Aside from the current crisis, a contributing factor to this lower demand is that people are keeping their cars longer. From 2009 to 2017, the average age of a light-

duty vehicle in the U.S. increased by 13% to 10½ years. Figure 2. New and used car sales in the U.S. were poised for growth in early 2020. Source: U.S. Census Bureau via Federal Reserve Bank of St. Louis While we have evidence that demand for motor vehicles in Europe is down, the U.S. data is not yet conclusive. Overall, data suggests that prices in most markets for new vehicles are too high. Low financing rates and low gasoline prices are encouraging some new car sales in the U.S. However, the force exerted on demand by the coronavirus lockdowns is much larger. There does not seem to be a good solution to this problem. It is easy to suggest that manufacturers reduce production in the face of lower demand. However, that lower production will invariably lead to a shrinking of the economy due to its large workforce. With lower incomes or lost jobs, those in the automotive industry will spend less, which reduces the income of others in the economy and creates a vicious cycle. Someone, somewhere is going to have to take a loss. This creates a dilemma. If political and business leaders take no action, each group loses less separately, but the economy loses more in total. If leaders put the burden on one group of stakeholders, that group takes a catastrophic loss, but the whole economy loses less. Of the stakeholders — which include governments, automotive manufacturers, dealers, and automotive workers — the best positioned to absorb these losses are governments, as was done in the Great Recession. They can defer and spread out losses, which can be recovered by future taxes, in a way that is the least bad for the economy. This action makes sense for governments including Germany, Japan, and the United States, whose automotive industries make up as significant portion of their manufacturing sectors. In Bangladesh, leaders should consider similar actions with the textile industry. In this way, we can flatten the curve on losses to lessen the severity of the recession. Figure 2. New and used car sales in the U.S. were poised for growth in early 2020. Source: U.S. Census Bureau via Federal Reserve Bank of St. Louis While we have evidence that demand for motor vehicles in Europe is down, the U.S. data is not yet conclusive. Overall, data suggests that prices in most markets for new vehicles are too high. Low financing rates and low gasoline prices are encouraging some new car sales in the U.S. However, the force exerted on demand by the coronavirus lockdowns is much larger. There does not seem to be a good solution to this problem. It is easy to suggest that manufacturers reduce production in the face of lower demand. However, that lower production will invariably lead to a shrinking of the economy due to its large workforce. With lower incomes or lost jobs, those in the automotive industry will spend less, which reduces the income of others in the economy and creates a vicious cycle. Someone, somewhere is going to have to take a loss. This creates a dilemma. If political and business leaders take no action, each group loses less separately, but the economy loses more in total. If leaders put the burden on one group of stakeholders, that group takes a catastrophic loss, but the whole economy loses less. Of the stakeholders — which include governments, automotive manufacturers, dealers, and automotive workers — the best positioned to absorb these losses are governments, as was done in the Great Recession. They can defer and spread out losses, which can be recovered by future taxes, in a way that is the least bad for the economy. This action makes sense for governments including Germany, Japan, and the United States, whose automotive industries make up as significant portion of their manufacturing sectors. In Bangladesh, leaders should consider similar

actions with the textile industry. In this way, we can flatten the curve on losses to lessen the severity of the recession.
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Chatbots for Better Customer Experience in Air Travel

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/better-customer-experience.html ----- Insights Industry Stories Most passengers will agree that communicating with airlines is often not a very pleasant experience, especially when in distress like a missed flight, re-booking, infant requirement, missed baggage, refunds, receipts, or any of the innumerable possible concerns. Though major airlines today employ thousands of on-call customer service reps, calling the customer care number often means navigating through number of interactive voice responses before speaking to an agent or getting the requested information. Queries over email can take longer and does not provide the kind of instant gratification that customers expect in today's modern digital lifestyle. There are several reasons for poor customer service experience, and one primary reason is that information is held by multiple entities within an airline – reservation, operations, commercial, loyalty. While each of them may be aware of the information relevant to them, it's nearly impossible for one desk or department to provide a single comprehensive service to respond to all queries from a customer without a handoff. Compounding the problem is that as events unfold in real time, which is commonly the case for much of the grievance calls, airlines are often clueless about who is impacted and to what extent, and how to pre-empt the customer service call through better intelligence. Considering that airline business is also highly seasonal, with significant spikes and troughs during holidays and abrupt weather conditions, keeping an army of customer service agents can put a serious drain on the economics of running an airline. Further complexity comes from chunks of information that reside with different personnel at different locations, like ground staff, airport staff, airline staff, vendors, contractors, government authorities who are handling security etc., making aviation one of the most difficult industries when it comes information sensitivity and security. Airlines are caught up between keeping customers happy with quick service and being meticulous with following rules. The information retrieval system used by most airlines do not help either. Most airline customer service desk use keyword-based searches using tools like Sharepoint or other tag-based searches for reference. Therefore, the accuracy of the results is subject to using the right keywords. Chatbots for Better Customer Engagement Chatbot technology has been evolving rapidly as a way to address some of the concerns listed above. Chatbots not only do an excellent job of retrieving information at top speed, they allow questions to be asked in natural language rather than relying on keywords. As the technology evolves, chatbots are rapidly growing in popularity, especially since they can communicate through existing messaging apps on smartphones. Several studies show that messaging apps are the most widely used smartphone apps today. Statistics indicate that in 2018, WhatsApp and

Facebook Messenger had over 1.3 billion monthly users, while WeChat had 980 million monthly active users1. Chatbots work well because people are generally reluctant to download any special app for communication with airlines. We experienced this with one of our clients, a leading airport in the UK. The airport authorities were keen to improve customer experience by providing information related to travel at the airport. They were dealing with dissatisfied customers who were not pleased with having to approach multiple parties to get different pieces of information. Since customers were mostly unwilling to download a separate app for queries related to the airport, we worked with the airline to build a Facebook bot. The bot was tightly integrated with the backend system and could seamlessly share travel related information through the Facebook Messenger app. Customer engagement isn't the only area where chatbots can help. They can help pilots search for EFB (Electronic Flight Bag) documents quickly, and assist in tasks such as crew briefing, retrieving information on passenger processing, manifests etc. Nia can integrate information streams from Resolution desk, underlying PSS (Passenger Service System), loyalty, CRM, baggage NetTracer and provide an abstracted natural language layer to service desk agents as well as to the Chatbot so that it can infer and bring up the information from a wide variety of queries. Nia chatbot can be used to book tickets, make ancillary purchases, track flights in real time, get information about upcoming flights and airport delays, as we have the ability to integrate a wide variety of internal and external data streams. One could also imagine airlines using next generation chatbots on their direct booking sites to furnish useful information to customers such as the seat pitch and angle, food and drink menu for long haul flights, facilities available at departure gates. The possibilities are endless. With the Infosys Nia Chatbot, we have leveraged its deep learning capabilities enabling it to read and internalize information from a wide variety of documents from contracts to user guides to different media. The Nia Chatbot is versatile enough to work both in terms of query responses as well as through natural language. Since it can immediately respond to even complex queries within seconds, it scores high on the customer experience quotient. Customers can even check in through their Facebook app, helping decongest check-in queues and helping better customer experience. In the future, we can expect chatbots to become ubiquitous in aviation, bringing in advantages for both customers and the industry. To know more about how we help the travel and hospitality industry, visit us at Infosys.com. 1https://www.statista.com/statistics/258749/most-popular-global-mobile-messenger-apps/
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Beyond Ourselves: A Response to COVID-19

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/beyond-ourselves-response.html ----- Insights Industry Stories When catastrophes strike, people and organizations around the world mobilize instantly to help victims recover. There are checklists and templates to follow and vast expertise at the ready when hurricanes, floods, and

earthquakes devastate a region. But what are the protocols when the crisis is diffuse, evolving, and, in the words of medical experts, novel? The coronavirus pandemic has expanded the traditional scope and scale of disaster recovery and forced many, including Infosys, out of their comfort zones. The number of COVID-19 cases globally passed 3.5 million in May, according to the World Health Organization. However, the number of people affected by the associated job losses, government-mandated lockdowns, school closures, and other hardships number in the billions. "These are unprecedented times that require every section of society to rise up to the challenge," said Sudha Murty, chairperson of the Infosys Foundation. The need to react and the desire to help has inspired Infosys, along with most large organizations, to contribute money, skills, and resourcefulness to the fight against the coronavirus. These efforts go beyond helping 240,000 of our own employees stay safe through sanitizing workplaces, installing thermal scanners, and enabling most of them to deliver client work from home. Our new responsibilities include helping educate schoolchildren, expanding hospital capacity, and assisting governments with informing the public and tracking the disease's spread. "My experience is that our behavior in difficult times is what defines us," said Infosys CEO Salil Parekh. Education This pandemic has left parents worldwide in a difficult position. In addition to their day jobs (for the fortunate ones still employed), they are now part-time teachers. School closings were among the first major government actions as COVID-19 cases increased exponentially. UNICEF estimates that 1.5 billion children and young people were affected by school closings due to the pandemic. The advantaged schools were able to send students home with technology — laptops or tablets — and access to learning materials. That scenario isn't universal; access to online education resources is scattered and uneven. In response, the Infosys Foundation USA repurposed its recently launched Pathfinders Online Institute learning platform and made it available to all. The educational platform was introduced just a few months ago at the 2020 Pathfinders Winter Institute, shortly before the spread of the coronavirus accelerated. Originally, it was available only to teachers who had participated in an in-person Pathfinders program. But even before mass stay-at-home orders were announced, the foundation was working to expand the platform's reach and add more content that meets the needs of the broader K-12 community. As classrooms become virtual, the foundation is providing families with hands-on computer science activities and maker education activities through a vast network of partners and the Pathfinders Online Institute. Those range from the basics of video game design to rollercoaster construction using household items to experiments designed to teach empathy. The platform has reached thousands in the short time since it launched, including 3,500 families participating in Family Code Week events in English and Spanish. Teachers can also use the service to share best practices and educational resources at a time when creativity and collaboration are essential. In a Microsoft survey, 30% of educators said they felt underqualified to teach computer science, and 20% said they felt overwhelmed. "It is critical that we support our teachers, as well as all of those individuals who have taken on the role of teacher during this challenging time," said Infosys President Ravi Kumar S., who is also chairman of the Infosys Foundation USA. "By expanding access to the Pathfinders Online Institute and adding more CS [computer science] and maker content, we are providing a single location where students,

teachers and parents can access resources and high-quality learning activities that support 21st century skill development." The Pathfinders Summer Institute, held annually at Indiana University, is still scheduled for July. This time, it will operate virtually, like many events today. Since it began three years ago, Pathfinders has provided intensive professional development to more than 1,000 K-12 public school teachers wanting to enhance their curriculum with computer science and maker content. Since learning is a lifelong endeavor, this sharpened focus on education goes beyond schoolchildren. Infosys' renowned Global Education Centre in Mysore, the world's largest corporate university, has moved online. The 337-acre campus is capable of training 20,000 people at once but is now mostly empty. Thousands who previously would have filled the physical classrooms are now studying tech skills using Infosys' Wingspan training platform. Charity Infosys' charitable response to COVID-19 looks different from traditional disaster relief. There are no massive blood drives or shipping containers packed with bottled water. This time, the Infosys Foundation has moved quickly to fill in gaps created by the overburdening of the medical system, widespread job losses, and shortages of certain supplies. So far, the foundation has provided a broad range of assistance to nearly 100 different trusts, hospitals, governments, and nongovernmental organizations (NGOs). Overall, the Infosys Foundation has committed INR 120 crore, or nearly US$16 million, to COVID-19 relief in India. More than one-third was contributed to the PM CARES Fund, created in response to the pandemic and led by India's Prime Minister Narendra Modi. Infosys has provided 2.4 million meals during this emergency and assisted more than 1 million people. The donations have helped thousands of migrants weather the financial crisis with food and other basic assistance, provided first responders with badly needed protective gear, and supplied civilian and military hospitals with 142 ventilators. Millions of masks and gloves were purchased for police officers, health care volunteers, and others. Medical professionals received 10,000 face shields. And Infosys paid for medical gas pipeline work at two hospitals. Infosys and Narayana Health, one of India's largest health care providers, announced the creation of a 100-room hospital in Bangalore, entirely for COVID-19 patients. This facility is providing free care to low-income residents. Devi Shetty, chairman and executive director of Narayana Health, said providing safe space for people to isolate themselves is critical to fighting this pandemic, according to the Economic Times. Governments and health care providers have feared that those infected with the new coronavirus — particularly ones needing ventilators — could push hospitals beyond capacity. That has the potential to leave other COVID-19 patients and also people suffering from unrelated illnesses with nowhere to go. That threat has led to creative solutions, such as construction of temporary hospitals like this one. Public-private partnerships In a crisis this large and pervasive, everyone's help is needed. There are roles for the tiniest local nonprofits as well as the world's largest companies. But their combined might isn't enough. Governments everywhere play a crucial role in fighting the pandemic, whether it's issuing stay-at-home orders or organizing the distribution of critical medical supplies. But even these giant, powerful bureaucracies can't go it alone. Infosys has collaborated with governments in India and the United States to help with immediate concerns and plan for the eventual reopening of their societies and economies. In the Indian state of Karnataka, the Infosys Business

Process Management unit has assisted officials with development of the Apthamitra app and helpline. Those tools provide the public with accurate medical advice, evaluation of symptoms, and testing and treatment referrals. Future versions are expected to include telemedicine components. Infosys BPM also helped the government with outreach to residents returning from overseas and also with tracking their health. The company, along with industry peers and trade group NASSCOM, has used email, text messages, and automated phone systems to locate people who arrived in Karnataka since the last week of February. The public-private effort helped these travelers find testing facilities and assist with self-quarantining, when needed. In three days, Infosys BPM digitized 52,000 travel records from the Bangalore and Mangalore airports and the Karwar docks to make automated communication feasible. Infosys employees also assisted with the complex effort to quickly research as many of the overseas travelers as possible and analyze the provided data. State officials credited the work of Infosys and its competitors with helping flatten the curve of infections in Karnataka during March and April. In that initial five weeks, the companies reached out to 90,000 travelers and their contacts. The government also enlisted the help of Infosys BPM after learning that a person who tested positive for COVID-19 attended a local concert. Infosys employees located attendees, staff, and performers to warn them about their possible exposure. Also, Infosys used its digital marketplace platform to create the Sahaya Setuve mobile app and web platform for Bruhat Bengaluru Mahanagara Palike (BBMP) government officials. These tools, developed in just eight days with the support of other tech firms, enable Bangalore residents to donate both money and supplies to COVID-19 relief and volunteer for efforts to fight the pandemic. The technology acts as a bridge among various groups, including individuals, NGOs, doctors, and BBMP officials. Government employees can assign activities, track inventory, and monitor and manage the overall process. The app also provides users with the location of "fever clinics" and Indira Canteens, which provide subsidized food. Through its NASCOMM partnership, Infosys also assisted with the creation of a variety of dashboards for the Telangana state government. Those include a listening dashboard to provide sentiment analysis and related intelligence, coronavirus hotspot identification, and lockdown and reopening impact analysis. These tools are also being offered to other Indian state governments. Nationally, Infosys is a member of India's task force helping the Ministry of Electronics and Information Technology (MeitY) and NITI Aayog, a government think tank, develop a COVID-19 contact tracing app. Each organization developed its own app, but government officials decided to combine the two, with the help of the country's high-tech industry. The result is the Bluetooth-based Aarogya Setu app, which shows whether the user had contact with someone who tested positive for COVID-19. This can help individuals self-isolate more quickly and slow the disease's spread. However, its effectiveness relies on a large percentage of the population downloading the software to their phones. A robust contact tracing program has been one of the most effective weapons for curbing the spread of the coronavirus. Infosys has also been active in assisting U.S. state governments, primarily related to the economy. Company officials serve on Indiana, Connecticut, and Rhode Island advisory councils that are planning for post-coronavirus recovery. Infosys and WONGDOODY, an Infosys-owned creative agency, are also helping the Rhode Island state government with

various COVID-19 efforts, including a response and contact tracing app. The software will alert individuals who have encountered others who tested positive and provide the state with disease hotspot visualization and data analytics. The GPS-based app is expected to launch in May to coincide with the reopening of many businesses. New features will be added in three-to-four-week cycles. Some of those features are expected to include Bluetooth-based contact tracing, symptom monitoring via chatbot, anonymized notification of potential exposure, and COVID-19 test scheduling. The work at the Providence hub goes beyond the cause of the crisis and seeks to address its effects. Providence staff designed a Rhode Island arts website and platform at the request of state officials. The platform allows the state to communicate with artists, allows audiences and artists to connect, and provides a way to direct donations to that community. The Infosys Small Business Tech Support team in Rhode Island also helped local businesses move online for the first time. The team created an online shopping template and order form for Roch's Fresh Foods, a local grocery store, and a website showing the inventory of Moore Blooms, a local nursery. Food and flowers won't wait until the pandemic has ended. Blurred lines The COVID-19 pandemic is certainly a generation-defining event that simultaneously brings people together and splits them apart. There is a clear consensus that this period will transform the workplace. However, it is also broadening the way businesses think about charity. The corporate reaction to this pandemic has been hands-on and collaborative, whether it's developing government apps to slow the disease's spread, retooling a manufacturing facility to produce hand sanitizer, or turning a parking lot into a drive-through testing center. Businesses have moved quickly to help mitigate the effects of the crisis — even those enterprises unaccustomed to being on the front lines of a disaster. As distinctions fade between work and home, the pandemic is showing businesses the value of blurring the boundary between commerce and charity, between doing the right thing for shareholders and simply doing the right thing. The world has reached a moment when creativity, expertise, and teamwork are sometimes as valuable as cash.

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Blockchain: What's In It For Your Industry?

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/blockchain-whats-your-industry.html ----- Insights April 2017 Industry Stories Blockchain is set to disrupt almost every industry, and the possibilities it offers are not about to diminish anytime soon. A report titled 'Blockchain Distributed Ledger Market by Type and End User: Global Opportunity Analysis and Industry Forecast, 2017-2023,' noted that the Global Blockchain Distributed Ledger Market accounted for $228 million in 2016, and this figure is expected to more than double to $5,430 million by 2023. This is an impressive compound annual growth rate of 57.6% from 2017 to 2023. In this blog post, we illuminate on the potential this trust-based technology offers various stakeholders in different industries. With the tightening of border controls owing to political conflicts, terrorism, and

displaced populations, international trade, especially with relation to the manufacturing industry, is beginning to feel the pressure. A shipment of roses from Kenya to Netherlands now results in a pile of paperwork 10 inches thick. Imagine the complexity involved if a manufacturer is shipping defense, aircraft or industrial equipment instead, says Nitesh Bansal, Senior Vice President and Head of Manufacturing Practice - Americas and Europe, Infosys. "Blockchain can better manage the documentation that accompanies the many equipment parts, simplify the movement of equipment and its maintenance and repair," he says. The documentation of equipment often spans geographies and is multi-lingual. Watch this Vblog to get Nitesh Bansal's perspective on how blockchain simplifies the process with its immutable ledger, data security, and need-based access of information. "Payments will have many new form factors, such as wearables, mobile devices, (and) new methods for authentication," says Randy Vanderhoof, Executive Director of the Secure Technology Alliance, a solutions provider for critical security challenges. As these form factors increase and become more complex, blockchain will be the technology that ensures transparency and traceability of payments. "Many other solutions such as e-sign, documentation and identity can be layered on top of blockchain," says Narayan Sivaram, Vice President and Global Head, Cards and Payments, Infosys. Listen to Narayan Sivaram as he explains why financial institutions need to invest in innovation or join consortiums as part of their collaborative journey to make blockchain a robust technology for consumers and merchants. The media, communication and entertainment industry is being increasingly powered by the internet. A growing amount of data is being downloaded and streamed, and blockchain is set to power digital rights management to better guide this data consumption. Blockchain can simplify processes through smart contracts, digital records of transactions, and multi-party records. Watch this video and listen to Avi Kulshrestha, Industry Head - Communications, Media, Entertainment Europe and OEM Global, explain the uses of blockchain in the telecom industry in clearance for roaming, billing, over-the-air activation of services and transactions. Watch this video to get an interesting perspective from Anurag Vardhan Sinha, Senior Vice President and Industry Head Americas - Communications Service Providers, and Media & Entertainment, Infosys on the role blockchain can play in software defined networks, by delivering bandwidth on demand, with flexibility and security. As billions of devices are slated to be on the network in the next few years, blockchain can have wide applicability in IoT service management as well. Read more about the Infosys offering for blockchain >> =====================

Bringing Utilities to the Digital Age

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/ bringing-utilities-digital-age.html ----- Insights Industry Stories Utility companies, notorious for being slow in adopting new technologies, are facing growing calls to make their operations more efficient and transparent and answerable to customers. The criticality of their role, juxtaposed with

the fear of supply disruption due to change or transition, makes it imperative for such enterprises to modernize their IT infrastructure through a well-planned, low-risk strategy. A regulated, not-for-profit utility company decided to take the leap to modernize their IT infrastructure and upgrade their telecom network. See how Infosys helped and the five key takeaways from the project. =======================

Building a Cognitive Supply Chain for Optimum Inventory

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/building-cognitive-supply-chain.html ----- Insights Industry Stories The most visible change in the retail industry in recent times has been around enriching customer experiences by facilitating superior and differentiated omni-channel experiences. But to enable this, organizations need to be ably supported by an effective supply chain that is aligned closely with the sales cycles. Apart from optimizing inventory levels, supply chain solutions also need to help mitigate risks, and comply with social, environmental and technical guidelines. Consumers today are spoilt for choice. Customer preferences and tastes change far more quickly than before, leading to much shorter product lifecycles. This is especially true for segments such as footwear, apparel, and even consumer electronics segments. Inventory freshness has become all important. For mass market trend-driven products, forecasting demand can be extremely challenging. Because industry trends are so dynamic and changing rapidly, relying on historical data to predict sales trends in the near future doesn't always work. The old adage of Mass Production, Mass Marketing and Mass Movement is no longer an advantage and in fact an inhibitor for a digital supply chain focused on enabling omni-channel experiences. Optimizing Inventory Levels Overstocking creates the need to get rid of excess stock through discounts and markdowns. This severely hits both profitability as well as brand reputation. Understocking again negatively affects sales revenue. It also impacts customer satisfaction, because people are disappointed when they can't find what they are looking for, in stores. The challenge for retailers is to not only ensure the right level of stock, but also to confirm consistent quality and pricing across stores and direct channels. The traditional approach to supply chain management is focused on efficiency and minimizing costs. However, the focus now needs to shift towards supply chain flexibility in order to cater to changing customer demands. The answer lies in leveraging a cognitive supply chain solution that uses technology such as data analytics and machine learning to help optimize the supply chain. Cognitive insight can also help in supply chain areas such as size optimization, profiling and pack optimization. It can relook at traditional algorithms and infuse the spirit of machine learning algorithms. A Digital Cockpit for an Efficient Supply Chain Having end to end visibility of the retail organization to understand the operations at a glance is an extremely important component of running an efficient supply chain. The view should ideally be customized to serve people in different roles within the organization. There can be dashboards that give a breakdown of key parameters at the store level, region level and category/

product level. All this can run on AI concepts of machine learning, chatbots and voice interactions. A real-time AI enabled dashboard can also help in better campaign management since it helps measure the campaign impact instantly, leading to better inventory management.

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Performance, Schedule, Cost Conundrum in Large Commercial Aircraft Design

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/commercial-aircraft-design.html ----- Insights Industry Stories Like most industries, the large commercial aircraft industry has undergone major transformations in the last hundred years that it has been around. But the past 35 years have been significant, throwing up many tough challenges for players in the industry. Consider these: A significant player in the past, Lockheed, is nowhere to be found today in this market. An upstart conglomerate, Airbus, came from nowhere in the late 1970s and has today become a primary air transport manufacturer. Boeing, meanwhile, absorbed its former chief competitor, McDonnell Douglas, in a merger in 1997. More recently, challengers from Brazil, Canada, Japan, China, and Russia are gaining traction in the smaller single-aisle-airplane marketplace. These examples raise an important question – what issues have caused these radical changes? The list is long. The US deregulation in the late 1970s caused severe price competition. Access to slots (gate positions) at airports became limited and as global economic cycles waxed and waned, travel did the same since it is strongly tied to the Gross Domestic Product (GDP). Travel was also intensely affected regionally by the events of 9/11 and Severe Acute Respiratory Syndrome (SARS). Even though those were one-time events, they had a long-lasting effect on travel. The price of fuel has also been a significant challenge for aircraft designers. The cost of fuel skyrocketed as a barrel of oil went from US$10 to US$50, and later US$140, now back to US$30. The volatility in oil prices makes it difficult to set fuel burn requirements for an airplane five years in the future. Recently, the strengthening of the Dollar against the Euro has become important as well, since most airplane contracts are in US dollars. In contrast, most labor and material costs are in the local currency where products and parts are built. While all these challenges are daunting, I consider long design cycle time and the propensity for new technology to have more greatly hindered the ability to quickly and reliably bring to market next-generation commercial airplanes. Many are familiar with the stories and legends of the 1930s and 1940s according to which airplanes were designed, built, and flown in a matter of two years. For instance, the B-26 went from a paper concept to being operational in two years. Martin submitted its design in July 1939, flew the airplane in November 1940, and began deliveries to the US Army Air Corps in February 1941, eventually producing over 5,000 B-26 bombers. The B-17 Flying Fortress had a similar timeline, progressing from specification to prototype fly-off in a single year. War time focus, energy, and

requirements are not the same as for a 20-year commercial airliner. It would be facetious to claim that such a timeline could work today in commercial aircraft. However, the duration to design, certify, and put an airplane into service has steadily grown. According to Aviation Week Intelligence Network, the DC-9 had only 205 days between first flight and delivery. The 777 first flew in June 1994and was delivered in June 1995. Many of the most recently developed airplanes have taken over 550 days between their first flight and delivery to an airline. The Concorde had more than 2,400 days between its first flight and first delivery. It is likely that the new technology needed to fly faster than the speed of sound in a commercial airplane, caused the long development time. The driving requirements today are much different. Air travel is becoming a commodity as are the airplanes that carry us. Passengers care about safety, while getting from point A to point B, and most choose flights by price. The airlines want as many seats as is practical with the appropriate range to travel between the most desired city pairs. Why don't airplane builders work on the cost of their products early in a program? Early in my career, I had a chief designer who had three cards pinned to his office wall. He arranged them in top to bottom order in terms of current importance. At the beginning of a program, the cards read performance, schedule, and cost in that order. Sometimes during the program, they would switch order, but cost was always last. Cost consideration must be a priority but it should not become the compromise point for designers. The most important early decisions are around getting the airplane 'correct' for its market segment. Performance rules early on. How many seats? How much range? What is the weight? What are the aerodynamics and controls needed to make all these synchronize around a design? Secondly, the schedule becomes a key. The many gargantuan tasks include engineering, planning, build, system design and testing, ground and flight testing, and certification. Generally, the engine manufacturer will be running a parallel track program to certify the engine one year before the airplane so it will be ready for its first flight. Much money is invested at this stage of the program. Nonrecurring costs such as engineering, tooling, factory buildings, and equipment are committed and plans implemented. Large bets are made on which technology can be ready in time for production and how much it will save in recurring cost when production is at maximum rates. Other recurring costs include direct hand labor, support labor, purchased parts, overheads, and depreciation. In Dr. Leland M. Nicolai's book, Fundamentals of Aircraft Design (1975), he points out two critical items: The solution appears to be self-evident: Do the business case for new features and technology and do not include a feature or a new technology just because it is the 'next big thing.' Ensure that what is desirable is not only feasible from an engineering perspective but also viable economically. Determine the target cost and ensure that the target cost is met on each of the subsystems of the product. Seems easy enough. Some industries, indeed, tend to do this better than others. Automobile manufacturers have target costs allocated down to the subsystem level. A designer keeps working until the design meets all three requirements. The margin for cars is much smaller. Imagine being US$300 high on a US$15,000 car. If a model price point is missed, that car will be a failure. Even within the commercial aircraft industry, engineers encounter such dichotomies every day in solving problems of functionality versus manufacturability, or strength versus weight, and they succeed in designing

and building a marketable product. Why then, in such an acutely cost-conscious market, do we still have aircraft programs that result in products that cost more than what the customers are willing to pay? Almost every large aircraft program is plagued with the high production cost problem. Predictably, product launches are followed by months, and sometimes years, of effort to optimize the cost by modifying the designs, manufacturing process, or the supply chain until the product becomes viable. So much so that engineers have accepted this as the norm. They make decisions by prioritizing performance and schedules and are resigned to the fact that they will address the `cost issue' when they get to the `cost reduction phase' of the program. While this prevalent practice often helps meet the cost targets eventually, it is a highly suboptimal process with a lot of cost reduction opportunities left on the table. The post facto design space is rather severely constrained for the engineer. Most of the designs are frozen and render themselves 'untouchable' due to high collateral impacts. The supplier base is identified and contracts are frozen, and significant investments are made in manufacturing tools and fixtures. For every cost savings opportunity identified, you can't implement three others because you no longer have the business case to make the changes. After every such cycle, for everyone concerned, it is always – "give us one more chance and we won't mess up this time." But the cycle seems to repeat itself despite everyone's best efforts. In trying to architect a solution for this problem, I kept going back to the three cards of performance, schedule, and cost. How do I stack these cards so that my engineers don't have to choose one over the other, but rather achieve all the three objectives simultaneously? How does one go about changing the DNA of the organization to concede equal priority to cost? In answering these questions, we looked at the existing models of concurrent engineering and development within the aircraft industry. For example, most improved cost design ideas tend to increase weight. But over the years, the industry has built a strong process and a working model to set weight targets, monitor weights with each step of the design evolution, and consistently achieve such aggressive weight targets. Similar challenges exist when it comes to designing for strength, produce-ability, and sustainability. Each day, these challenges are overcome through communication, feedback, and exchange of ideas within an integrated function team construct. The solution is to base the design-to-cost working model on the same lines of the integrated functional teams: Commercial aviation has not only endured, but flourished in the past 100 years, despite challenges. Design-to-cost is just another hurdle that can be conquered with an integrated, prioritized approach. =====================

Complying with Regulatory Change

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/complying-regulatory-change.html ----- Insights Industry Stories Business Challenge A European asset and wealth management firm had to implement MiFID II regulations, the biggest and most comprehensive regulatory change in Europe in the last decade. Infosys View In an increasingly strict

regulatory environment, financial services firms would do well to overhaul their approach to compliance and risk management functions through integrated solutions covering business, technology, and operations. Business Outcomes And more... Read about the client benefits and the 5 best practices drawn from this engagement. ======================

IT/OT Convergence Needs Organizational Change First

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/convergence-organizational.html ----- Insights Industry Stories Asset heavy industries in general and the energy industry in particular are catching up with the impact of digital disruption. The opportunities in the energy sector are immense due to the sheer scale of operations that generates immense amount of data along with accelerating computing power and advances in automation, AI and ML. Traditionally, industrial processes and equipment including the technology that supports operations (OT) have stayed isolated from enterprise technology and its network (IT). Cheaper and faster connectivity, enhanced computational capabilities and cloud adoption are allowing IT and OT to come closer and drive superior levels of efficiency that were unimaginable a few years ago. For example, in upstream getting real time sensor data from production assets and feeding them into market demand management systems can close the loop and create market driven production plans. Assets can be maintained based on their operational condition rather than their standard design specifications which can translate into millions of dollars of savings in maintenance costs. Disparate legacy operations and process control systems, running on proprietary OEM platforms can be brought onto a single pane of glass for efficient operational monitoring. When data silos across the entire value chain from exploration, subsurface, drilling, production and ERP are integrated we can see correlations and find new insights, outcomes and avenues for efficiency. The challenges of IT and OT convergence However, this is easier said than done and IT/OT convergence faces multitude of challenges at the heart of which is the organizational divide between the two. Operations and technology have been traditionally siloed not only in the technology protocols and tools but also exist as completely different organizational entities. IT/OT convergence need to blur these differences. Operations are no longer just about managing physical assets, factories and plants. Data collected from the assets which are analyzed and visualized into their digital twins need maintenance thereby, requiring operations engineers to become technologists. And at the same time, technology groups need to be deeply embedded into the operational aspects of the business if they want to create real impact. These silos extend to data which is the lifeline of digital transformation. OT data because of their proprietary nature tend to stay within the plant systems and analytical and enterprise data takes too long to enter the operational silo to make an impact. Achieving the big shift In the course of our work with clients, we've seen these challenges and have developed a point of view and path forward on how to address them. While IT/OT integration is definitely a technological challenge, almost every

successful integration is underpinned by a fundamental change to the IT and OT organizations. In general, there are three shifts that need to take place to achieve better integration: Break organizational boundaries The traditional silos between IT and OT restrict the flow of data, information and decisions. To begin this journey, companies must look at breaking organizational boundaries first. While many organizations are creating the role of a Chief Digital Officer or CDO to focus on their digital journey and leave legacy IT to their CIO, one of our clients took a different route, eliminating the role of CIO and having a CTO oversee both operations and enterprise technology with an end to end responsibility of technology that is aligned to business value chains. This gives them the ability to make technology decisions that address business outcomes rather than technology solutions that are siloed. Another organization is changing their floor plans to co-locate technologists (data scientists and Python programmers) into their reservoir modeling teams and give them the opportunity to interact on a day-to-day basis. At the same time, they provide monthly Python classes to their reservoir engineers. Set your data free Data must be set free in a secure manner to flow from the operations to the enterprise side and vice versa by creating seamless connections. One way to achieve this is to retrain employees who have strong operational knowledge with the right digital tools for application development, analytics and visualization. Tools like PowerApps and PowerBI can help empower them to build their own applications. On the IT side too, providing access to operations data can help them better appreciate operational complexities. Giving both IT and OT teams the tools to operate in each other's world can help unlock several valuable insights. Data marketplaces offer efficient platforms that can help achieve this goal by making 'easy to navigate' and high trust data available to a wide variety of citizen developers. Democratize insight gathering Once the data is in place and people have the skills to use the data to their advantage, organizations must let people lead the way. Let citizen developers give the use cases, build solutions and come up with algorithms. Such an approach allows for experimentation and an iterative development process. Rather than giving a set of requirements to the IT developers, democratizing the process and allowing for bottom-up solutions will encourage people to experiment, fail fast and come up with newer ideas. Traditional IT will still have a big role to play when it comes to scaling ideas and delivering workable models, but a lot of ideas will come from the ground. Thus, bringing integration at the organization level between the enterprise technology and operations technology teams can ensure that the organization as a whole is oriented towards a common 'north' and are equipped with the right data, tools and skills to maximize business goals.
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COVID-19 injecting uncertainty into a shaky world economy

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/covid-19-uncertainty-world-economy.html ----- Insights Industry Stories Last week the world reached a tipping point. Twelve countries, representing 50%

of the world's GDP, shifted into suppression or lockdown (Figure 1) to limit the spread of COVID-19. Many industries will be affected, but some will just be disrupted. Those that act fast enough can help support citizens through this crisis — and will be stronger for it in the long term. Figure 1. How the 20 largest economies shifted from first infection to full lockdown We don't know yet how big the economic toll will be on each of these countries, or globally. China (which is the first major economy to lift restrictions) could see its economic growth fall by 23%, according to some forecasts. That is big considering the country managed to limit its cases to 81,000 — an insignificant proportion of their 1.38 billion population. The concern is that other major economies have not reacted as fast, or with as much authority, and that they may suffer even deeper economic impacts. Governments are racing to release fiscal stimulus packages. The financial markets in response, are either falling or becoming extremely volatile (Figure 2). Figure 2. While governments spend, market confusion reigns It's far too early to predict the medium or long-term effects. However, there is no denying that travel, hospitality, public events and venues are the first in line to take a direct financial hit. Meanwhile, retail, logistics, education, manufacturing, healthcare, media, telecoms, and insurance are facing significant changes in demand dynamics that present new opportunities but could also overwhelm them. Further down the road, however, it is the property and mortgage markets, as well as general financial institutions, that are going to face a longer-term challenge as employment falls and defaults start rising. For those where demand is shifting rather than decreasing, timely action will determine their ability to weather this storm. For these industries, COVID-19 will bring disruption that could accelerate digitization and re-shape their business models. Healthcare providers obviously have to deal immediately with a massive spike in demand. But healthcare organizations and policymakers will also have to rapidly ramp up their use of data analytics to track their progress and prioritize their short-term investments. Longer term, more connected and real-time data on health conditions will become necessary. Retailers will now have to be digital first, as consumers' physical store visits will be restricted and online deliveries encouraged by governments. Those that use data effectively to predict and manage demand will be in a better place to cope — now and in the future. Manufacturing firms will need to increase production of items that are in high demand like personal protective equipment and healthcare technologies. If retooling factories is too burdensome, a lack of demand could collapse some of these firms. Supply chains are going to have to do many about turns in order to re-balance inventories and orders. Logistics firms are currently well connected through various supply chain mechanisms — yet much of their handovers are still manual, and tracking provenance and quality is a challenge. In a hyper-sensitive pandemic situation, those that can ensure their goods are untainted will add the most value. Online education is already becoming a ubiquitous replacement for millions of primary and secondary students globally. It will boost the nascent e-learning market, while also make us value physical learning in a different way. In fact, it may disrupt the e-learning market more than it does traditional schools. Now some of the best teachers in the world will be able to reach classrooms of millions instead of dozens or hundreds. The media industry is already under pressure. As people stay at home, demand and consumption for content is soaring. Yet many production companies have

shut down filming due to the pandemic. The advertising market remains though. In fact, it could help bring more eyeballs back to broadcast from online. Some are finding new content. For example, ESPN2 will carry marble races and other alternative sports through YouTube licensing acquisitions. Meanwhile, Netflix and YouTube are purposefully limiting their speeds in Europe as bandwidth demand spikes for residential users. Telecom companies are now going to have to sustain peak volumes, and home broadband becomes a much more critical function as whole populations begin to rely on it for work. It would be trite to say that the ramifications of the COVID-19 pandemic will be far reaching. Whether the lockdowns are short-lived, or run on into the next year, the global nature of this crisis clearly marks this as a pivotal moment that will fundamentally affect social, business and governmental thinking. For many, COVID-19 is a warning to humanity about our fragile and tenuous control over the world around us. From an industry and economic viewpoint, technology can win back some of this control through techniques that connect, monitor, analyze and automate our ever more complex interrelationships.
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Creating a Community-Based Approach to Engage with Customers

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/creating-community-approach.html ----- Insights Industry Stories I have been working with high-tech enterprises for more than 15 years, and one of the most common challenges they all seem to face is this: How to boost engagement with customers in order to establish a deeper connection? The ultimate goal, of course, is higher customer retention rates and improved revenue performance. Here are my answers to that seemingly simple, but important question. Let's explore how enterprises can establish new ways to improve customer retention in light of the typical challenges they face today. Traditionally, high-tech enterprises have relied on their customers or retailers providing (or volunteering) feedback so they could share it with their product teams to incorporate it into new or enhanced product versions before launch. This would often lead to long delays for market-validated new product releases, and even if they did manage to accelerate the process, it often meant the new features did not align with customers' expectations. With advances in technology, high-tech enterprises are now able to engage directly with end customers and consumers by using social platforms, such as Facebook, Instagram, Twitter, YouTube, and others. Some companies even build their own unique platforms to engage directly with their own customers. Let me share with you an example of one company that created their own community of users, and several of the best practices learned from that exercise. A Community of Design Engineers that is an Industry Benchmark My example is Avnet, a global technology solutions provider with an extensive ecosystem of experts that support customers at every stage of the product life cycle. Avnet is ranked #165 on the FORTUNE 500

and has customers in more than 140 countries. Those customers include more than 2.1 million design engineers — from large enterprises to scrappy startups. To ensure that these diverse customer needs are met in their next generation of products and solutions, it was critical for Avnet to engage early and often with the core of their customer base—design engineers who are working on new products and new technologies. These engineers could be working out of a garage in the Bay area, or from a college dorm in the UK, or on a factory floor in China. To engage with such a diverse group of target design engineers and developers, Avnet saw the need for a way to provide easy access to all of its offerings. They also wanted to provide insights into the various components that went along with their product offerings to ensure a seamless design process. It was critical to receive input on how other design engineers were using a particular product and for them to share their feedback. Avnet chose to develop a very engaging and resource-rich community for design engineers—one which could provide Amazon-like reviews coupled with a Facebook-like interactive approach, all while tailor-made for developers and engineers. To move quickly on their strategy, Avnet acquired Farnell (based in the UK), which is a leading distributor of products for electronic system design, maintenance and repair. This move provided Avnet access to their element14 community, a discussion-based forum where engineers collaborate to help solve one another's design challenges. Shortly thereafter, Avnet also acquired Hackster.io, another online community which offers education on programming and building hardware. These two strategic investments have helped Avnet engage with design engineers early in the design process, leading to more engagement because of their end-to-end ecosystem that supports product design—from an idea on a napkin to mass production. In addition, it has also created a very vibrant community that fuels innovation of new product ideas as well as peripheral cross-sell and upsell opportunities for the company. Avnet is an expert in the latest technologies, including IoT and AI, and has two powerful online communities, element14 and Hackster, that are at the heart of our end-to-end ecosystem. These communities are key to our ability to help developers take an idea from the back of a napkin and turn it into a full-fledged product. Through them we are able to provide greater value for our customers as well as receive better insight into their needs. - Dayna Badhorn, vice president emerging businesses, Avnet Since the launch of its community-based platform strategy, Avnet has seen great benefits in terms of: Avnet also realized that having one's own community helps a business have better access and responsiveness compared to relying solely on other social media channels. Best Practices for a Community-based Approach to Customer Engagement To summarize, the top three takeaways for high-tech organizations are:
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Crisis and the Evolving CFO

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/crisis-evolving.html ----- Insights Industry Stories No member of the C-suite has been insulated from the recent turmoil, whether that turmoil is accelerated digital transformation, changing regulations, or, most recently,

the global pandemic. All these challenges have pushed the boundaries of what is expected from the chief financial officer (CFO) and added further layers of complexity to an already complex business landscape. In a recent CFO Fireside Chat, I had an interesting discussion with Chalhoub Group CFO Paolo Lo Monaco about the office's challenges and opportunities. The Dubai-based Chalhoub Group is a leading luxury retail, distribution, and marketing firm serving the Middle East. It has a workforce of more than 12,000 in 14 countries and operates 600-plus retail stores. The 66-year-old company sells some of the world's best-known brands (Louis Vuitton, Parfums Christian Dior, Tag Heuer) as well as creates its own brands and concept stores. There are always valuable lessons that we can learn from other great companies, even those in different industries. The underlying currents are the same, whether it's emphasizing agility, accelerating transformation, or discovering new business models, and all flow from a spirit of continuous learning. Our chat touched on subjects that ranged from the impacts of the COVID-19 pandemic to the evolving role of the CFO. Jayesh Sanghrajka: How did you react to COVID-19, and what changes did you make to your operating or business models to emerge stronger? Lo Monaco: Predictably, the Chalhoub Group was hit hard by the pandemic and the lockdowns that resulted. The company was forced to temporarily close all its stores, including space in the world's busiest retail center. "You think about the Dubai Mall — which is the highest-traffic mall in the world, with 80 million visitors a year — and suddenly, the traffic is evaporating in weeks. We had to stop that machine and reinvent ourselves very rapidly to cope with a different world." With mall footfalls halting suddenly, our entire supply chain engine stopped dead in its tracks. That immediately created liquidity concerns, as pressure increased from seemingly every direction. We had a perfect storm of dropping volumes, dropping EBITDA, excess stock, customers not paying, and other challenges. Chalhoub immediately set up task forces to take point on liquidity and ensure the health and safety of employees — when they were able to return. Meanwhile, the company also had to make sure it didn't lose touch with its customers, who most commonly interacted with Chalhoub businesses in person. Sanghrajka: I could totally relate to what you said. As a service provider, we closely monitored the challenges faced by our clients, spread across various industries. Our own industry faced all kinds of issues — people's safety, business continuity, completely ambiguous forecasts, clients holding on to their purse strings, among others. We too created what our CFO christened the "cash office," with a mandate to work with a three-pronged strategy: first, to reduce the infrastructure and other related spend; second, to work with our vendors to optimize our cash cycle on the payment side; and third, to work with our clients to do the same on the receivables side. Our client services group was tasked with remaining in constant touch with clients, even at the risk of overcommunication. How did you manage to maintain that contact with customers in a world where everyone was practicing social distancing? Lo Monaco: We had to reinvent ourselves very quickly by activating distance sales, which allowed us to reoccupy our brick-and-mortar sales staff. The online channels were the only means to maintain sales. We saw an exponential growth in our e-commerce business during the lockdown. It wasn't easy. What saved us was the earlier and timely investments made in our digital transformation program, which started in 2017. The effort was already advanced by the time COVID-19 was declared a

pandemic in March 2020. By then, Chalhoub had already started implementing customer relationship management, data analytics, and e-commerce, and improving last-mile delivery. "COVID has forced us to accelerate certain decision-making. Because of the disaster, we will still be 20% below last year in terms of sales. Without putting in place certain measures — specifically, organizing our supply chain and e-commerce sales — we could not have recovered a good chunk of those sales and would have been in a much worse situation." Sanghrajka: Our own experience has been very similar. The reason we were able to pivot to close to a 100% work-from-home model more quickly than our industry peers was because we had invested in technology ahead of time. We already had clearly defined remote working protocols, which we were able to scale up overnight, thanks to the foresight Infosys had while designing the technology landscape. Each business needs to have their digital strategy sorted out as of yesterday to be able to face such black swan events. In the past nine months, this pandemic has significantly accelerated digital transformation for many organizations. Businesses that have managed this transformation well are the ones that have emerged stronger from this crisis. Looking in hindsight, it is a relief that such decisions were made in time. What have you learned from the crisis that could apply to future black swan events? Lo Monaco: Honestly, I think the pandemic can be compared to an earthquake. And nobody can be 100% prepared for such an event in the future. However, the most critical takeaway — at least for retail — is the importance of timely decisions and speed of response. Companies should not postpone their digital transformation; instead, they should speed up the execution of their strategies. "Certain trends were very clear before the pandemic, specifically the acceleration of e-commerce sales," Lo Monaco said. However, the pandemic underscored the necessity of omnichannel retail and other foundational shifts. Although many luxury brands have been slower to embrace e-commerce and lagged other industries, Chalhoub started a partnership with luxury retail platform Farfetch in 2018. "To prepare for future events, you need to invest time and money to understand and delight your customers. In a business like retail, you really are the middle man ... offering the right product in the right place at the right time." At the same time, retail has to deal with competition from large online, price-oriented marketplaces and even the brands themselves. Sanghrajka: That's a fact. As a transformation partner to a variety of industries, we are observing this increased focus on digital transformation. No doubt the pandemic has underlined the importance of this shift. Do you think this is a short-term reaction, or will it be a long-term shift in strategy? Lo Monaco: The pandemic has been a cruel reminder to every organization that digital transformation can no longer be treated as discretionary. There is a risk that retail could become commoditized and then irrelevant. The utilization of technology has only become more important, so you can survey the data on customers and customer preferences. Basically, you can know your customer better than anybody else. You just cannot rely on human interaction alone to manage this. While that might sound elementary, it is the paramount lesson for retailers. Sanghrajka: Paolo, this is true, not just for the retail industry but also for every business. Adopting digital technology is no longer an option. It is critical to become digital-first. This pandemic has squeezed a decade's worth of digital transformation into nine months. Switching to the role of CFOs in managing the digital transformation of their organizations,

in your view, how do you see the role of a CFO transforming? Lo Monaco: The role of the CFO — outside the pure finance function — is very much ensuring there is an appropriate governance over the tech spend. There is an incredible acceleration, a skyrocketing of tech investments across all areas: customer-facing, back office, and supply chain. CFOs need to create teams that help prioritize those investments and carefully examine the return on investment. At Chalhoub, the approach started about two years ago as the company accelerated its digital transformation. The other important way technology interacts with the CFO is the actual transformation of that office. The same sort of automation that has revolutionized other industries or departments is rapidly becoming part of the "DNA of finance." The three most important CFO tech trends are: Sanghrajka: Infosys Finance is also running a focused transformation for itself. Being an IT company ourselves, it was essential for us to practice what we preach. At Infosys Finance, we have a dedicated team of experts who are leading this transformation for us. We have put together a clear strategy that has four pillars — effort efficiency, process efficiency, intelligent analytics, and compliance (the bedrock of finance). In the absence of a clearly defined strategy, one may end up taking initiatives that are focused on effort efficiency or process efficiency because these are usually the more tangible and pressing needs. A disciplined and balanced execution of the four-pronged strategy has helped us tremendously in the overall effectiveness and efficiency of our function. The guiding principle has been to use technology to amplify people's potential by freeing them of mundane, manual effort and enabling them with better capabilities for their core competencies. Lo Monaco: A change of such scale is never without its share of problems. The biggest impediment that we faced at Chalhoub was the insecurity of our teams. They were worried that technology might take away their jobs. So, we had to spend significant time and energy explaining to them that technology was not their competition but an aid to help them become more effective. Sanghrajka: This resonates completely with our own experience. However, being part of a technology company, our associates were a little more open to experimenting. Still, we had to clearly show them the benefits of technology adoption and showcase early successes, apart from repeatedly explaining how technology could amplify their capabilities. Good thing is, once people start to see the benefits, it creates a snowball effect that keeps getting bigger and bigger until it envelops everyone. For me, two things stood out throughout this chat. First, when you strip things down to the basics, all businesses have similar challenges and similar solutions that can help them. And second, the CFO's office is going to be more and more prominent in the near future. But it'll be a new office — a digital one that leverages technology, that focuses on predictive analytics, and that is powered by techno-functional finance professionals. Welcome to the finance of the future. =====================

Customer-centricity in a Regulated Utility Industry: Is It Time to go Beyond the Myth?

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/customer-centricity-regulated-utility.html ----- Insights Industry Stories As I pulled my electric car into the driveway on this happy 4th of July, I felt the car sway and then jolt, something I blamed on the car's yet to mature 'software enabled' handling. Within few minutes Twitter was abuzz with news of one of the biggest earthquake tremors in Southern California in the last two decades. From being occupied with my electric car, clean energy rebate program and 'time of use' billing plan, I began worrying about gas and water line damage, a possible electric outage and how social media might become crucial for very different reasons this independence day in the US. It is interesting to note that when the last earthquake of a similar magnitude hit Southern California, there was neither technology (both with the customers and the utility companies) nor any 'customer expectations' from utilities. Technology has established a huge presence since. It came as a surprise, therefore, that despite the technological advancement in the past few years, the J.D. Power 2018 Utility Digital Experience Study found the industry to be among the lowest-performers when rated for digital customer experience . Until recently, this could have been explained away as consumers being captive 'ratepayers' who pay highly regulated tariffs, with utilities having zero incentive to sell more. In 2019, 'customer-centricity' can no longer be an afterthought for utilities. It turns out that my regional utilities faced electric outages, gas leaks and fire incidents that required amongst other things –analyzing social media traffic from customers, adopting latest communication channels to minimize damage and a 'customer aware' assessment and response strategy. Consumers are not about to let utilities get away with a poor experience. They are demanding choice, transparency, and flexibility and utilities are increasingly realizing that the benefits of consumer-centricity are mutual. For instance, California utility encourages consumers to shift towards cleaner energy by inspiring them to learn more about their favorite car model based on fuel efficiency, about the available incentives and the total cost of ownership for that particular make, model, by year. It might be easier to influence an environmentally conscious millennial owner of an electric car, a solar roof or an energy-efficient appliance with proactive and engaging interactions. As these consumers become 'prosumers' by giving energy back to the grid, engaging with them can impact demand and fulfillment planning as well as energy grid infrastructure planning for utility providers. The consumer today doesn't shy away from buying medical supplies, baby products, or food from an enterprise that started as a bookseller, because the customer experience is consistently seamless, convenient, and trustworthy. Here is how a utility company can become a trusted partner to its consumers and help manage energy and resources demands of the 21st century. Customer data analytics can transform a utility into a Live Enterprise The global utility industry is increasingly becoming smart – smart meters, smart grid, and sensors all over the infrastructure. Millions of data points, through the lens

of analytics, have the potential to nudge out patterns, identify areas for innovation, and locate areas for improvement around customer and the energy grid. With these insights, a utility can transform into a 'Live Enterprise' that is constantly listening, learning, has a single customer view and can plan for the grid before demand or emergency arrives. At a higher level, data analytics can offer utilities unbiased pointers on what consumers want and where to allocate resources and investments. Digital readiness enables the live utility to respond to the ever-evolving consumer The utilities and their operational systems need to readily integrate with emerging services and service providers through a digital technology layer that is agile, fast and responsive. They also need to prepare to integrate with API based services and secure digital integration of the millions of operational sensors so that new services can be provided or routed through them. Customer-centricity can become a key differentiator in a competitive retail environment Consumers in the US are becoming conscious of the energy they consume and are gradually shifting towards renewables. The cost of wind and solar energy has also been dropping and community grids and community farms are burgeoning. As consumers become prosumers and disengage from utilities how can utilities manage revenues and keep growing? I think the answer lies in deeper customer-centricity and the creation of new business models based on cross-selling of services, and not just revenue streams safeguarded for decades by regulation. Without doubt, a customer-centric approach is a departure from the traditional approach adopted by utilities. But with disruption everywhere, utilities need to adopt a broader perspective that enables them to navigate the future of energy, get closer to customers, understand what motivates them, keeps them buying, and stops them from switching to the competitor. 1https://www.jdpower.com/business/press-releases/jd-power-2018-utility-digital-experience-study ======================

In-Store Customer Experience Will Define the Future of Retail

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/customer-experience.html ----- Insights Industry Stories Despite the phenomenal growth of online retail, it is still too early to write off the physical stores. Rather, the future of retail is about leveraging the combined power of online and in-store retail to deliver superior, differentiated customer experience and super-efficient operations. However, the physical stores of the future will be drastically different from the traditional stores since in-store customer experiences will be driven by technology, just like online stores. One great example is a leading retailer from Europe with whom, we started working with to streamline its IT operations and drive better operational efficiency. Today, the retailer is increasingly focused on improving the experience of its customers by providing a consistent experience both online and offline. We are currently working on concepts around back office transformation to enable a store of the future effectively. Here are a few examples of the things to come: Real-time Inventory Management With the combination of scanning robots and video analytics,

store managers will always have a real-time view into the inventory of products. Customer service robots or static AI enabled edge cameras scan the aisles and ensure that the right levels of inventory are captured. By ensuring data capture across the logistic supply chain, stores can streamline ordering, return, customer experiences and warehouse management. Refreshing Stores with AR/VR Augmented Reality/ Virtual Reality tools can help store managers experiment with new store layouts and views to determine the optimum ways to display their products. AR/VR can also help visualize new arrangements for special occasions such as celebrations or marketing campaigns, pop up stores etc. AR can also help provide product intelligence/data either to store personnel to facilitate better customer service, or even directly to customers. Using AR from a customer experience perspective has not been tapped at all but is very promising. In-store Navigation Geo-location can help customers navigate the store effortlessly through a mobile app. When customers enter the store, they are prompted to scan something nearby. Then, based on insights from analyzing their past actions, customer can receive targeted promotions. There are also opportunities to upsell/cross sell. AR provides good opportunities to make navigation, product finding and promotion overlays easier. In App Purchases Stores can eliminate the need for customers to go to the cashier at the end of shopping by enabling Scan and Go applications or walkout like technologies – something that Amazon has already demonstrated through its new age stores. Video Intelligence Intelligent real-time video can help in effective store management by monitoring the movement of individual customers. It can also be a useful tool for crowd management. Video data combined with AR can be valuable in footfall management.
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Campaigning for Customer Loyalty with an App

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/customer-loyalty-app.html ----- Insights Industry Stories Customer loyalty is hard to come by, in the age of ever growing competition and fast-changing customer preferences. Incentivizing purchases through offers and discounts is a good way to reel in customers. Making targeted offers tailored to customer preferences, and delivering them on a platform that is always available, is even better. A premium drinks maker thought they had checked all these boxes when they created a mobile loyalty app to push promotions and notifications to customers. But something crucial was missing. See how Infosys helped and the five key takeaways from the project.
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How to Get Customers to Love Your Brand

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/customers-brand.html ----- Insights Industry Stories Testing is often the pain point for enterprises when taking new products to market, and can make or break customer loyalty. Testing speed impacts how fast you can take a product to market, and quality can determine if the product takes off or not. So how can product testing be done better, faster, and in a more agile manner? A global CPG giant was looking to solve the same problem when it wanted to take its customer loyalty app to 18 countries. See how Infosys helped and the five key takeaways from the project.
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Why Utilities Need to Make Cyber Security an Urgent Priority

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/cyber-security-urgent-priority.html ----- Insights Industry Stories In the middle of winter's coldest night in the Midwest, I hear my central heating shut off and jump out of bed to find that the lights are out too. I sit gazing at the dark neighborhood and dropping thermometer, wondering what if the power outage lasts the entire frigid night. I start wondering how my recently installed smart meter might have been hacked to turn off my power, or my online account hacked to send a 'remote turn-off' signal, or the grid breached by rogue elements from a rogue state. The Internet is awash with such apocryphal accounts of doomsday scenarios that might not happen today, but are not out of the realm of possibility. A lot has been done to modernize the smart energy infrastructure since EISA (Energy Independence and Security Act of 2007 or the "Energy Bill") was enacted to make better use of resources and help the United States become energy independent. EISA 2007 and the resulting research, collaboration, and guidelines by industry bodies such as the NERC-CIP, FERC, NIST standards, and others led to many changes in the industry to keep pace with mandates and modernization demands. However, the rapid convergence of Operational Technology (OT) and Information Technology (IT) network, cloud adoption and distributed energy proliferation in utilities present unprecedented challenges to realizing the vision of the smart grid. A report commissioned by Infosys in 2018 titled 'Digital Outlook for Utilities Industry', found that 66 percent utilities have security as their highest priority. (graph below). While a Global Professional Service Company found that 49 percent of CEOs in the utility industry "say that becoming a victim of a cyber-attack is now a case of 'when', and not 'if". This concern persists not only for the critical grid control systems infrastructure, but also for personally identifiable information (PII) of millions of customers that could be compromised by a security breach. What Can Utilities do to Successfully Fend off a Cybersecurity Attack? From my extensive interaction with the industry, I

believe the first step in implementing a cybersecurity solution is to identify areas where infrastructure might cave in and strengthen these. Two areas within utilities that are vulnerable to external attack are Operational Technology (OT) systems and Information Technology (IT) systems. In OT areas of the grid, industrial control systems, supervisory control and data acquisition devices, and allied technologies used in plants, pipelines, terminals, and rigs have been found to be vulnerable to cyber-attacks. To address this scenario, utilities need to make the right investments, strengthen the security ecosystem, and push for more robust standards from suppliers. A superior resiliency-oriented security approach should encompass physical and data security including privacy. As utilities transition to cloud for agility, their cybersecurity teams will need to view this platform through a new lens, and adopt robust, scalable solutions such as cloud access security brokers, and architectures that handle applications and data separately. The focus on vulnerability assessments and cybersecurity risk assessment should reflect in IT operations strategy as well as project solution methodologies. Personally identifiable information (PII) including usage data will increasingly offer a much needed opportunity for monetization. This could be squandered away even before it materializes, if utilities do not adopt the highest levels of data privacy. More so, as, the risk of attack is only escalating, punitive costs are rocketing and awareness of data privacy through regulations such as GDPR is increasing. While peer-to-peer energy trading was the initial target for blockchain pilots, this 'buzzword technology paradigm' could well be the answer to pressing concerns around personal data from smart meters, billing and financial data or supply chain traceability that is geared towards the security and reliability of the grid. Whether it is pilots led by various power and energy companies like Vattenfall and Innogy in Europe or US based academia/ industry partnerships such as energy startup incubator Ameren Accelerator, utilities can benefit from early partnerships to explore the use of blockchain and strengthen safety, security and reliability of the energy grid. With the cost of a cyber-intrusion running into millions, an innovation partner can ensure the adoption of the right cybersecurity strategy While utilities try to implement network access controls, protocol-aware security layers, encryption measures, device connection controls, and other integrity measures, comprehensive awareness and personnel readiness remain a challenge. Cybersecurity could be further impaired by poor institutional cyber hygiene such as weak or no password usage, outdated/unpatched software, or poor physical security. All this, even as attack vectors evolve better social engineering tools rather than attacking hardware directly. It is here that an innovation partner acquainted with these complex levers of digital transformation can play the differentiating role between successfully warding off an attack or succumbing to its ravaging effects. Learn more about how Infosys has helped enterprises address the risk of cyber attacks
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From Darkness to Light: The Five 'Ds' can Lead the Way

Insights Industry Stories Technology makes the world a smaller, better place. Much of our 21st century sophistications are attributable to advances in technology. But even today, people across vast swathes of the planet seem to be living in the dark ages. Almost 1.3 billion people do not have access to electricity. If the statistic is staggering, the solutions beg a leap of faith and technology – energy from the sun for one hour suffices to meet the world's requirements for an entire year. However, less than five percent of the world's energy requirements are powered by renewable sources. The issue at stake is not mere electrification, but a mission for inclusive growth. The demand for power is growing exponentially. Limited access to power inhibits development. Elsewhere, an increase in population, economic, and industrial growth, along with a rise in per capita energy consumption due to lifestyle changes, are intensifying the load on the power infrastructure. The concerted effort of industries such as automobile to reduce the carbon footprint by replacing fossil fuels with electricity is further driving the demand for power. Policymakers need to ensure equitable distribution of energy supply, decouple carbon emissions from economic growth, rationalize domestic consumption as well as industrial demand, and foster sustainability of power companies. It can be achieved by focusing on the five Ds (democratization, decarbonization, deregulation, decentralization, and digitization). Democratization of energy supply facilitates access to power as well as flexibility to choose the source of power. Sustainable energy boosts economic growth and creates employment in emerging economies. In places with 24x7 power supply, the approach of consumers to renewable energy has changed dramatically over the years. In the formative stages when the price of 'green' power was high, providers offered incentives to consumers to boost demand. But today, consumers in the U.S., Australia, and Europe are prepared to pay a higher tariff per kilowatt-hour for power from wind turbines and solar farms. Small-scale or distributed generation is an efficient mechanism to democratize supply across markets. Initially, the cost-effectiveness, flexibility, and scalability of renewable energy were a cause of concern. However, utility scale wind and solar power projects are now viable due to the sharp decline in the price of solar panels and wind turbines. Additionally, rapid innovation in battery technology to drive consumer level and small-scale storage will further revolutionize this field. Deutsche Bank expects solar energy to reach grid parity in 80 percent of the global market by 2018. The cost of wind energy is predicted to be below natural-gas-based power in the future (Figure 1). Grid parity with conventional energy sources empowers environment conscious consumers to reduce their carbon footprint without paying a premium for 'green' power. Recent wind energy prices are competitive with expected future cost of burning fuel in natural gas plants. Figure 1 Cost of wind energy With no fuel cost and zero emissions, wind power provides clean energy with long-term, stable pricing and serves as a financial hedge against fossil fuel price volatility and potential future carbon pricing or regulations. Coal-based power plants produce only about 40% of

the total energy, but are responsible for more than 65% of carbon emissions. Some power plants have replaced coal with fossil fuel alternatives driven by technological advances in extraction that ensure an abundant supply of oil and gas. Natural gas is a much 'cleaner' source than coal, when methane leakage is circumvented. However, environmentalists warn that the rate of decarbonization needs to be accelerated to achieve the greenhouse gas (GHG) emissions target set by the U.S. and Europe at 80% by 2050. Further, distributed generation provides affordable and reliable energy, while mitigating carbon emissions and spurring economic growth. Bloomberg New Energy Finance expects global investment in solar installations to increase from the current 2% to 35% by 2040. Countries with rich oil and gas reserves, including Saudi Arabia and the United Arab Emirates, have undertaken programs to improve energy efficiency and reduce GHG emissions significantly. Along with all this, the power infrastructure needs to be revamped. A majority of the existing power installations will continue to be operational in 2050 while being less productive. Public-private partnerships (PPPs) can better mobilize funds required to transition to a decarbonized energy system. The entrepreneurial skills, project costs, and financial as well as technical risks of large-scale energy projects are best managed by the PPP model. The energy industry does not provide a level playing field yet. Conventional energy is subsidized in many markets and consumer segments. A conducive policy framework is a prerequisite for clean energy. Government energy policies should foster innovation as well as investment in utility-scale technologies to phase out carbon-intensive production facilities. The potential of solar, offshore and onshore wind, biofuels, marine, and geothermal energy can be realized only with institutional finance as well as regulatory support. The collapse of two leading solar panel companies – Mark Group and Climate Energy – following a series of subsidy rollbacks in the U.K., suggests that the energy sector needs all around support to realize the 'green energy' vision. Political consensus on reducing GHG emissions to mitigate climate change augurs well for the renewable energy sector. At the United Nations Climate Change Conference in Paris, in December 2015, government and business leaders made a commitment to accelerate energy transformation. Initiatives of the 'Lima-Paris Action Agenda – Focus on Energy' conference will boost energy access and help achieve sustainable development goals by providing a productive and transparent working environment for companies. Simultaneously, initiatives such as the US Clean Power Plan and 'Reforming the Energy Vision' (REV) in New York State address regulatory obstacles and market uncertainties. However, high-level strategies are not sufficient. Global standards to measure and verify real-time energy savings need to be developed. Incentives to encourage replacement of power-guzzling home appliances and industrial equipment with more efficient products are required. Significantly, holistic programs are required to modernize legacy power infrastructures. The industry has achieved Zero Distance with convergence of the points of generation and consumption. Investment in 'clean' energy sources is growing exponentially (Figure 2). Microgrids and onsite power systems allow enterprises, commercial establishments, and residential consumers to become self-reliant. More importantly, it reduces overheads and even empowers consumers to sell excess power to the electric grid. However, the ability to store energy holds the key to decentralization of electric power. Excess energy generated, whether from

rooftop solar panels in a home or a wind farm, requires large-scale energy storage systems. At the 2015 Climate Change Conference in Paris, several governments promised to increase research funding for clean energy. Business leaders including Bill Gates and Elon Musk, and agencies such as Advanced Research Projects Agency-Energy (ARPA-E) are building grid-scale batteries that will also reduce the cost of energy storage. In May 2015, Tesla's wall-mounted Powerwall batteries to store energy from solar panels at home were reported to be sold out within 10 days. The company plans to launch a more efficient version of the battery by August 2016. In a recent announcement, they clearly articulated their focus on the 7 kWh battery which is designed to integrate with solar panels. Figure 2 Investment in clean energy Source Bloomberg New Energy Finance A 10% reduction in power consumption will reduce carbon emissions by 18% and a 20% reduction in consumption will reduce 48% emissions by 2050, according to Bain & Company. A technological ecosystem can help companies and cities identify energy solutions and ensure the success of energy efficiency initiatives. Further, digital tools and collaboration between stakeholders can drive research and development in achieving an optimal energy mix. The Internet of Things (IoT) simplifies demand management by integrating diverse points of power consumption. Real-time data from heating, ventilation, and air conditioning (HVAC) systems, industrial equipment, and gadgets help optimize lower consumption. For instance, EnerNOC's energy intelligence software helps control electricity consumption in buildings, plants, and production lines. Analytical solutions predict consumption and combine it with weather data to capitalize on renewable sources. Energy management products empower customers to minimize demand and make informed decisions to reduce electricity bills. Although smart meters and IoT enhance the distribution infrastructure, they increase the risk of data breaches and service blackouts. Security incidents cost the power and utilities industry US$1.2 million in 2014, according to 'The global state of information security survey 2015' by PwC. Advanced security solutions identify vulnerabilities and protect applications, databases, and the network from physical and cyber-attacks. The utility industry needs to be more responsive to the acute energy deficit as well as the preference of the millennial generation for greener energy. The sustainability of utility enterprises will be determined by how smartly energy can be harnessed, stored, and distributed. =====================

Using Data to Gain an Advantage in ESG Investing

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/data-gain-esg-investing.html ----- Insights Industry Stories Data is now the fuel that propels companies and industries. However, the opposite is true for a great many environmental, social, and governance (ESG) investors, who often struggle to make sense of contradictory and sometimes irrelevant data points. Companies frequently receive conflicting ratings from respected ratings agencies. One researcher found that the leading ESG agencies had just a 30% correlation among their ratings. By contrast, credit ratings

agencies agreed 99% of the time. When Statista surveyed asset managers and owners about ESG investing, the research firm found that 39% considered data quality and consistency a main barrier to further investment. Nearly the same number — 38% — point to inconsistent data across asset classes as an important hurdle. This can leave investors wondering who is to be believed. Infosys conducted a global survey of 455 investment and fund managers to better understand how they use ESG data and ratings and assess the resulting benefits. Two of the key findings pointed to data's function as an obstacle or an advantage. Broadly, survey data found the following: Investors seem to understand the value of doing the math themselves. More than nine out of 10 firms relied on in-house ratings only or a combination of in-house and external ratings. These approaches produced noticeably better results than those for companies that relied entirely on external ratings, a sign that firms can use their data analytics expertise to find edges in ESG investing strategies. Firms that used only external ratings reported returns 6.47% higher than the S&P 500. Investors that relied only on internal ratings said their returns on average were 6.78% higher. And when they combined internal and external ratings, the increase jumped to 6.9% above the baseline. Figure 1. The best-performing investment firms combine internal and external data Source: Infosys Knowledge Institute However, our research did find an advantage that many investors missed. We evaluated the data sources firms used to develop their own internal ESG ratings, either data directly from the target companies or the raw data provided by ratings agencies. Investors that used company data to create their internal ratings performed 1 percentage point better than competitors that relied on external ratings. The firms that used rating agency data — not just the ratings — performed 0.8 percentage point better than those that used only the external ratings. Surprisingly, almost none of the investors surveyed combined both types of data. Perhaps they presumed both sources were essentially equal. But the data obviously is capturing different factors. Our analysis found that firms that use both kinds could see investment performance 1.8 percentage points higher. Our research found that the more data companies used, the better their ESG investment performance. Even so, we found more volatility than expected in the performance of the various ratings agencies, either through their ratings or the data they provide. Some of the agencies were used by nearly half the investors surveyed, and others were used by just a few. However, the popularity of the ratings agencies didn't necessarily correlate with the performance of the investors that use their ratings or data. Some of the most popular agencies had no effect on ESG investment performance. At the same time, firms that used one of the less popular agencies reported significantly better investment performance. This suggests that there is still a great deal to learn about what factors matter the most in ESG investing and which data sources will make the greatest difference. Investing in ESG is no longer a side focus; it's rapidly becoming mainstream, and firms that move confidently in this direction can profit in multiple ways. Growing the green economy — The stakes are no longer those of a niche market. Sustainalytics projects that the ESG investing market will reach $50 trillion in the next five years — offering vast lending and investment opportunities as well as risks. Investors should not underestimate this economic shift. Competitive advantage — Stakeholders are now considering ESG pledges and actions when making financial decisions. Institutions need to show that their actions

support these sustainability commitments and avoid the risk of greenwashing. Firms are increasingly judged on their ESG credentials. Reduce risk — National governments are demanding greater sustainability — particularly related to climate change — from companies. These can either show up as regulations or incentives. This will change the course of entire industries and economies and give an advantage to those on the leading edge. The great gains made by ESG investing in the past couple of years have opened the eyes of investors. However, it is easy to look smart during a boom. As ESG investing gets past this initial surge, firms will need to scrutinize their strategies — and the data that underlies them — more thoroughly. The data is almost certainly telling us something. But we're not yet hearing the full story. ======================

The COP26 Debate About Decarbonization Now Turns Into Action

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/debate-about-decarbonization.html ----- Insights Industry Stories The full impact of the COP26 global climate talks in Scotland these past two weeks won't be known for years or potentially decades. The wide-ranging debates, promises, and hopes spanned extraordinarily large numbers down to the smallest scale. Even as attendees pledged $130 trillion toward sustainable finance, the conference's signature moment perhaps came from the world's smallest economy. The recorded speech showed the suit-and-tie-clad Simon Kofe, foreign minister of the island nation of Tuvalu, standing knee-deep in the ocean — a visceral reminder of the risk climate change poses to many. Debates raged about whether enough was accomplished in Glasgow or the point at which rising global temperatures will finally peak. One of the only areas of agreement was the urgent need to decarbonize. In some cases, that meant a commitment to phasing out fossil fuel production (Denmark and Costa Rica). In other cases, it was plans by 40 countries — including Poland, Vietnam, and Chile — to shift away from coal. Many others promised to end public financing of overseas fossil fuel projects. If all climate pledges from COP26 are successful, calculations suggest that the worst impacts could be avoided. Dr. Fatih Birol, executive director of the International Energy Agency, said these pledges could limit warming to 1.8 C above preindustrial levels. Signatories to the Paris Climate Agreement pledged to keep warming well below 2 C, with a goal of 1.5 C. The commitments seem to be in place. But nations now have to execute those plans quickly and will need the support of their industries to cut emissions while meeting other obligations. This places additional pressure on companies to align their carbon emissions goals with those of the Paris Agreement and the global call to reach net-zero greenhouse gas emissions by 2050. Even with immediate action, this journey is likely to take the next three decades for most developed countries and longer for developing nations. For individual companies, however, this goal is within reach much more quickly. At Infosys, we committed to carbon neutrality in 2011. Last year, we reached that goal with a combination of

commitment and innovation. That success has emboldened us, rather than make us complacent; we have pledged in our ESG Vision 2030 to be carbon neutral each year going forward. We were able to create a collection of strategies, processes, and technologies that could move us to that carbon net-zero goal faster than we had previously imagined. The three pillars to reduce emissions are: The sequence of these operations is important so companies can minimize the costs and maximize the benefits. Investments in analytics, systems thinking, and automation reduce energy use, and, in turn, will determine a building's actual needs. This is a critical step because the use of buildings (both businesses and homes) accounts for 28% of the world's emissions. Once a new baseline is created, a company can then fulfill those needs with renewable energy, whether it's rooftop solar, power purchase agreements, or other options. In some cases, these might be long-term contracts that invest in the development of new renewable plants or expanded capacity. For the above, the benefits for the company and environment are clear. The emissions reductions help a country meet its "nationally determined contributions" toward the UN goals. Simultaneously, the reduction in energy use saves money. Historically, companies might give up more of those savings to pay for green energy, but the cost of renewable energy has dropped precipitously in many parts of the world. The final step is carbon offsets, which are necessary but not sufficient. These should be used judiciously and carefully; there is some risk that carbon offsets don't always offset carbon. A 2020 Bloomberg investigation found examples of carbon offsets that paid for preservation of forests that were never in danger, even without those payments. Although carbon sinks are important, they have their limits. The NGO Oxfam calculated that planting enough trees to account for planned CO2 reductions would require space the size of India. Companies must plan carefully to ensure their carbon offset is actually meaningful. When Infosys sought offsets, we developed our own program that eventually created a broad ripple effect. Instead of buying offsets from a market, we invested in India's rural communities. Our offsets program included electrification projects and replacement of old cookstoves (often wood-fired) with cleaner-burning, efficient biogas stoves. This not only reduced carbon emissions but also improved indoor air quality, which a global study determined is responsible for at least 1.6 million premature deaths annually. Overall, Infosys' offset program helped 119,000 families, created more than 2,600 jobs, eliminated the equivalent of more than 1 million tons of CO2, and contributed to 11 of the 17 UN Sustainable Development Goals. None of these efforts dragged down business performance. During this race to net zero, Infosys' revenue has doubled, and the workforce grew by more than 100,000. These results show a path forward to practical sustainability, a way to subtract what does not work in an industrialized society and replace it with what does.
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Enhancing the Digital Experience for Australia and New Zealand Mortgage Lenders

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/ digital-experience-mortgage.html ----- Insights Industry Stories While other mortgage markets have struggled, the markets in Australia and New Zealand have recorded strong growth for more than a decade. The value of Australia's outstanding home mortgages has doubled since the end of 2007, although growth slowed considerably in the past couple of years. In New Zealand, the value of household mortgages has increased by more than 70% since 2007 and was still growing strongly last year. However, financial institutions in these countries still have many challenges: rising customer expectations, shifting demographics, emerging competitors, and changing regulations. On top of those pressure points, financial services firms now have to manage temporary branch closures, increasing customer questions, and rising credit losses caused by the economic impact of the coronavirus pandemic. Even with the current crisis, the greatest challenge is likely the competition from non-traditional firms that offer lower rates and faster approval times. In Australia, nonbank lenders grew seven times faster than major banks in 2019, offering lower rates and faster approval times. New digital native companies have raised significant venture capital funding. These challengers are targeting the mortgage market with digital offerings that can be launched rapidly and offer a superior customer experience. For example, 86 400, which calls itself Australia's "first smartbank," says it can approve a loan within two hours, without the need for paperwork or a face-to-face meeting. Accelerating digital transformation is needed across the whole mortgage value chain in order to gain or even just maintain market share. But to improve the customer experience, established mortgage providers would do well to focus on the origination process. This is more complex with mortgages than with many other financial products. However, new technologies are providing a means to make a difference. Some of the digital functionality, which can be introduced in the pre-origination and origination processes, are: All these innovations require significant digital capabilities leveraging advanced analytics, artificial intelligence, machine learning, and open APIs. The latter is particularly important when creating an ecosystem of partners to enhance the customer experience. Many mortgage providers are still adding these new capabilities. In a recent Infosys global survey of industry executives, 41% reported they were likely to prioritize developing these capabilities in-house. The same percentage said they were likely to look for external partnerships to gain access to new technology. The trend to expand digital channels has been growing for several years, although traditional channels are still important. A 2019 Infosys survey of 1,250 consumers found that branch locations were still important factors for many customers. That research found that just over 30% said that they preferred to apply for a home loan at a branch location. Yet, the world that emerges from this coronavirus crisis is almost certain to be a more digitally-focused one. Consumers are now relying on more digital technology for everything from shopping to education to payments. The

increasing use of digital channels is driving existing providers to accelerate their digital transformations. The winners will be those who can transform quickly and efficiently in order to deliver an enhanced customer experience at a lower cost. =====================

How Content Publishers Can Succeed in a Digital-First World

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/digital-first-world.html ----- Insights Industry Stories Publishers use analytics and technology to offset the collapse of traditional subscription and advertising models. However, organizations must accelerate digital transformation to keep pace with the decline of their largest sources of revenue. Research by the Winterberry Group found an 11.2% decline in U.S. magazine print advertising and a 12.7% decline for newspapers this past year. Digital transformation is required across multiple areas, including advertising, content acquisition, editorial operations and audience engagement. This evolution has the potential to attract, create and retain digital subscribers; develop new revenue streams; and differentiate the leaders from the rest of the pack. Publishers that outperform their peers have done so by: Where publishers should focus Successful digital transformation can be sustained only with a "from the ground up" investment to develop enhanced analytics companywide. Leadership must demonstrate the discipline to consistently use these insights to make strategic and tactical decisions. This implies that a digitally focused publishing company should also be a technology company with a strong and driven IT team, and the ability to: This requires sustained investment in core IT teams or collaboration with partners experienced in technology transformation or global delivery. With more mature technology, publishers can tap into the growing number of innovative ideas and efforts. New digital formats Virtual and augmented reality and immersive video are increasingly popular options for content presentation in a complex and ever-changing publishing world. While content creation can be straightforward, finding new and unique ways to present that content is challenging and can differentiate a publisher from the competition. Content delivery Compelling content is only part of the story. Publishers must reach their audiences where they live, work and play. Currently, that means a dizzying number of devices with different screen sizes, processors, bandwidths, and other technical capabilities and limitations. Content delivery must be intelligent enough to provide a satisfying experience to large audiences who are using a diverse collection of devices. The Flipboard app, customized for mobile, tablet and web, is an example of a platform that hits that mark. Personalized content Publishers curate, personalize and recommend content based on subscriber segmentation. Platforms have the ability to provide supplemental and complementary content for ever-smaller slices of the audience. Google and Facebook have grown into advertising behemoths thanks to their detailed user profiling. While most publishers are not likely to receive data with that granularity, they do have access to metadata that can target consumers with content they want. YouTube, Medium and BuzzFeed are

popular personalization success stories. Audience analytics Successful publishers gather state-of-the-art audience engagement analytics and content consumption metrics. This is a crucial piece of the value chain, an element that differentiates industry leaders. The variety and depth of metrics provide the insights needed to drive other efforts. However, analytics cannot be a "set up once and forget" effort. It requires a dedicated team of data scientists and analysts to evaluate the metrics and key performance indicators (KPIs). These professionals must continually fine-tune the parameters, challenge the current metrics, and invent new metrics and KPIs. The next important aspect is to make these insights available to the content creators and close the creation feedback loop, much like what the New York Times did with its Stela, or Story and Event Level Analytics. Optimize costs In the past couple of decades, publishers have focused on all types of cost cutting as a survival mechanism. Increasingly, technology-led platforms can help those companies better optimize the costs of noncore services. It is critical for publishers to understand their strengths and weaknesses in both core and noncore areas. To give the creative side the attention it needs, all non-value-adding but essential operations should be optimized. This includes retaining or outsourcing those operations. Publishers should benchmark their current capabilities, systems and infrastructure against industry standards and invest to reach those measures. For instance, Arc Publishing is an offshoot of a Washington Post initiative to build the next-generation content management system for news publishers. This system is now being licensed to other news organizations without the need for significant marketing or overhead. Find every edge Focusing on core competencies and optimizing noncore systems are necessary for modern publishers. But that is not enough. These companies must also diversify into other businesses and alternate revenue sources, such as e-commerce, experiential advertising, content aggregation, internal business process and operations expertise, technology platforms, and the bundling of complementary content. The next generation of content publishers need to be agile, tech-savvy and data-centric in every aspect of their businesses. Publishers must understand that the meaningful impacts of emerging technologies, such as artificial intelligence, can be realized only when they identify the right problems and business needs. Then publishers can align the entire enterprise and invest to make this approach work. Ultimately, this gives publishers more freedom to do what they do best: Publish. =======================

A Digital Future for North American Mortgages

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/digital-future-mortgages.html ----- Insights Industry Stories Mortgage providers in the United States and Canada face challenges from every direction, including increasing regulation, low interest rates, growing customer expectations, and new digital native competitors. In addition, these companies now have to manage the disruption caused by the COVID-19 pandemic, which is pushing the global economy toward another

recession. Even before the current crisis, growth in much of the North American mortgage market was already low or non-existent. Profitability was under pressure, due to falling mortgage rates, escalating cost of loan origination, and the high prices of homes. In 2018, Forbes, Zillow, and others cited the housing slowdown, among other factors, in their predictions of an economic recession in 2020. In the U.S., outstanding residential mortgages fell from $11.3 trillion in 2007, just prior to the Great Recession, to $10.9 trillion at the end of 2018. That decline of 19% doesn't even consider inflation. Recessions have a particularly complex effect on the mortgage business. Unemployment leads to decreased lending and spending, which slows the economy further. Banks are less willing to lend money, resulting in higher interest rates. But those are often offset by governmental stimulus policies to lower the rates. Sometimes this encourages existing homeowners to refinance their loans. Cash buyers might switch to the more attractive financing options, while others may choose to save their money for emergencies, such as job loss. Although the mortgage market hasn't boomed since the last recession, it also hasn't stood still. Nonbank mortgage originators accounted for just 25% of the U.S. market in 2008, according to the Bank for International Settlements. By 2018, their share increased to more than 60%. These nonbank lenders are popular options for customers rejected by banks because of low credit scores. Additionally, online peer-to-peer (P2P) lending has increased in popularity. Those platforms easily link borrowers to investors with lower rates, digital innovation, and faster processes, a good fit for tech-savvy millennials. The worldwide P2P lending market was valued at over $67 billion in 2019, according to Allied Market Research. However, not all nonbank originators are new fintech companies. Quicken Loans, which was founded in 1985, introduced its highly successful Rocket Mortgage division in 2015. Faster loan approvals, flexible rates, shorter processing times, and looser regulatory norms have helped digital-first mortgage providers race ahead. Interestingly, this may be the first recession experienced by these companies. Since many nonbanking mortgage lenders rely on short-term credit for their operations, they are particularly vulnerable to greater losses and risks during economic downturns. A Forbes article explained that while traditional banks have deep data and extensive experience to deal with recessions, fintechs come with the advantage of being highly adaptable. Clearly, whether incumbent or startup, keeping up with digital developments — or even pulling ahead — requires significant investment and effort. For example, Quicken Loans reported that a team of more than 500 was needed to develop and launch its Rocket Mortgage offering. To match these new competitors, traditional mortgage providers need to build capabilities in a range of new and developing technologies, such as blockchain for faster approvals, machine learning to consolidate borrower information, artificial intelligence (AI) for underwriting, automation for faster loan origination, and omnichannel lending capabilities for enhanced customer experience. In a 2019 Infosys global survey, financial services executives said the most important technologies across the mortgage value chain were robotic process automation, advanced data analytics, and cybersecurity. Other important and emerging technologies were AI, machine learning, and open APIs, according to executives at these legacy companies. The Infosys survey looked at critical investments made by mortgage providers and found there was some progress. However, there was much more to do. For example:

Although many companies have begun exploring these and other digital technologies, the investment and range of skills needed are huge. To further develop capabilities in AI, machine learning, and open APIs, about half the companies surveyed said they would prioritize partnerships over internal investments. Historically, the mortgage industry has been slow to digitally transform, but that has started to change. Nonbank lenders and neobanks forced traditional lenders to expand their digital capabilities to meet evolving customer demands. The pandemic seems likely to accelerate and intensify that change both with intermediaries and direct-to-consumer mortgages (acquisition, servicing, and retention). Liquidity pressures, intensified by the new economic crisis, is also expected to accelerate nonbank consolidation. The nonbanks are asking for bailouts, but none of the U.S. federal relief packages have included them. Throughout this industry shake up, success will be measured by how lenders and servicers have helped their customers and employees through this crisis. If they succeed, the post-pandemic world will see a different and more resilient mortgage ecosystem. =====================

The Digital Pharma Labs of Tomorrow: A Sample of Things to Come

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/digital-pharma-labs.html ----- Insights Industry Stories This blog has been written with inputs from Qais Malik, Technology Architect, IoT Pharmaceutical laboratories work with data. Lots of data that needs to be stored, analyzed, shared and retrieved. Data that is critical right from serving the needs of the patient to driving outcomes that insurance companies, government and pharmaceutical companies seek. They also deal with a lot of complex laboratory processes that includes working on fragmented data systems, collection and validation of data from diverse sources, and demands from regulatory bodies for high standards of data integrity. These create a perfect opportunity for pharmaceutical laboratories to consider digitizing the entire laboratory workflow in order to streamline processes, control costs and deliver real-time and accurate information. Digitalized laboratory environments give meaning to data, which enables "digital moments" where decisions are made at the intersection between people, business systems and connected devices. Combined with analytics, the laboratory equipment, consolidated platforms, and consumables, a digital laboratory can sense, communicate, analyze and act on data in an optimal manner. Key Trends Encouraging the Move to Digital Lab Electronic Labs of Today Lack Agility and Accuracy Today, laboratory equipment feed data to systems where analytics filters it for relevancy; however, humans still interpret most of the results. Automation is often built into laboratory informatics, but the systems are not dynamic or flexible. For example, if the performance of an instrument has been diminishing, the experimental deviations are typically unnoticed until the results go 'out of trend'. Historical relationship between an operator and a process is difficult to

capture. Mistakes, oversights and challenges are routine even in a paperless or electronic environment, despite using laboratory systems with fail-safe capabilities. While these systems are electronic in nature, legacy architecture and infrastructure prohibit them from adopting true digital capabilities. The Possibilities of a Digital Laboratory The following questions while sounding aspirational bring forth the value that digital can drive in laboratories: Digital capabilities can create value across the five most common areas where lab metrics are measured. Last but not the least, the roadmap to a digital laboratory does not end with adopting systems that support self-learning and analytical capabilities, it involves a cultural change in the way the laboratory staff accesses, monitors and manages the samples and results. They need to reskill and learn new ways of gathering, recording, viewing, retrieving, and interpreting data for a true digital success in the lab. =====================

Retail stores need a digital reboot

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/ digital-reboot.html ----- Insights Industry Stories Technology is so advanced that fitting room mirrors can now help shoppers select and coordinate their wardrobes. Although still rare, this level of augmented reality is no longer a science fiction device but a practical tool. Retailers are pursuing high-tech breakthroughs to keep pace with the growth of online shopping and increasingly demanding consumers. Two facts underpin the blending of physical spaces and digital technology. First, despite the convenience of online retail, consumers still want to touch, feel and experience products before buying them. Second, digital systems offer cost-effective and simple tools to differentiate in-store experiences. In retail's new omnichannel world, the consumer experience demands a seamless transition between physical and virtual environments. Interactive kiosks, smart dressing rooms, virtual trials and mobile apps can be used to enhance the appeal of physical spaces. Digital tools delivering immersive product experiences, fostering interaction or inspiring creativity need to be combined with proven in-store marketing techniques for the new customer journey. In other words, don't get rid of the mannequins just yet. A digital frontrunner At athletic wear giant adidas, executives took a digital-first approach to their physical retail stores. The in-store technology includes radio-frequency identification-enabled mirrors, QR codes, location tracking and visualization via apps. The Bring it to Me app allows shoppers to search products, check stock, request trials and order merchandise. The tool also enables staff to respond promptly when shoppers ask for other sizes and colors. Running Labs at the adidas flagship store on London's Oxford Street let customers test products in virtual landscapes. Run Genie pods attached to shoes can analyze movement during trial runs in the store and display data on a tablet. That helps store associates recommend products that match the customer profile and preferences. Online-offline divide The shopping experience is moving beyond the product. Some customers may insist on a product's sustainability, while others may be interested in who designed the merchandise. Identifying and fulfilling the unique requirements of customer micro-segments is possible only with scalable solutions that integrate

external and internal data sources in real time. Infosys research and client experience has found that harmonization of physical and digital elements empowers retailers to address multiple problems, including cart abandonment and product returns. Spatial modeling, digital twins and machine learning provide the ability to troubleshoot and test concepts while enhancing product aesthetics, store layouts and operational efficiency. Those elements were featured in the creation of the Infosys Live Enterprise Suite, which modernizes core retail systems to create a feedback loop between the physical and virtual. The result is a seamless connection of the digital and brick-and-mortar sides of the business. Empower store assistants The adidas experience — along with many others — teaches us the balance needed in the new generation of stores. More retailers have deployed voice assistants and video chat for customer self-service. The tone of voice and facial expressions are new data streams that can generate insights and deepen customer engagement. However, mixed reality, digital displays and interactive catalogs cannot replace the human touch. While digital assistants help customers find and learn about products, retailers need teams of in-store experts to boost impulse buying and make nuanced recommendations. Millennial shoppers are comfortable switching back-and-forth between online and physical retailers. So store associates must be trained on digital tools to become equally fluent in the old and new ways of shopping. That is essential to retaining their jobs and also keeping the shop doors open as more business moves online. Join us at NRF 2020, from January 12-14, 2020, in New York City, to understand how we are building user experiences for stores of the future. ======================

Digital's Next Stop - Farming

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/digitals-next-stop.html ----- Insights Industry Stories Just yesterday, within weeks of the start of the North American planting season, Indiana farmer Trent Boyd was installing field tiles. To those unfamiliar with farming, field tiles are a network of black pipes laid about 30 inches below the soil's surface, and, depending on the farmer's preference and the crop, about 40 feet apart. They run laterally until they meet a larger drainage pipe or ditch, similar to a household drain operating on a massive scale. Farmers like to joke that water never, ever runs uphill. The laying of field tiles is an example of the many important tasks a farmer must accomplish before the spring planting; from that point until harvest, the focus turns to coaxing maximum yield from the crops while optimizing the inputs. Proper drainage and irrigation is one element of farming that can tip the scales between feast and famine. We humans should know – people have been farming for many thousand years. And for the bulk of that period, calculating the right field grade and slope was an intricate and important part of the process. One of the proudest accomplishments for men of the 18th century enlightenment, like George Washington, was to become a land surveyor. Until about a decade ago, it was not uncommon for farmers to prepare their fields like they did in Washington's day; spending hours per acre using surveying tools and making complex calculations in paper notebooks regarding the layout of the land. Yesterday, Mr. Boyd, a partner at Boyd Grain Farms in

southwestern Indiana, hopped into his tractor, and using a digital GPS system that relayed information back to a base station, determined the grade and slope of every square inch of a 40-acre field and simultaneously, laid the field tile. What used to take weeks is now completed in a couple of hours. Undoubtedly, the digitally powered human revolution sweeping the globe is on full display in the Silicon Valley. But there are other valleys – consisting of millions of acres of farmland – that have been quietly powering the human revolution just as profoundly as anything to come out of the Silicon version. Food is probably the most basic and essential necessity of life on this planet. Yet even today, a significant percentage of the world's population does not have enough food to eat. With the world's population projected to reach 9 billion by 2050, it's no wonder that the technological transformation currently affecting farming can have far more enduring effects than another social media app. Farmers are using technology to grow more crops using less acreage, water, fertilizer, and fuel than at any time in history. They're empowered by advances in digital surveying systems like the one Mr. Boyd uses, and also by gigantic leaps in how seeds are developed to withstand unexpected changes in the climate. They're designing pest-resistant crops, which means farmers will no longer have to spray chemicals over large swathes of land and hope that the pesticide sticks to the plant and isn't part of the run-off into a local water supply instead. Beyond Silicon Valley, other technology companies are also changing the world in ways that are just as powerful. Dozens of companies are developing products that improve crop and animal health, boost the nutritional value of farm products, and make farming more productive and efficient. These enterprises are dedicated to taking on global problems worth solving. I come from a long line of farmers and still help my family manage land in southwest Indiana, some that we've harvested for generations. Although I've spent my career at technologically savvy, digital corporations, I always look forward to each opportunity to return to my family's farm. In fact, the world of high-tech shares characteristics with today's farming: the basic mandates of a modern company include maximizing yield while minimizing waste and inefficiencies, reducing our carbon footprint, and designing and marketing products and services that help improve the human condition. In essence, accomplishing more with fewer resources for more consumers. Along the way, the organizations I work with as clients of Infosys, want to leverage technology to give their customers or constituents more power and choice, as well as to give their employees more options when it comes to navigating the marketplace. Everything I've just described is equally true for the rapidly digitizing farm of today. My cousin, Mike Kavanaugh, is the Product and Agronomy Manager at a seed corn company called AgriGold Hybrids. With a Master's degree in soil and crop science from Purdue University, his specialty is to push the boundaries of agricultural science – and that means using technology to mitigate risk in the field. To a farmer, risk runs the gamut of things such as pests, disease, climate, crop characteristics, and probably the riskiest of all, time. These are elements of farming over which, until recently, a farmer had little control. With the advent of bio statistical analysis, however, scientists can establish the characteristics of various strains of seeds in the laboratory, – long before they hit the soil. The result is that agricultural experts like my cousin can choose the finest seeds that eliminate guesswork and save precious time during the growing season. By

the time those seeds are planted, farmers have a clear understanding about how they will perform under a wide array of conditions. Moreover, genetic improvements to seeds allow farmers to focus on high-yield crops that have the most nutritional benefits for the end consumer. Seed research is only the beginning of how farmers are solving a worldwide problem. There is also a digitally enabled process known as 'variable rate seeding' that uses data such as soil analysis to know not only which types of crops will grow optimally in what part of a farm, but also how many seeds to plant per acre. In the recent past, farmers would have to wait until the harvest season to evaluate which crops grew better in certain sections of the field and institute their planting regimens for the next growing season. Now, time is on the farmer's side. They can use digital sensors and monitors to solve yield limiting mysteries in the field while these are happening. Real-time analytics have saved millions of dollars' worth of crops. Near exactness with Global Positioning System (GPS) technology has improved accuracy of soil sampling. This in turn has enabled variable rate fertilizer applications to optimize the yield environment of specific fields, creating better fertilizer efficiency and timeliness. In 2015, AgriGold research in the US Corn Belt showed over 5 bushels per acre increase compared to field check strips, when digitally changing the population of seed on the go, within a field. The assets and inputs needed to make a farm as efficient as possible are expensive parts of the equation. Whether it's a tractor, bailing turbine, or other mechanized equipment that run on fossil fuels, or varieties of fertilizer that help crops get the most from a growing season, digital farmers are leveraging tools that help them use less and yet reap more. For instance, digital tools have created programs of multi-hybrid seeding where a farmer can plant one or more hybrids or varieties in one geographical area. The point is that hybrids can thrive in more than one environment; so the farmer can use overly wet areas of the field and, on the other end of the scale, drought-prone areas of the same field to plant a combination of hybrids or varieties of the same crop. The hybrid that can thrive in a water-logged environment would shut down when its seeds got to the drought-prone area. But within feet, if not inches, the other hybrid would pick up and thrive in that area. Not to waste even an acre, the `in-between' areas are where both crops would conceivably thrive. Digital monitors relay data back to the farmer, who then knows when and where to plant seeds more likely to thrive in that soil. In 2015 AgriGold research in western Iowa showed a 7.8 bushel per acre advantage when changing hybrids on the go, while using a 24-rope hybrid planter. The digital journey that has transformed the farming industry has many benefits. Farmers now have the capability to understand the climate before they even plant a crop. That's the future. My cousin likes to say that the world of digital farming is just now dipping its toe into the water. Of the many benefits and changes that digitization has brought to the practice of farming, arguably, the most significant one is that farming has become a forward-looking industry. Everything about farming used to depend on evaluating last year's crop, weather, and soil to make decisions as to how to prepare for the next growing season. That means that for tens of thousands of years, farmers relied upon past data with little visibility into the future. Now farmers can analyze a weather trend in real time or study the characteristics of a seed and its potential performance long before it is planted. The possibilities for Planet Earth are tremendous. It starts with grassroots innovation in some of the remotest farms on earth – places that

don't yet have access to a computer. But what they do have is ingenuity and innovative thinking. Take the story of Pandharinath More, a resident of Maharashtra, India, who demonstrates that grassroots innovation remains alive and well. Pandharinath is a 66-year-old farmer who anticipates the arrival of the Internet of Things. Every year, he makes the bulk of his income during the precious couple of months between November and January when he cultivates onions. It's the only time of the year this cash crop will grow; so a farmer like him wants to achieve the longest season possible. The problem Pandharinath faced was how best to plant seedlings at the beginning of each growing season. It's the most labor intensive part of the two-month process. So he got to work creating an onion transplanter. It took him 43 days to invent and build a piece of farm machinery at a whopping total cost of $725. This tractor-drawn implement can simultaneously perform three functions – transplanting onions, applying fertilizer, and making equally spaced irrigation channels. Pandharinath's invention has made being an onion farmer in India a far more lucrative pursuit than it was even a year earlier. Another inspirational story of agricultural innovation comes from the Hussain brothers in the Darrang district of Assam, India. Mohammed and Mushtaq Hussain are rice farmers who became fed up with frequent power outages that interrupted their water pumps. Rice paddies fail pretty quickly without lots of irrigated water. Sure, you can turn to diesel pumps if the electricity is spotty in your area. But diesel fuel is expensive and a drain on resources. After watching a kite fly high into the sky from a gust of wind, the Hussain's got the idea to assemble a windmill that could power their irrigation pump. They searched for building materials that were abundant, cheap, and strong. Their prototype was a combination of bamboo, polypropylene, iron rods, and rubber from old tires. The rotation of the windmill cranks the handle up and down, creating a continuous flow of water for their farm. They built their prototype in only four days, and the final product cost less than US$70 – 90 percent less than commercially available models! Better still is that they can dismantle the entire structure in under an hour and carry it to another field or even another farm if needed. This innovative story is well-known in the farming community because of the low-cost, high-value application of technology to improve the human condition. The investment community has taken notice; venture capitalists are taking a strong interest in the ancient industry of farming. Monsanto made news when it bought weather big data company Climate Corporation in 2013 for US$1 billion, creating a large payout for its investors. Last year, a group known as the Farmers Business Network, received a US$15 million investment round led by Google Ventures. Their goal is for their team of rural data scientists from around the American Midwest to make agricultural data more accessible. The more farmers know about what crops are doing well and under what conditions, the more chances they have to improve yields. Another venture capitalist firm, Kleiner, Perkins, Caufield and Byers, has funded a group that claims to have aggregated data on the performance of seven million acres of farmland across 17 American states. The database also includes information on more than 500 seed varieties and crops such as alfalfa, corn, wheat, and soybeans. None of this widespread sharing of highly detailed knowledge would be possible without big data and its underlying technologies. Using real-time and predictive analytics, as well as big data pertaining to crops, seeds, weather, and soil, humans have the opportunity to improve productivity for

land all over the world. From Indiana to India, think how much more productive these farmers will become as they become fully connected to the Internet of Things. The endgame is that as the population of the planet continues to increase, agriculture will keep pace, and no one will go hungry. That's a problem not only worth solving, but it's one that's being solved today by farmers around the world who are embracing new technologies that are revolutionizing their industry Learn how Infosys is renewing and creating new value for agriculture enterprises >> ======================

How Legacy Can Overcome Digital Transformation Challenges

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/digital-transformation-challenges.html ----- Insights Industry Stories Today, most organizations understand and appreciate the need to provide digital experience to a new and growing breed of digital natives who live and breathe digital. But despite the intent, transforming an organization, especially from a traditional old school 'legacy' industry, can be incredibly difficult. Insurance is a great example. The insurance industry is highly regulated, and with good reasons. Stringent regulations can make it tough when you are trying to launch, let's say, a new life insurance product that is simple and easy to understand. No matter how innovative and exciting the new offering is, it needs to stay within the ambit of rigorous guidelines and regulations. This puts severe limitations on creativity and innovation in certain markets. Technology transformation is the other roadblock. You are essentially trying to retro fit the legacy technology backbone with new-age technology. Not an easy task. If we again take life insurance as an example, many companies run on antiquated COBOL-based systems that run in a batch mode. Every night, the system runs batch jobs to process all the policies sold or changed during that day. This is about as far as one can be from a real-time, one-touch experience that today's customers know and demand. In such a situation, creating a world-class experience is challenging because the technology stack is living in an era that doesn't allow us to do so readily. The other aspect is that the industry itself is steeped in operational processes that are not designed to be nimble enough to support today's business needs. For example, the processes required to support issuance or changes to policy would have changed several times over, across the years, in lieu of changing regulations or types of products. Often for many companies this means completely overhauling the business process to make digital experience as real as possible, which throws a big challenge in their transformation journey. Any digital transformation effort in such a scenario demands an all-encompassing change across technology, process and functions in order to beat challenges and become successful. It is a massive exercise right from realignment of roles, redefinition of both internal and customer facing processes, to the complete technology overhaul. So, even if an organization is keen and willing, moving the entire business into a new era is a tedious, time-consuming and difficult task. The question then is; how do we do this? Start Small and Experiment Given the

quantum of change that a transformation demands, many organizations are wary of jumping headlong into it. This is especially because you run the risk of impacting growth, if you mess it up. So, the preferred approach to digital transformation is to experiment with smaller pockets of change. One way, which is probably extreme but possible is to create a separate entity that is completely digital in terms of processes, technology stack, and offerings. This is being experimented by industries who understand that changing the old legacy firm quickly to create a new digital face is near impossible. So creating a separate entity that is different in every way, from structure to roles, compensation, process and tech stack, thereby keeping it away from the shadow of the legacy organization is an alternate way forward. It is truly the turning point for legacy industries that they either disrupt themselves or be disrupted. A leading global staffing solutions provider, has done this quite successfully. It launched a mobile-first, cloud-based, end-to end digital platform in many ways disrupting their existing business. The new platform leverages the company's key strengths, and also brings scale, speed and agility to introduce new ways of doing business in the digital economy. It is already disrupting the industry and its own business in several markets. A Phased-Approach to Digital Transformation If we hope to digitally transform an entire organization without unduly disrupting the flow of work on a day-to-day basis, a phased approach probably works best. Start with the people. The challenge is that people are set in their ways. So, an organizational change management exercise that focuses on changing people's mindset and thinking is an important part of the change. I have been part of conversations where people would ask what we meant by going digital. Not everyone understands or agrees to what it means, so creating a common understanding of what digital means for an organization is a great way to start. The next thing is to agree on what are the outcomes that the organization is trying to achieve. This probably is the most important step that organizations miss in the journey. Going digital is strategic enough for it to be run from the highest level. Agreeing to outcomes that must be achieved, whether it is Net Promoter Score (NPS) or top-line/bottom-line growth, ensures alignment of the priorities within the program. The subsequent step is to re-look at processes to ensure that they meet the desired outcomes. For example, if NPS is important then one of the critical things would be driving customer satisfaction. Every process that touches the customer, needs to be relooked at and examined to see what should change so that you exceed the customer expectation. A pilot should be launched first to assess feedback. The actual digital applications could be introduced through a series of soft launches over a period of time. It is essential to invest sufficient time and resources to gain a thorough understanding of what your customers expect. One stellar digital success story is that of a US-based agriculture and home improvement product. While they always have had an online channel it wasn't quite best in class and not delivering the expected business impact. On a detailed study there were many possible reasons that were identified like their customers often liked to pick up products at the stores, or there were issues of running out of stock which became apparent only at the time of checkout etc. Multiple such insights on the portal side and on the process side went in to creating the digital transformation plan. Marrying online and in-store experience, process changes, and redoing the online channel for better efficiencies led to a remarkable turnaround in their online sales to the tune of an almost

100% increase during Thanksgiving. Today, there exists a class of digital native customers who expect the best digital experience in their interaction with any business. At the same time, there is also a class of what we can call 'legacy' customers who prefer the traditional modes of engagement. Every industry has to cater to both the types of customers, so that when they access your business through different channels their expectations on experience are fairly aligned. Whether a legacy customer is walking in to the physical store or a digital native customer is accessing the digital store they expect the same brand characteristics along with a much higher level of responsiveness and personalization than in the past. And then both these set of customers are coming from a world of one-click buy, so today's businesses have to apply the same set of technologies and create similar experiences to meet the demands of both the groups. With the advent of conversational commerce, AI, Bots, AR/VR/MR etc., this space of digital transformation is just getting more exciting. =====================

Digital Transformation in Financial Services, leveraging Agile

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/digital-transformation-financial-services.html ----- Insights Industry Stories The financial services industry is undergoing significant disruption driven by consumer demand for new and innovative products and services, with rich user experience, shorter timelines to deliver while continuing to reduce cost. Enterprise agility is emerging as a key imperative for such digital transformation. Smart adoption of agile is now critical for banks and capital market firms globally. This article highlights how successful firms are leveraging agile for such transformation in a rapidly evolving industry landscape. Introduction Over the past few years, the nature of financial services has changed owing to consumer demand for highly personalized service, intuitive interfaces, backed by robust security and business transparency. Most financial services firms have embarked on digital transformation keeping customer centricity at its core but flexibility in continuing to on-board new and emerging technologies will be critical to retain the edge in today's dynamic and competitive marketplace. There is a need to adopt evolving data and insight driven approaches to increase market share, use cloud to improve security, leverage AI for contextual and personalized service, in line with the firm's vision and strategy. Enterprise agility and the ability to innovate, adapt and respond quickly, is no longer a choice but the cornerstone of successful digital transformation. What Drives Successful Digital Transformation? Here are 5 key factors that are crucial for successful digital transformation programs in the financial services industry: The Power of Agile in Financial Services An underlying theme among the above success factors for digital transformation is the need for agility. Infosys has helped financial services firms globally, adopt agile approaches for greater value realization. Our experience shows that there are 5 common underlying themes and they include the following:

Understanding the bigger picture – The end goal of digital transformation can be represented as a roadmap of milestones to be achieved, features to be released incrementally or a chart of targeted outcomes to be realized over time. Agile teams have the advantage of understanding this bigger picture, allowing them to better identify what steps are needed to achieve small and large goals. Such teams comprise of multi-skilled personnel that collaborate well with the extended organizational ecosystem to uncover challenges, brainstorm solutions and execute resolutions with precision. Agile teams also leverage agile practices such as iterative delivery and frequent demonstrations to business teams for better involvement, thereby aligning IT with business. A leading US Insurance company successfully used Agile to enhance Business-IT collaboration on a large digital transformation program and was able to bring down time-to-market for new features by nearly 80%. Shift from project-based to a product-driven mindset – Many organizations continue to view agile as a purely technology-related concept for improving project delivery by identifying defects, meeting deadlines and achieving milestones. In reality, agile represents a new way of organizational thinking that goes beyond smooth project delivery to encompass customer-centricity, business-driven IT, outcome-oriented change and delivering business value from each project. With customers at the core of thinking when developing, testing and deploying, agile projects are delivered continuously, fulfilling top priority requirements first while responding to changing and evolving requirements. A leading broker/dealer leveraged agile for modernizing their legacy platform to a distributed transaction posting system which helped improve the ability to handle market volatility and more than doubled the legacy throughput in terms of transactions per second. Translate agile digital to clear outcomes – Enabling digital capabilities is not about simply adopting digital technologies but driving better outcomes. This is where agile helps. Prioritization of features based on business value facilitates outcome driven mind-set; shorter and more frequent release cycles provide early visibility to business, thereby amplifying the feedback loops - making it easier to pivot, if required, keeping in mind the target outcomes. A US Bank made this shift and leveraged Agile to deliver faster to business, thereby contributing towards 25% increase in digital channels revenue within the whole-sale banking portfolio. Get on-demand DevOps-themed delivery – Organizational agility is about creating a continuous lifecycle to brainstorm ideas, build new capabilities and deliver high quality services and products. This requires a well-defined technology and tooling ecosystem to accelerate idea generation, development of features on cadence and delivery on demand utilizing DevOps. A leading Australian Bank successfully adopted DevOps for a strategic digital banking initiative, thereby accelerating the release cycles resulting in faster time to market. DevOps capability amplified business feedback loop by 20X in the digital initiatives across retail banking, allowing for rapid response to changing market needs. Innovate continuously and responsibly – While agile helps organizations foster a culture of experimentation and innovation, this culture must be nurtured across the enterprise and not be relegated to a single vertical or 'innovation team'. Initiatives such as hackathons, ideathons or immersive learning experiences based on the principles of failing fast with a focus on cross-functional collaboration help firms remain ahead of the innovation curve. Conclusion Financial Services firms are beginning to measure and report Key Business

Indicators to track success of their Digital Transformation Programs. These include metrics like percent increase in digital adoption by customers, account opening - initiation to conversion, average time from account opening to funding, cost reduction in account servicing, quantum of asset retention, overall increase in customer satisfaction and more. The key drivers for success for any digital transformation initiative, include enabling customer-centricity, faster time-to-value, minimum viable product releases, legacy modernization, and workforce training and enablement. Adopting enterprise agile has been a crucial step to achieving the above outcomes. Agile approaches have helped financial services firms connect each step in their transformation journey to the bigger picture, adopt a product-centric mindset, drive better outcomes, leverage DevOps for on-demand delivery and create a culture of responsible and consistent innovation. With these capabilities, banks will be able to continuously transform to achieve better service efficiency, higher product quality, delightful consumer experience, and greater business growth. 1https://www.pwc.com/gx/en/industries/financial-services/assets/pwc-global-fintech-report-2017.pdf 2http://www3.weforum.org/docs/WEF_Future_of_Jobs_2018.pdf ======================

Culture is a Key Aspect of Digital Transformation in Telecom

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/digital-transformation-telecom.html ----- Insights Industry Stories Over the last few decades, the telecom industry has seen a rapid pace of change. Earlier, voice calls dominated the bulk of business. Today, there is an insatiable demand for data. For telecom companies, it has been challenging to deliver new differentiated services, while maintaining profitability. In addition, there is intense competition from a new breed of over-the-top (OTT) players who are targeting the same market with new, diversified offerings. As per a recent report by a well renowned analyst company, in the communications service providers market, the growth in the voice market is flat and mobile voice revenues are declining, though fixed data services are expected to grow by 4% between 2018 to 2022 due to strong demand for broadband, ethernet, and high-speed fiber connectivity. In another forecast by a large market research company, the global OTT market is set to grow at a CAGR of 17.03% during the period 2018-2022. Even while the absolute size of OTT revenues may still be small in comparison with the telecom market, the growth numbers clearly tell us which way the wind is blowing. For telecom players, the writing on the wall is clear: digitize or die. The biggest challenge is not about implementing technology or reskilling employees. Transforming the culture of an organization is perhaps the hardest and the most underestimated part of any digital transformation journey. Unless the culture changes, we cannot expect any real change on the ground. What Makes the Digital Natives Tick Digital native organizations operate very differently as compared to the legacy players. They tend to be entrepreneurial in nature. They care less about the process, and more about the outcomes. On the other hand, legacy organizations are

extremely process-driven. They spend a lot of time defining, adhering to and measuring process compliance. When we study some of the phenomenally successful digital native companies such as Apple, Google, Facebook or Amazon, there are a few elements of a digital culture that we can discern. Can Legacy be the New Kid on the Block If we look at these traits, there are a few points that stand out and give clear direction to legacy organizations. There are two broad areas where legacy organizations need to change – Organizational Structure and Operating Models, in order to be competitive and beat the newer generation of telecom companies. Organization structure The hierarchical command and control structure that most of the incumbents still follow isn't conducive to the entrepreneurial mindset and innovation that the digital approach requires. There is a need to rethink organizational structure in favor of hiring new talent from different domains, with contemporary skills like Design Thinking. Traditional hierarchical structure needs to give way to a flatter organization where innovative thinking is encouraged at the ground level; right from the fresh out of college intern to the top executive must feel free to collaborate and share ideas. Employees must be encouraged to unlearn and learn new ways of thinking without constraint and trying new models and approaches. Operating models Operating models need to support the creation of digital native attitudes. One great example is a leading telecommunications company, one of the largest in Asia Pacific. The company understood the need to first behave like a software/technology company if it needed to accrue the benefits of digitization. To enable this, it hired digital natives who brought together product management, IP and operations teams into a quasi-physical location so that they could benefit from the organic unity of a shared physical location. In cases where a part of the team is remote, the company ensured that they were still connected via video at all times. This physical and visual manifestation of the culture made an amazing amount of difference in the way the company operated. In India, telecom company Reliance Jio, often called the 'largest start-up project in India' has championed a similar open culture that does away with plush private cabins in favor of an open-office format. The company's consumer base crossed the 200 million mark within just 22 months since its launch to become number 3 in terms of consumer base and number 2 in terms of revenue. As the telecom industry continues to evolve, incumbents that want to survive will have to change with it. The key to this is changing their culture. There is no time to lose. =======================

It's Time to Digitize the Media Supply Chain

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/digitize-media-supply-chain.html ----- Insights Industry Stories Media and Entertainment (M&E) companies such as studios, broadcasters, music and pay TV providers are primarily in the business of content production and distribution. They often suffer from a fragmented supply chain with different companies handling the creative, management and technology aspects of the content they produce/distribute. The trend in the industry is to move to

an intelligent media supply chain that capitalizes on AI and automation to facilitate creative collaboration, enable production on an industrial scale, and monetize customer relationships. This is a strategic transformation that cuts across technology, process and organizational change. This transformation involves focus and prioritization on several key functions. The creation of any content, especially when it involves video and audio, is extremely data intensive. A single movie is likely to take up several terabytes. For a long time, digital technologies were simply not evolved enough to handle such humungous volumes. It is only in the recent past that computing, storage and broadband speeds have developed to cater to these requirements. Besides, media is a niche industry that requires specialized tools, which either did not evolve or started to evolve fairly recently. With technological advances, the time is ripe for the digitization of the media and entertainment industry. Digitization in siloes If we look at the evolution of the media and entertainment industry over the last few decades, we find that while the formats have evolved and the technology has changed, the basic processes have remained largely unchanged. The basic steps in any media production involve capturing, processing, editing, finishing, duplication (for different formats) and finally, distribution. We may be using the most high-end digital camera to capture footage, but we have not been able to automate processes or consolidate them significantly. We're seeing a number of siloed production and distribution processes starting to migrate to the cloud. Players within the media supply chain have already begun their own cloud migration initiatives. However, while these processes may have moved to the cloud, they are still in siloes and are not talking to each other. This 'lift and shift' approach bring limited benefits. Creating greater synergy through a platform approach Only an overarching workflow transformation can bring in the disruptive, game-changing benefits that digitization promises. Given the complexities involved in the media supply chain, there are a number of vendors/tools that are used at each step of the supply chain. Bringing all of these together through a platform that integrates all the tools and creates synergies is the way to go. To build an end-to-end, completely digitized supply chain, there are a few guiding principles to keep in mind: Holistic view Focus on creating visibility across the entire workflow, right from production through distribution. Also, allow for secure collaboration across the production ecosystem to help accrue the benefits of a holistic view. A leading American entertainment company was able to monetize a catalog of 100K+ hours of program content (movies, TV series), and games in over 30 countries using the Infosys Media Platform and its Intelligent Metadata Workflows. The platform ensures all digital content metadata that is tagged and delivered to storefronts runs efficiently through standardized workflows and meets brand compliance across all geographies. It helped the company achieve 99 percent accuracy of delivery, 3X process scalability and a 40 percent decrease in Total Cost of Operations (TCO). Optimize content movement Given the humungous file sizes involved in media content, the idea is to move the content as little as possible. Instead, bring the process to the content. The process can be smoothened by empowering productions and studio to manage timing and access to the content. For a leading digital media solution provider, a Studio Operations Workflow Platform helps manage content capture, storage, services and editing through a Digital Asset Management system using metadata information. Automate where possible. Automation using the 80/20 rule can help considerably eliminate or

minimize human effort. For instance, metadata creation and management are still largely manual and extremely time-consuming. The Infosys Media Platform for complete metadata management helps automate this to a large extent. Content localization, mastering, delivery and cataloguing are other manual intensive areas that can be automated in the future to a great extent. Real time metadata A large amount of data about the content (metadata) is generated manually through time consuming process of data entry, review and approval. While automation of the overall process improves efficiency, digital enablers like machine learning and video/audio/image recognition can be implemented to generate metadata in real time providing a more accurate and timely content delivery workflow. As media and entertainment becomes more advanced with the advent of 5G, new distribution and consumption channels, and new formats, the benefits of digitization will come to the fore. Key to this transformation is a unifying fabric (such as the Infosys Media Platform) that uses smart workflows, incorporates automation, machine learning and AI, and orchestrates cloud native media and cognitive services from a closely integrated partner ecosystem. =====================

Digitizing corporate banking with data

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/digitizing-corporate-banking-data.html ----- Insights Industry Stories Business Challenge A major bank wanted to digitize trade and cash management services with a platform that would serve as a central payment processing hub and provide real-time status updates on transactions. Infosys View As banks warm up to the idea of digitizing corporate banking, using data as a core to transform and modernize services and products, they need a blueprint of opportunities for data-led value creation. Business Outcomes And more... Read about the client benefits and the 5 best practices drawn from this engagement. =====================

Digitizing the Loan Process

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/digitizing-loan-process.html ----- Insights Industry Stories Business Challenge A non-banking finance company in Vietnam wanted to modernize their core lending solution to be able to cater to the growing credit demand in the country. Infosys View Banking and financial services companies need solutions that are adaptive and scalable to their business needs, to drive tangible business outcomes and truly digital transformation. Business Outcomes And more... Read about the client benefits and the 5 best practices drawn from this engagement. =====================

Oil and Gas Companies Pivot to Diverse Post-Pandemic Futures

Insights Industry Stories Remote working and travel slowdowns have aided many countries to reduce COVID-19 infections and deaths. However, the secondary impact has been to hammer the oil and gas industry worse than almost any other sector. The price of West Texas Intermediate crude oil dropped to $11.57 per barrel in April, down from $63 in January. In addition to government lockdowns, the industry was forced to manage the fallout from the Saudi Arabian-Russian impasse on production cuts. These two factors have driven the market to where the supply has far outpaced demand. The consensus among Infosys clients is that the ongoing cash crunch will last for the next 18 to 24 months. In that time, the energy industry will need to focus inward to adjust its cost structure (discretionary vs. non-discretionary), lower capital expenses, and minimize impact on its employees. This retrenching poses important questions for industry leaders, particularly about innovation and digital transformation. After decades of slow evolution, the industry started catching up after the oil price crash of 2015-16. Executives now must decide whether to continue those efforts or put them on hold. The answer is not simple, and there are factors to consider beyond COVID-19 or even the current supply and demand imbalance. There are three distinct paths the industry is taking, driven by politics in different countries and regions. These represent structural shifts fueled by diverging views of how countries, super majors, and national oil companies each see the future of energy. Industry innovation and digital transformation will continue for many companies during these difficult economic times, only on different paths with different visions, goals, and desired outcomes. The three petroleum industry paths are represented by: Path 1 — Fossil fuel productivity> While surprising to some, the U.S., Russia, and OPEC are following similar paths. They are all fossil fuel oriented, conservative, inward focused countries (at least in the short-term) with leaders notable for their powerful public personas. The super majors, national oil companies, and independent producers will likely focus on innovation and digital transformation that reduces their costs to produce a barrel of oil or cubic foot of natural gas. They will find efficiencies through production and brownfield optimizations, autonomous drilling in shale formations, reducing cost of shale extraction, maximizing offshore yield, and increasing refinery yields and margins. Concerned about price volatility, some of these companies have also expanded into energy trading and risk management after neglecting those options for decades. Path 1 companies will tend to choose oilfield services, information technology, and digital partners who can expedite these changes. Given the immediate cash shortage, the companies will look for self-funding initiatives and solutions from their partners. These oil and gas businesses have the most to lose, given their size and standing in the industry and the world economy. They will try to improve their bottom line while maintaining the top line. Path 2 — Fossil fuel + renewables Driven by BP, Shell, Total, Equinor, and Eni, the European group has already pivoted to a future led by renewables and alternative energy. Their liberal nature,

climate change concerns, and leadership personas are driving their decisions. Innovation and digital transformation will focus on a net-zero carbon future, scaling of renewable infrastructure, carbon capture and storage, low carbon energy, sustainability, and tapping into adjacencies (spawning new noncarbon-centric business ventures). Oilfield services, IT, and digital service providers need to create new offerings geared to these alternative approaches. These countries and companies walk an especially tricky path. They will have to pay for this transformation with money from businesses they are trying to minimize. That risks creating cash flow problems at the very times that investment is needed. Members of this group have generally allowed themselves a 30-year window to complete their transformation, so there may be time to determine how to work through market crests and troughs. But if some of these countries and their citizens adopt a more conservative perspective, they may be caught in an economic no man's land: stuck between an unsustainable fossil fuel present and unattainable renewable future. Path 3 — Entrepreneurial energy The companies and countries treading this path might be the biggest long-term gainers; they have little to lose and everything to gain. None have huge reserves of fossil fuels (except coal in China and India). They can, however, innovate their way to an energy future of their choosing. The innovation and transformation required by Path 3 countries and companies could be the most exciting for digital transformation partners and the service companies. Since most of these will be greenfield, startups, and early incubators, the potential is enormous. The Chinese government is expected to invest heavily in innovation and research projects. Beyond China, there is a tremendous opportunity for private industry to co-invest in energy startups, build them from the ground up, and help them grow. These are unique opportunities for the major consulting, IT services, and engineering firms. These Path 3 countries and companies are the most likely to adopt the fail fast approach, which could limit cost exposure for everyone involved. Working with this group, oilfield services companies could eventually morph into broader energy services firms, expanding their horizons beyond traditional fossil fuels. Choosing a path Whatever a company's or country's direction, the need for innovation and digital transformation is greater than ever. The decisions now will drive these agendas and economies for decades. Meanwhile, their consulting, technology, and services partners need to align their offerings to each set of needs. That includes evolving well beyond current capabilities, much like the oil and gas companies are doing themselves. =====================

Easing corporate lending

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/ easing-corporate-lending.html ----- Insights Industry Stories Business Challenge A leading Australian bank was struggling with a complex business lending process, and wanted a smart lending application for ease of use and faster response times. Infosys View For banks to deliver on the promise of digital, they need a fit for purpose loan origination system that provides bankers a digital dashboard with a 360-degree view of the customer account to speed up and ease decision making. Business Outcomes And more... Read

about the client benefits and the 5 best practices drawn from this engagement. =====================

Easing Regulatory Compliance

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/easing-regulatory-compliance.html ----- Insights Industry Stories Business Challenge A large banking client wanted a single repository of country-specific regulatory guidance for their 6,000-plus sales and relationship managers spread across the globe. Infosys View Enterprises can ensure regulatory compliance by using cloud-based applications with omnichannel and reporting capabilities, which will also reduce investment of time and resources in software development. Business Outcomes And more... Read about the client benefits and the 5 best practices drawn from this engagement. =====================

5G Ecosystem & Its Impact on Immersive Technology

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/ecosystem-needs-evolve.html ----- Insights Industry Stories We recently had a conversation with Gary Traver, architecture executive at Telstra Corporation on the emergence of 5G and its impact on immersive media experiences and other new-age technologies. Telstra Corporation Limited is Australia's largest telecommunications company which builds and operates telecommunications networks and markets voice, mobile, internet access, pay television and other products and services to Australian consumers and a host of network services to a global enterprise customer base. Here are a few excerpts from the conversation: With 5G being projected as the future, could you give us a sense of the role that Telstra can play with respect to it? Telstra has a history of being an early adopter of emerging technologies, and 5G is the latest. We have been active in the global standards forums and providing input to help refine the standards to accommodate some of the unique characteristics Australia has in supporting vast amounts of land with variable population densities. We have also been working with equipment and technology suppliers to test pre-release versions of 5G to gain a better understanding of what we will need to do to introduce and manage 5G services. Today we are rolling out 5G into our network and have launched 5G to consumers with our first device the HTC 5G Hub available now and the Samsung Galaxy S10 5G on sale from 28 May. Beyond that, 5G is ground-breaking as it allows us to create many different types of virtual networks and tailor the properties of each of the virtual networks to support many different use cases. For example; for IOT, the network needed to support many different types of remote sensors with long battery life and small amount of data delivered, is vastly different from the network needed to support high resolution video with embedded elements of real-time augmented reality. When looking at emerging technological advancements across the world, most of these have one thing in common: they are not

stand-alone autonomous capabilities. They rely on the ability to connect with other components of an ecosystem through networks. A reliable network is a key enabler of these emerging applications. For me personally, there is a sense of pride in being part of a company that plays a crucial role in the emergence of these new capabilities. Our key learnings from our history of innovation is that taking the time to understand how the application is used by customers, and, translating that to how the network has to perform is an important part of delivering a great customer experience. Many OTT providers take network connectivity for granted. But understanding the role and influence that connectivity has in the success of the application is not widely understood. The variability in connectivity options in 5G will drive greater appreciation for aligning connectivity to applications. Do these new capabilities include IoT applications as well? IoT is such a broad category of things, but several industries are already getting traction in the market. Many of the capabilities included in 4G have enabled businesses to start deploying IoT solutions. For mass adoption, it will require ecosystems centred on specific industries. By ecosystem, I am referring to everything from sensors to their integration into the existing supply chains. The network elements are enablers to the solution and only represent a portion of what is necessary for the industry to take off. Telstra and other service providers, who want to actively participate in this emerging market, need to be able to seamlessly customize solutions to the needs of our customers, and do that at scale. What are some things to consider before rolling out new business cases? It is important to acknowledge at the start of any new program that we don't know what we don't know. Take the time to learn the unique attributes of a new solution. Understand what it takes to operate at scale, and how existing capabilities can be leveraged. The complexity of our future environments dictate that we automate functions, and understand what the end-result should look like. Once, all of the factors are available, it is important to understand what minimum functionality is required to get the business started and how to make it economically feasible. Look across various ecosystems to gauge the level of maturity of a particular application. Is an industry poised for further advancements or are there areas that are holding the industry back? Find layers of commonality across applications, and look to standardize through the industry. Finally, be realistic on what it will take to mature certain technologies to be used at scale. What impact will 5G have on immersive media? At a basic level, immersive media means delivering the experience in such a way that people who are viewing it become completely involved in the story and may even actually perceive themselves to be part of the environment or situation. As the technology advances, we will see experiences emerge where it will be possible to place yourself inside of the experience and also guide your navigation through the story. To make immersive experiences work at scale a new ecosystem needs to emerge. Changes are required to the way stories are filmed and told. 5G allows us to visualize creative processes which is very different from the way we build traditional creative processes today. New ways of encoding and delivering media are being developed to lower the overall bandwidth required to deliver these large bandwidth-intensive files. New devices are being developed to manage the higher processing demands, and to improve the resolution of the displays. A high-speed, low latency network is an important enabler, for this viewing experience, because the delivery of the media must be able to follow where the viewer wants to look. For the

experience to be considered acceptable to the human brain; the shift in video must fall within the response time of what the brain considers to be a normal reaction time. If the delay in reaction time lags is too much it could cause some disorientation. Low latency networks and computing are required to allow the advanced compression methods to be fully utilized. New compression techniques include lowering the resolution and amount of detail in the video in the parts of the 720-degree image where the eye is not focused on. Once the eye moves to a different area within the image, the video in that area must be improved to the higher resolution within the required latency. This requires the video streams to be located close to the edge of the network, thus changing the functionality and topology of content distribution networks or CDNs. All the items listed above must emerge in an economically viable fashion to ensure that everyone in the value-chain is incentivised to participate. What are the things that businesses need to keep in mind for delivering immersive experience? In order to create demand for a new capability like immersive media, customers have a predetermined image in their heads of what a great experience is, and what is minimally acceptable. When thinking about immersive experiences one must not only consider the quality of the content and the usability of the solution but must also consider the acceptability of the media, in terms of both picture quality and response latency. Poor experiences during initial offerings may negatively impact the ability of a new technology to gain acceptance. A good example of releasing solutions too soon is the 3D consumer television. We must be aware of what success looks like, and also understand the implications of how the customer perceives the content. Providing the right customer experience also requires having the right measuring techniques in place to gauge success with the customer. For example, when customers first started watching streaming videos, the onset of buffering caused anxiety, frustration and anger. If streaming video creates that kind of anxiety, think about what happens in a premium immersive experience. That's why, with applications like this, it is fundamental that we measure success from the onset and ensure we are able to fulfil on customer expectations before we provide the service at scale. Also, it is important to consider the economics of delivering these immersive functionalities. As improvements are made they must be focused on delivering a resilient solution at scale while improving the overall cost of delivery across the entire ecosystem. What excites you about the future? While 5G is emerging, we are also seeing growth in machine learning and AI. In addition, devices are being developed that can support a range of new IoT applications, and new, low cost computing platforms that enable compute to be highly distributed and located in a range of settings. It is the combination of these advancements and how they can be used together to create new applications that generates the excitement for what the future holds. The challenge we face is finding elements of commonality across the applications. Using our technologies as enablers requires that we think more broadly, past a particular application so that our investments can be used across a wide range of use cases. By using the enabler approach, a particular technology can be implemented faster and takes the pressure off of a business model for a single use case. Much of the new technology we are adopting can do this. It is up to us to work inside of our organizations to change mind-sets and work across industries to standardize approaches. The 5G network is an important enabler, but also relies on edge computing to deliver low latency

applications. Edge computing will require collaboration between organizations that have not worked as closely in the past. There is great value to be achieved with this kind of collaboration.
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Evolving Digital Footprint with Lessons from the Financial Services Industry

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/evolving-digital-footprint.html ----- Insights New dimensions in a changing digital landscape Changed Approach to Financial Services Technology Solutions Role of the Technology Service Provider A state-of-the-art Global Delivery Center, using the latest technology stack, employing an Agile approach, and fostering effective collaboration between teams, created an innovative award-winning product for one of Australia's largest banks. Infosys serviced a large UK bank in collaboration with a fintech for an integrated cloud solution, dispelling concerns about unhealthy competitions and encouraging new partnership models Componentization, Data Democratisation, DevOps and Microservices – bring data centricity, analytics and a faster time to market success story for an American financial services and wealth advisory firm Our Approach as a Partner of Choice to our Clients Industry Stories The digitization of financial sector has given rise to increased customer interaction and other trends resulting in digital co-creation of products/services in today's marketplace. This is leading organizations to rethink their approach to technology solutions in terms of changing their culture and architectural thinking, becoming more collaborative and expanding the scope of digital. We have come a long way since the early 1980s when personal computers invaded our homes and offices, followed by web services and e-commerce during the 1990s and 2000s, and m-commerce at the turn of the century. These digital disruptions changed the face of almost every industry. This article includes a narration of a few remarkable transformation journeys that some of our financial services customers undertook, which can be of interest and relevance to every business leader in every industry. As more and more organizations incorporate "digital" in their vast canvas of business processes, the following new dimensions have come into play: Enhanced Customer Interactions The ecosystem of businesses has shifted to include a wealth of relevant information through social media platforms such as Google, Twitter, and Facebook that organizations can utilize meaningfully. In addition, ecosystems have evolved from comprising only humans to housing a combination of humans and a variety of devices, systems, and robots. This data is being utilized to offer proactive and innovative products. The coming years will see data analytics capabilities becoming more robust, and any organization not geared to use them will find it hard to exist. Blurred Boundaries Between Traditional Service Providers and Start-ups The ecosystem in most industries is increasingly becoming more homogeneous and accommodating of new players. In the financial services sector, the

market offers various means of payment such as PayPal, mobile wallets, WhatsApp, etc. This increased competition implies that only those offering the best products/services along with the best customer experience would have a unique advantage. Provision of Customer Experience Apart from Core Service The success of players such as Uber and Airbnb in the platform economy is primarily credited to their user-friendly open platform(s) enabling quality servicing and superior customer experience. This disruption (often called 'Uberization') is a wakeup call for financial services institutions. Today, the customer values an end-to-end experience rather than a fragmented solution. For example, consider the mortgage scenario. Customers assess different parameters, such as locality, infrastructure development, home renovation support, relocation support and more, before committing to a home loan. If an institution is able to facilitate the experience of buying a house rather than addressing only the home loan need of the customer, the greater value-add would drive customer loyalty. Conversion of Customer Data into Insight Many organizations are lagging behind when it comes to mining the customer data they possess. For example, banks still use physical forms to collect personal details such as customer name and contact. On the other hand, social media and internet giants, such as Google, Facebook, and Twitter, effectively use customer data to generate meaningful insights, and potentially pose a threat to banks in the financial services business. Financial services institutions have to either acquire equivalent capability or collaborate with social media platforms to leverage customer analytics and protect their business. The above trends require that technology in financial services industry should be flexible and adaptive to accommodate the dynamic needs of the business. Some of the key changes in the customers' approach to digital and how technology solutions need to be arrived at include: Changed Scope of Where Digital is Applied - Digital technologies have evolved from providing customer experience to becoming omni-channel solutions. There is a realization that unless the entire operation is 'digital', it is difficult to achieve customer centricity. Hence the purview of 'digital' has broadened to include customer operations, single customer view, analytics and data monetization, to name a few. Changed Architectural Thinking in Technology Solutions - Mammoth, inflexible legacy systems are key impediments in achieving the desired level of agility. Banks have taken different approaches, from the 'evolutionary' to the 'revolutionary'. Many are taking a hybrid approach of retaining the 'core banking' systems and building modular, nimble 'cross-product' layers that sit between the customer experience and core banking layers in the architecture. This layer is expected to provide the flexibility and quick response times that are often required to launch new features and functions, such as overlay products, product bundling, pricing, billing, etc. Change in Culture - With increasing digitization in banking and need for greater agility in financial services, industry players are increasingly using an agile model of execution, such as 'Spotify' that leverages structure tribes, squads, chapters, etc. to achieve high autonomy with self-organizing teams without compromising the broader organizational objectives. The focus has shifted to agility in learning, engineering skills, and integration of IT and business. Fintech Start-Ups - The financial services sector enjoyed a monopoly owing to high customer trust and a tough regulatory framework, making it challenging for small players to do business. However, after the global financial crisis, both these advantages took a hit and provided an

opportunity for fintech firms to emerge. The advantages that these start-ups provided in terms of speed and personalization of services found an immediate market, putting the big banks at risk. Regulatory environment changes that affect large banks negatively - Banks are forced to open up so that boutique firms can offer customer-centric value-added services to customers. API Economy concepts, such as Payment Services Directive 2 in Europe (PSD2), will force banks to publish APIs/services that can be consumed by challenger firms, causing banks to lose their monopoly. Let's take a look at some of the digital transformation journeys of our financial services clients that bring forth valuable learning for technology service providers. Agile Global Delivery Centers to Digital Banks Infosys is the technology partner of one of Australia's largest banks and worked on its "Australia First" digital channel for mortgage origination, including online approvals. The product was named "The most innovative mortgage product of the year" at the Australian Retail Banking Awards. Several other digital initiatives from Infosys using digital pathways, such as mobile, online and tablet, helped the Bank offer branchless banking and increase its customer base with a self on-boarding facility. Most of these programs are executed in Agile or Scaled Agile methodology, making use of the latest technology stack like Angular JS, React JS, and RESTful API. Infosys has been involved in all the phases, starting from consulting in digital transformation to providing services such as User Experience, Visual Design Test, Automation etc. state-of-the-art Agile Global Delivery Center was established to foster collaboration among various teams involved in executing distributed Agile programs. New Breed of Partners including Fintechs and Cloud Service Providers One of our large UK clients wanted to digitally disrupt its mortgage process by adopting cloud computing and was looking to partner with Fintech firms. Infosys offered not only the cloud solution, but was also involved in identifying the Fintech candidates with the necessary cloud capabilities and providing a collaborative partnership proposal. While offering this disruptive and collaborative solution, the key question that arose was about the Fintech firms competing with our solution. Our view was that together with the identified Fintech partners, our collaborative solution became more compelling for the Bank. The platform Subject Matter Expertise and the enduring relationship Infosys has with the Bank will help to develop and deploy the integrated solutions faster than what the client could have done had it worked directly with the Fintech companies. Applying Architectural Design Thinking for a Reduced Time to Market An American financial services and wealth advisory firm aspires to move to the Amazon AWS cloud platform from its legacy architecture involving exchange of data feeds between internal applications to (external) Web/Data Services. To offer web services on legacy platforms, we are implementing API connectors to channels and third parties. We implemented microservices architecture to simplify the applications and help achieve shorter time to market. DevOps implementation along with microservices enabled changes to be implemented in production for smaller components without impacting the larger system landscape. Domain-based design is being considered for componentization and re-engineering. In Wealth Management advisory, the data pertaining to customer wealth and investment is significant and customers want to store it in a form that lends itself to the generation of easy and quick insights. Infosys is partnering to build/implement tools around data governance, lineage, Meta Data Management (MDM),

optimization for improved performance and higher volume processing, and better validation with improved interface. With increased customer interaction born out of digitization in banking, organizations are compelled to rethink their approach to technology solutions by: Infosys is proactively embedding Artificial Intelligence and Machine Learning skills in our technical solution processes to identify specific opportunities and contextualize the solutions to help clients with their digital transformations. We understand our clients' needs to operate in bimodal and multimodal IT and have been supporting them to operate in the digital landscape while maintaining/modernizing the mainframe and other legacy portions of the IT landscape. =====================

Field Operations in the Time of COVID-19

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/field-operations.html ----- Insights Industry Stories While much of the world shut down due to the COVID-19 pandemic, electricity and natural gas had to be delivered as essential services to homes and businesses. Electric and gas utilities scaled back field operations by sending workers out only for emergency services or the most essential jobs. Field operations personnel have to travel to substations and far flung locations to inspect, maintain, and repair assets needed for energy delivery. They also visit customer sites to investigate service disruptions or hazardous conditions, such as gas leaks or fallen trees. Even something as routine as starting or stopping service might require a field visit. As more stay-at-home restrictions are being lifted and utilities look to resume regular field operations, the field personnel face greater exposure to potential infection. Utilities need to act fast and find new strategies to maintain safe and efficient operations while protecting fieldworkers. Creating the right procedures now not only will accommodate the current situation but also provide a blueprint for the next wave of COVID-19 cases as well as other crises to come. As utilities look to resume normal operations — or something close — they should focus on four important areas: The actions taken today need to address this singular crisis and find solutions to problems we didn't know existed two months ago. However, these new steps must pull double duty. They should make the workforce safer from the novel coronavirus and ensure organizations are better prepared for the next emergency, whether it's small scale or global. The more resilient an organization, the less work will be needed to meet the next crisis or to excel when the world is back in balance. =====================

Using Your Field Service Operations to Drive Revenue

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/field-service-operations.html ----- Insights Industry Stories Communication

Service Providers (CSPs) are in the midst of a disruption. With markets getting highly saturated, competition has intensified. As a result, acquiring new customers has become a major challenge. Also, the intense competition means that the market is highly commoditized, putting immense pricing pressure on primary services. Average Revenue Per User (ARPU) is falling steadily across the globe. At the same time, there is additional competition from new age Over-The-Top (OTT) service providers who are forcing CSPs to expand network capability to cater to ever-increasing traffic, while also usurping monetization opportunities. Therefore, to drive growth and increase revenues, there are two key areas that CSPs need to focus on. The first is to create highly differentiated offerings. Next is to focus on up-selling and cross-selling to existing subscribers to increase ARPU. To achieve this, a consistently good post-sale customer experience becomes extremely important. Other than interfaces such as front-end web channels, mobile and stores, field service has emerged as a key channel to drive better customer engagement. Moving from Transactional Relationship to Value-adding Partners Unfortunately, most field services personnel traditionally have a commodity mindset when it comes to managing customer relationships on the ground. They are generally trained to tackle only the technical issues at hand rather than looking at the problem in the larger customer context. As a result, they tend to have mainly transactional relationship with customers, rather than seeing themselves as meaningful, value-adding partners. For instance, if the customer has been facing a particular issue repeatedly, field personnel will fix the immediate problem rather than taking time out to understand why the particular problem is occurring regularly. Given the impact of these interactions on customer experience, it is imperative to bring in a mindset change and a behavioral shift in the field personal; where they consciously try to act as valued partners rather than as commodity service providers. One major hindrance to developing a customer centric attitude among field service personnel is the lack of customer insights. Most existing service provider infrastructure do not allow for a 360-degree view of the customer. The answer lies in digitization. Digitization of Field Services Management Given the importance of after-sale engagement and field events in customer experience, digitizing field services is key. It can empower field services personnel with details such as the customer's history with the company. They can also be aware of details such as upcoming contract expiry deadlines and maintenance schedules. This information can help the field personnel confidently upsell or cross sell relevant offerings, thereby increasing customer satisfaction and generating additional revenue. Equally important, it provides a mechanism for the engineer to record customer feedback and updates, such that they are logged into the formal system. This data can prove to be extremely valuable both for future interactions with the customer as well as to create a feedback loop that can help inform future marketing initiatives. We recently published a whitepaper on 'Digitization of field service operations and how CSPs can transform field service into revenue centers' that talks about how CSPs can go about digitizing their field operations. You can refer to the full whitepaper here.
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A 5-minute loan process

Insights Industry Stories Business Challenge A leading Australian bank wanted to simplify the process of applying for credit cards and personal loans, including providing a mobile-optimized experience. Infosys View As consumers increasingly prefer to engage with banks that offer the robustness of traditional services delivered using the latest technologies, a mobile-optimized experience is a baseline expectation for all banking services today. Business Outcomes And more... Read about the client benefits and the 5 best practices drawn from this engagement. =====================

How Flying Can Be 'Business Class' For Everyone

Insights Industry Stories In the late 1950s and early 1960s, at the dawn of the jet age, nothing was more glamorous than traveling by air. Frank Sinatra even had a hit song - "Come Fly with Me" - about those who were then known as the 'jet set' crowd. How times have changed. Today flying, especially for the infrequent flier - not the business ones- can be rather unsettling. Security lines at airports are so long that travelers often need to get there a few hours before their flight is scheduled to take off. I say 'scheduled' because how many times has your plane left on time? You would think that with the array of digital tools, big data, and predictive analytics, flying would be as easy as shopping online. But this is not the case - weather, turnaround times, readiness of ground staff, and inter connected flights adds a whole set of hidden complexities to airport management. Unfortunately, airports and several players in the ecosystem have not adequately leveraged digital tools, and so consumers are yet to have the seamless experience that has become an integral part of other industries. Is it time then for the airline industry to usher in change? I should think so. Growth in revenue passenger miles (RPM), a metric used by the transportation industry to determine the number of miles traveled by paying passengers, are slated to slow down over the next decade in the United States. RPM is calculated by multiplying the number of paying passengers by the distance traveled by them. The Federal Aviation Administration's forecast for the next decade, projects RPM to increase by a paltry 2.6 percent a year. Domestic RPMs in America are forecast to grow at an even more underwhelming 2.1 percent, and international RPMs are forecast to grow at 3.5 percent a year. Technology could play an important role in making airports digital, simplifying baggage management, increasing service offerings and addressing security concerns. This would improve the flying experience and bringing the passengers back. Majority of the projected growth in RPM is expected to be in large and medium airports, which are already crowded. To ease the pressure on passengers, airports of the future can simplify a number of processes. The basic function of any

airport and airline relates to supporting passengers in activities such as check-in, check-in of bags, customs check, and boarding the airplane. Technology through automation can make it easier for travelers at each of these touch points. Technology can also play a role in several other complex functions that an airport has to manage such as security, manpower management, ground transportation, air traffic control, and transportation security administration, besides other things. When airport authorities are looking to introduce technology they could, for example, use digital solutions to dig deeper into passenger demographics, preferences, and details that could help then better understand and plan service requirements, such as to decide the number of agents with special skills that would be required for a particular flight. Airport authorities can also provide passengers a virtual reality view of the airport and its facilities much in advance, so as to familiarize them with the airport rather than using outdated airport maps on paper. Plane cabins are getting cramped and what aggravates the situation is large bags that are stuffed into overhead compartments, leaving no room for regular-sized bags, briefcases, and backpacks. Passengers who board later -those that are not frequent fliers or do not have a high priced ticket- often find that they do not have enough space to store their bags and have to rely on the flight attendants' creativity to find a solution, or check-in their baggage instead. All the while, the rest of the passengers are left watching and wondering if this could have been handled better. The key reason for this cramped cabin is that baggage fees have steadily increased, and travelers are allowed to haul large bags with them. If you are wondering what could help resolve this issue, well it is a smart baggage arrangement. Imagine a baggage concierge that can be accessed from a residence or hotel. Not only will this make the check-in process faster but easier as well. If passengers do not provide information on the size and weight of the baggage they are carrying in advance, the airlines could decide where the bags are stored e.g. in overhead bins or in the cargo hold, so as to better plan weight and balance of aircraft, and thus hasten the loading and turnaround process of the aircraft. Sensors on the bags could allow passengers to track the movement of their bags, too. In case of connecting flights, passengers can be assured that their bags have made it (or not). With beacons, sensors, and tracking technology, airlines could offer a 'bag drop' service to the home or hotel so that passengers need not wait at the terminal to claim their luggage. Sensor readers at airport baggage sorting facilities can vastly enhance and expedite their work and reduce manual intervention. In fact, the Industrial Internet Consortium recently gave its approval to the Smart Airline Baggage Management test bed co-developed by Infosys to do just this. The right technology can not only offer an intelligent baggage solution for passengers and airport authorities, but reduce cost of operations for the airline, and free up airport staff to spend more time improving the flying experience of their passengers. Airlines, airports, and technology companies have an opportunity to work together to make this goal mainstream. Often passengers wish to access certain merchandise or services from airport shops, but run out of time while searching for the sales counter. As a solution, wouldn't it be good if passengers could simply order from anywhere, anytime through an airport app or website, and have the product delivered right at the gate before they board their flight or at the airport of arrival? This would offer airports an opportunity to build a positive relationship with their customers. The app

could be used to order food, book a car, order that fast track/expedited security lane pass, a bouquet of flowers or a gift. The security check at the airport is a hurdle for most passengers, especially in America. For those with a Global Entry/ TSA (Transportation Security Administration) PreCheck, there is some ease of not having to stand in serpentine queues, taking out laptops, and removing shoes and jackets. To simplify security checks, airports can create a dedicated fast track security line for those who wish to clear the security process in a shorter duration. Of course, passengers would still have to go through the same process but the queue would be much shorter. Airlines could do more to work with airports and provide this perk to their passengers, especially when loyalty points are being utilized or as promotional offers to elite members. Digital airports can simplify and improve navigation as well, such as by enabling cars to book a parking spot at the right terminal based on the flight details streamed to the car's GPS system. This means an autonomous car can take a passenger from home to the designated parking spot without spending precious time having to scout for a location to park. Technology has tremendous potential to improve passenger service, and airports can leverage highly scalable and intelligent platforms that seamlessly interact with heterogeneous systems to facilitate communication between service providers and passengers, thus making travel pleasant. Because soon it may not just be places of business or leisure that we are flying to, destinations outside our planet itself!
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A Postcard from the Back, Mid, and Front Office of Banking

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/front-office-of-banking.html ----- Insights Industry Stories An ABN AMRO senior executive narrates the bank's journey Since time immemorial, the changing profile of the banker has offered lessons to the banking industry. In 2000 BC, temples in Babylon served as safe vaults for savings of the kingdom's subjects. Today, technology companies are emerging as intermediaries of financial services. The evolution of ABN AMRO, one of the oldest banks in the Netherlands, mirrors the dynamics of the business landscape and needs of customers over 300 years. From barter of goods to digital cash, much water has flowed under the Amstel bridge. In the Netherlands, digital natives use the debit card to pay for everything. The widespread use of the debit card has found expression in language: 'google' the Internet for information and 'pin' to pay. More than 1,400 supermarkets in the Netherlands do not accept cash. When the Dutch shop, on local e-commerce websites, the iDEAL platform takes shoppers from the webstore to the bank's secure website where details are already entered. You select the product or service and confirm the transaction amount. ABN AMRO understands that serving the millennial generation requires providing the convenience of shopping within two clicks. After all, a bank competes with an online retailer or a technology company for the customer's wallet share. We evaluate our processes continually and benchmark them against a graph of customer convenience that increases geometrically. Technology has been

a catalyst in the omnichannel banking journey of ABN AMRO. We offer customers a consistent banking experience across channels with underlying technology that simplifies and standardizes banking at every touchpoint. Our bank decoupled the technical architecture and adopted a three-tier architecture to deliver superior customer service. The new architecture implementation contributed to a significant spike in user adoption and repeat usage of our online banking channel. Today, we embrace a 'mobile first' philosophy and use the mobile channel as the starting point to deliver new services. After the success of a mobile initiative, we roll out the service across other banking channels and streamline processes for a seamless customer experience. ABN AMRO puts the customer at the front and center of our processes and technology. We believe that the simplification of banking technology enhances customer experience significantly. We adopt the 3x3 approach to standardize our back-end architecture: develop applications on three operating systems and deliver them on three versions of each OS. At any point of time, the number of versions of OS across the organization cannot exceed this number. Our guiding principles have helped us navigate regulatory compliance, capitalization stress tests, and consolidation after mergers and acquisitions. TOPS, our operations hub, is responsible for upgrading technology and refining processes so that we can sense and respond to the needs of the digital generation. Our hub harnesses information and communications technology, big data, cloud, and automation to deliver a seamless customer experience across online, branch, or ATM banking. We adopt a personalization approach that recognizes the unique needs and aspirations of customers. Our bank's International Clients (IC) Desks offer services via phone, internet, or mobile banking. Our experts at the IC Desks offer personalized financial advice in more than 25 languages. Our consumer and commercial clients business unit caters to the consumer market, small and medium-sized enterprises, companies, and institutions in the private and public sector. We calibrate the degree of personal contact depending on the customer profile, and determine the distribution method based on the banking product or service to be delivered. The Netherlands has a rich history of innovation in banking technology. Significantly, the government has been a change agent and helped introduce innovative banking tools and services. Girotel, a national giro-based payment system, was the Netherland's formative Internet banking service from Rijkspostspaarbank. The credit facility guarantee for small- and medium-sized enterprises via the Nederlandse Middenstandsbank is another notable innovation under the auspices of the government. ABN AMRO takes a leaf out of the innovator's handbook. In 2013, our bank established an Innovation Center to help our clients, partners, and employees share ideas, identify business partners, and co-create solutions. It is strategically located in the middle of our Amsterdam headquarters, so that employees walk through the Center to access another department. You can feel the buzz of emerging banking technologies at every turn. Our 'corporate garage' is exploring innovative business models from smart transactions to peer-to-peer finance. Our projects include reusability of raw materials, the exchange of goods in the 'sharing economy', and wearable technology in the context of banking. Our Innovation Center organizes 'Start-up Friday,' a monthly event where start-ups pitch their business plan to bankers and companies. Ideas and conversation on a designated financial services theme flow over drinks on a relaxed Friday afternoon. Archimedes had his 'eureka' moment in a

bathtub. The next big innovation in banking may well emerge from a watering hole. ABN AMRO set up TSO Munt Sq., a collaborative workspace for start-ups in financial technology and other sectors. We are creating a habitat to cross-pollinate ideas in a milieu of diverse cultures and disciplines. The smart workplace opens doors for networking and co-creation. Promising start-ups can access the skills of pop-up bankers, innovation gurus, and domain experts. Our banking network helps start-ups seek advice on finance and meet a prospective client or investor. Our bank works closely with IT partners to help us look at business challenges in a different light. Our partner ecosystem has charted a robust banking technology roadmap, a better coupling of business and IT, and enabled faster introduction of products and services. In June 2015, we invited our partners, including Infosys, for #HackITon. Six teams developed 21 concepts for ABN AMRO's role in the API economy in 31 hours flat. We learned crucial lessons from this hackathon: #1: Compelling third-party services can be delivered while safeguarding customer privacy and data integrity. #2: The velocity of decision-making and product development increases when business and IT professionals complement each other. At ABN AMRO, we regard the regulator to be a partner in our ecosystem, not an invigilator, and regulatory compliance as a strategy to boost customer confidence, not an operational overhead. Our continual dialogue with regulators across financial markets ensures that regulation gets more focused to protect the interests of customers. We want to transcend regulation and convert it into an opportunity for operational excellence. For instance, when regulators set data reporting standards, we developed a simplified and standardised data structure for easier maintenance and superior quality of data. While regulators seek deeper mining of customer data, we focus on the context and quality of data. Our bank contested the regulator's rationale of barring masked data on the public cloud. After ABN AMRO discussed the merits of storing masked customer data with the regulator in specific user scenarios, the data privacy regulation was relaxed. Our bank believes that regulators, banks, and IT partners need to keep the channels of communication open to develop a dynamic regulatory framework, that is responsive to the needs of millennials while addressing market dynamics. ABN AMRO is a proud member of the Banking Industry Architectural Network (BIAN), a consortium of leading banks that strives to achieve standardization through service-oriented architecture in the financial services industry, and interoperability among financial institutions. Infosys supports the banking consortium as an advisor to co-create open standards that will shape the future of banking services. The millennial customer seeks to bank at home, at the workplace, and on-the-go. The customer wants to open a bank account, and buy financial products and services in the shortest possible time, with minimal human intervention and paperwork. If the bank cannot deliver what the customer wants, alternatives are a tap, click, or phone call away. A financial service enterprise will inspire trust and confidence only when it understands the aspirations of customers at each life stage, capitalizes on technology to transform the customer experience, and renews processes for enhanced convenience.
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Blockchain in Telecom and Media – A Game Changer

Blockchain as a technology has the potential to disrupt or change business models in almost every industry. According to a recent report by a leading market research company, blockchain in telecom market is expected to grow from USD 46.6 million in 2018 to USD 993.8 million by 2023, at a Compound Annual Growth Rate (CAGR) of 84.4% during the forecast period. What's the Buzz About? Blockchain is a shared ledger, replicated across stakeholders in the network, that maintains complete history of all transactions between two or more parties. A history that's verified by other stakeholders and cannot be tampered with. Transaction records are immutable and private or public network can be restricted. In other words, its value proposition lies in the security, transparency, and control it provides across the ecosystem at every point of a transaction and the opportunity to reduce intermediaries. While fintech was one of the earliest industries to first adopt the technology (check out the Blockchain based Trade finance Solution) there are varied possibilities in almost every industry and particularly in the telecom, media and IoT industries. Blockchain Brings Value to the Telco Value Chain The telecommunications value chain consists of providing the necessary network infrastructure and connectivity for voice, data, media and other related services. There is data exchange between networks that call for data security, data integrity, data inspection, and fraud prevention. With IoT and edge computing, more devices gets added to the network and there is a need for device identity and security. New flavors to network management and new infra sharing models are coming up, e.g., lease management of 5G Network slices for telco and network partners, enterprises, Mobile Virtual Network Operators (MVNOs), and Over the Top (OTT) players. Core operations like Operation Support System (OSS) and Business Support System (BSS) processes include partner management, enterprise management and customer management to address contracts, settlement, supply chain management, SLA management etc. Also, in the digital journey, new business models and eco system partners come into play. Blockchain can help simplify the process, make them secure, transparent and efficient and find new revenue streams through digital bundle value propositions. Let's talk about few telco specific scenarios: Simplifying processes In roaming partner settlements, current processes take a month and issue resolution timelines go up to two months. With blockchain, the process gets simplified with real time views. This helps in faster issue identification, resolutions, and reduced disputes. Companies can automate SLA agreement documents into Smart Contracts through programmable blockchain solutions and provide real time view to all the stakeholders with threshold breaches made visible immediately to the involved parties. Revenue Streams beyond Telecom Digital Identity/sharing any Identity reference documents e.g., passport or driving license with relevant parties based on the individual's consent is key to simplifying the process of KYC (Know Your Customer) document verification in any industry or enterprise. Blockchain allows de-centralized storage of these reference documents with control

remaining completely with the individual. Other opportunities are digital sharing of music, mobile games and payments through mobile wallet with blockchain; scenarios cover royalty management and digital asset management. Improved Collaboration Multiple business transactions are efficiently carried out in a consortium model, where-in stakeholders have common interest and come together to be part of the blockchain network, e.g., Trade Finance, KYC, etc. Blockchain can play a key role in bringing all the stakeholders together. In the Telco world, CSPs connect with their partners, other telecom companies, and suppliers in order to provide connectivity, services for their customers and to adhere to SLAs, so that they can provide a seamless customer experience. Such complex transactions and interactions between all these parties make it imperative to ensure there is trust, security and transparency. For telco ecosystems in the B2B and sometimes B2B2X models, we look at permissioned network that brings in multiple benefits. In a permissioned blockchain network, a group of participants are identified and given express authority to provide validation of blocks of transactions. Choosing the Right Blockchain Technology Bitcoin was the first blockchain technology and today there are varied technologies, just to mention a few – Hyperledger, Ethereum, Ripple, Multichain, Sawtooth, Corda, and specific domain solutions. While there are multiple choices, blockchain technologies are in different maturity stages and are constantly evolving, it is important to select the right technology in context of the use case in hand. For example, for computational logic, preference can be a blockchain platform that supports Smart Contracts like Hyperledger; for registries, Multichain is an option. Key parameters for choosing a blockchain solution include: 1. Use Case 2. Value delivered through blockchain solution for the identified use case 3. Data that needs to be stored and processed 4. Programming Languages supported 5. Open Eco System 6. Public Key Infrastructure (PKI) 7. Transaction size, rate 8. Consensus Model 9. Platform Community 10. Smart Contracts, programmability 11. Computational needs 12. Infrastructure, deployment models. Digital telco looks for extreme digitization across organization and ecosystems and blockchain can be a viable solution for specific scenarios and bring in simplified process, efficiency, and transparency.
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Building a Citizen-first Government with Technology

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/government-with-technology.html ----- Insights Industry Stories From My Health Record to the digital economy strategy, there is constant conversation surrounding the Australian government's digital initiatives. Becoming more digitally centric is key for progress and a priority for the government, but how will this be achieved? Infosys' recent study, Infosys Digital Acceleration Study: Infosys Australia and New Zealand reveals that 86 percent of leaders perceive medium to high levels of digital disruption within public service. Understandably, gaining operational efficiencies (63 percent) is cited as the key driver behind digital transformation initiatives

with public service leaders. As citizens become more accustomed to frictionless customer experiences in their interactions with businesses, public service organisations need to deliver on similar expectations. When compared to other nations, the Digital Acceleration Study shows that 50 percent of public service leaders in Australia feel they are trailing behind international counterparts. Alarmingly, only seven percent of public service leaders believe to be internationally ahead. The public service sector is clearly facing certain challenges when it comes to building disruptive models at scale and agencies and departments must act with clarity to be able to continuously transform and meet citizen expectations. The Building Blocks of a Digital Government Public service organisations often struggle with building a culture of innovation and improving agility and flexibility of processes. As a highly regulated sector working to serve millions, it is easy to see how agility and flexibility within processes are easily overlooked due to careful decision-making that has to consider risk to the public and prudent expenditure of public funds. Unfortunately, complexities and a natural aversion to risk causes inefficiencies in the system and an inertia to necessitate change for improved services. To overcome this, the strategy needs to be two-fold. Firstly, we need departments and agencies to modernise with the right technology for the benefit of the end-user. Modern technologies such as automation, AI and big data can work cohesively to streamline repetitive tasks, gather insights and speed up decision-making, enabling agility at scale. Through a report published earlier this year titled "Amplifying Human Potential: Towards Purposeful Artificial Intelligence", we found that AI is seeing an adoption rate of almost 90 percent in the private sector locally, but this drops drastically to 57 percent amongst public service organisations. This demonstrates the need to be more receptive to technological change for the benefit of running a more efficient government and providing a better citizen experience when interacting directly with government. Secondly, because technology is only as advanced as its user, the need to reskill and retrain employees is imperative to ensure that the government workforce is suitably equipped with the right skillsets to support our national ambitions. With internal challenges rather than external market forces cited as a key barrier to change across all sectors surveyed, leaders need to focus on internal digital programs to encourage innovation. A great example of this is Canada Translation Bureau's innovation to assist with translation and document processing. Using two different applications, the solution provided employees with an integrated language ecosystem that automated translation requests and optimised workflows. This improved translation standardisation across all official documents, overall staff efficiency and reduced service delivery times, which meant that the government could communicate more effectively in both of its official languages to better serve Canadians. Usage of the tool increased from 20 percent to over 90 percent, resulting in 300,000 hours of gains in time spent on translation over a period of a year. With a culturally diverse nation such as Australia, it is easy to see how a similar solution could be implemented and would benefit citizens from an efficiency standpoint, and offer a more citizen-centric service to support with translation needs when it comes to processing official documents. As we look to become a world-class digital government, we need to look at driving systemic changes to support this transformation. As with every sector, public service organisations need to have frequent stock-takes along their digital transformation journey to

continuously improve services. The path to success has two lanes, not only do we need to have access and implementation of technology; a digitally agile culture must be cultivated internally to deliver the innovation we want to see. Australian government at all levels are embarking on their digital journey. The Commonwealth Digital Transformation Agency is working to change the federal government culture and to re-invent the digital relationship with citizens. States such as NSW have made significant advances in providing digital services to citizens. For more information on what our C-suite decision-makers, influencers and program managers from the region's biggest ($1billion+ annual revenue) companies believe is required to enable them to build disruptive business models at scale, download our whitepaper today. =====================

How Can the High-Tech Industry Evolve in a Digital World

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/high-tech-industry.html ----- Insights Industry Stories As the world becomes more technology driven than ever, opportunities abound for companies that play in the high-tech space. But to leverage those opportunities, these companies must rapidly adapt to the changing dynamics of the industry. The rising cost of manufacturing, evolving customer profiles and the need to quickly acquire new capabilities are driving changes in the fundamental functioning of high-tech companies. The Challenges of a Digital and Dynamic Market Keeping the cost of manufacturing low has always been a major concern. Hi-tech manufacturing companies are making increasingly multifarious and micro products and at the same time increasing their production capacity (in line with Moore's Law). Just to give a sense of the impact, as per a report from a leading analyst firm if the manufacturing cost of a 28nm chip is roughly $30 million, the cost of manufacturing a 7 nm chip may go up to $270 million. That's a nine-fold increase in manufacturing costs. This discourages manufacturers to produce the 7nm chip unless they have high-volume and can get a reasonable return on investment. The changing customer profile has also led to some far-reaching changes in how high-tech companies function. In an earlier era, the applications for semiconductors were mostly limited to PCs and phones. This meant that these companies had to sell to a very small customer base – mostly PC and mobile phone manufacturers. Today, semiconductors are used in a vast multitude of industries ranging from automotive to manufacturing to energy and home automation. They are used in sensors, robotics, cloud computing, connectivity and many more applications. They are used in systems that work on new technologies like Artificial Intelligence (AI) and Internet of Things (IoT). Given this complexity, vendors often don't fully understand the complete scope and usage of their products. However, the use cases are still emerging and they look promising. Need for New Business Models As a consequence, the market for these high-tech companies has exploded, both in terms of the sheer number of companies they can sell to as well as the reach and geographical spread. This change in scale has impacted several business functions within the organizations right from how they design

marketing and sales strategies, how they reach customers across the globe, how they compete and differentiate themselves, and how they support this vast customer base. All these result in a need for new business models. Given all these changes, how can the high-tech industries prepare themselves to succeed? I'd like to offer a few insights, based on our own work in this sector: A Comprehensive M&A Playbook As new innovations emerge, and the breadth of the technology landscape expands, companies need to rapidly acquire new capabilities; often through mergers and acquisitions. Over the last 30 years, the number of major players in the semiconductor industry has gone from over 30 companies to roughly 13 or so today; largely due to mergers and acquisitions. We have worked with customers in the high-tech space to put together comprehensive M&A playbooks that help ensure day zero readiness. This is important to ensure guaranteed realization of market commitments based on synergies. Embracing Digital Technologies Like I mentioned earlier, the customer profile as well as reach has diversified considerably, necessitating a change in the way the organization is run. A digital transformation effort is important because it can empower the organization with digital capabilities to help reach a wider market more efficiently and effectively through digital channels. Digitizing tech support (possibly using AI/chatbots), research, and other operations is the only way to cater to the new scale. The old model of dedicated customer representatives for each customer is simply not feasible. Domain Expertise As technology becomes ubiquitous across verticals, an understanding of various applications is key. We've worked with semiconductor vendors to help them develop a better understanding of the use cases, leveraging our own deep domain expertise. As our world becomes more digital than ever, it throws up plenty of new challenges as well as enormous new opportunities for high-tech companies. Adapting effectively to the changing dynamics will be key. So is the high-tech industry ready to change for better success in a digital world?
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How Entertainment Will Be All About Experiences

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/how-entertainment-will-be-all-about-experiences.html ----- Insights Industry Stories Technologies such as augmented reality (AR) and virtual reality (VR) have empowered entertainers to immerse their audiences into intended experiences. What is even more powerful is that the rate at which these new technologies have proliferated in the last decade is far higher than that of the entire previous half century of developments. About deep immersive experiences See-through AR device such as the Microsoft HoloLens is becoming mainstream. It has been effectively used in public relations and marketing initiatives for motion pictures, television and other promotional campaigns. For example, as part of the release of the DVD, Frozen Planet, BBC partnered with augmented reality firm Appshaker to create an AR event at the Bristol Museum and Art Gallery. Here people could play with polar bears and dolphins as they stood on polar ice. As part of the promotion

of Batman vs Superman, Roadshow Films and JCDecaux used AR to set kiosks in malls where shoppers could choose their favorite superhero and play competitive games that were immersive. An example of gamers enjoying the potential of AR is ZenFri, a Winnipeg (Canada) studio that pioneered AR in 'Clandestine: Anomaly,' a location-based AR game, which turns the player's home into ground zero for an alien crash landing. And, last year's global phenomenon Pokémon Go exploited AR to a whole new level. Real-world application of virtual and augmented realities Gamers have truly adopted virtual reality. Owlchemy Labs recently announced that their VR game Job Simulator made $3 million in sales last year . Survios, another VR gaming company said their game, Raw Data grossed over $1 million per month in paid downloads in its first month alone. 20th Century Fox used VR in movie advertising for their blockbuster The Martian - an adventure that puts the viewer in the shoes of Matt Damon, the marooned astronaut. Subsequent films like Ghost in the Shell, Assassin's Creed, and Independence Day perfected the use of VR for movie advertising. Until late 2015, VR was still in its hype cycle, as business conversations and investments were mainly on hardware like Google Daydream View, HTC Vive, Oculus Rift and Samsung Gear VR. In 2016, however, significant investments in VR software took off. For example, Verizon's AOL purchased startup RYOT to bring VR news to its Huffington Post property. Mixed reality start-up Magic Leap added $800 million in 2016 as C round funding led by Alibaba, which took the company's valuation to $4.5 billion. This segment of the tech industry is able to rapidly take concepts with viable economics and scalability potential to consumers. A next big platform shift is taking place The shift to augmented and virtual realities is the next major one after that to PC's, web and mobile. Like in these previous shifts, the initial focus and investments are often dedicated to the hardware and platforms. Media companies have realized the potential in this and are backing start-ups by the dozen. For example, Comcast led the seed funding for Spaces, a start-up developing VR and mixed-reality experiences. And Disney is investing heavily in multiple startups through their renowned accelerator program. Traditional media giants have lost the race to over-the-top companies like Google and Facebook during the last major platform shift, as they held on to traditional business models of monetization, while new competitors radically disrupted the industry; one such example being Netflix. In the case of AR and VR too the first source of revenue will be mainly through inbound advertising campaigns. The potential for yet-to-be-discovered business models and revenue streams remains a great white space. Companies that can crack the code here will be positioned for market dominance as this platform shift matures in the years ahead.
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How Technology Can Make Healthcare Widely Accessible In Latin America

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/ how-technology-can-make-healthcare.html ----- Insights Industry Stories Access to healthcare in Latin America has been increasing since the 1990s. However, day-to-day delivery of medical services still needs improvement. 30 percent of the population does not have access to healthcare and not many countries in the region meet international indicators on doctor-to-patient ratio. On an average, the region spends only 6.7 percent of its GDP on healthcare. More recently, the Zika virus has taken a heavy toll on Latin America. The World Health Organization expects the virus to infect anywhere from 3 to 4 million people by 2017. An impact assessment by the United Nations Development Programme estimates the socio-economic costs of this mosquito-borne disease to be between US$7-18 billion from 2015 and 2017. Healthcare in Latin America was at the centre of major attention during the World Economic Forum on Latin America. With technology playing a prominent role in almost every industry, those at the event including me, were mulling over whether it could become the central axis for equitable healthcare in South America? Almost 40 percent of the region's population use smartphones. Could this be the ubiquitous tool to deliver healthcare to economically disadvantaged and rural populations? There is much that technology like mHealth can do to introduce and manage diagnostic services, treatment routines, provide data for R&D, simplify predictive medicine and more. For instance, Dr. Consulta, a startup in Brazil, uses data analysis and online technology to offer low cost, high quality primary healthcare services to the 100 million without health insurance in the country. Similarly, Memed is an e-prescription platform that maintains an online catalogue of medicines. Through Memed, doctors can browse through a list of medicines and write out the correct prescription. It enables doctors to prescribe accurately, faster and efficiently. This is especially helpful as it was found that medical prescriptions in Brazil had a 75 percent chance of error. Latin America had approximately 156 million smartphone users in 2015. This number is set to grow at the rate of 12 percent year-on-year through 2019. Brazilian organization, Plataforma Saúde is preparing to capitalize on smartphone technology to provide easy access to healthcare to those who do not have it yet. Services of Plataforma Saúde include medical examinations to identify a person's susceptibility to chronic lifestyle diseases such as diabetes, hypertension, and heart ailments. Going a step further, apps, wearable devices and wirelessly connected devices have the potential to shift healthcare delivery away from periodic medical checkups to data-driven, 'as needed' appointments. Wirelessly connected devices such as blood pressure monitors or glucose monitors, infusion pumps and other devices, which were once embedded with sensors can collect data, present it to patients and transmit it to physicians. Data from these devices enable users to assume greater responsibility for their health, harness automation to monitor different parameter of wellness and make educated decisions when needed. This type of care paves the way for leaner, connected and

personalized health through cost-effective systems. Since Latin America is a vast region. A standardized care path supported by data and automation can be a robust method to ensure predictable outcomes, and improve quality, accuracy and application of human and financial resources. The collection of data in a structured way, along with AI and robotic process automation, allows health providers to continually learn, improve processes, reduce cost of healthcare delivery and enhance effectiveness of services. The United States has made great strides in ensuring healthcare accessibility through technology. There, the approach is patient centric. Technology plays out through electronic health records, apps, telemedicine, robotics, wearables, AI and more. It enables doctors to reach more patients, and besides offering healthcare, focus on preventive healthcare and wellness. An approach like this would enable Latin America to move away from a reactive approach to a proactive one - a direction embraced by all developed regions. Redefine processes with new solutions for the Healthcare industry >>
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Container ship industry finds flexibility eclipses efficiency, for now

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/industry-flexibility.html ----- Insights Industry Stories International ocean carriers entered 2020 with an expense problem and a profit problem. Global maritime regulators mandated a shift to cleaner, low-sulfur fuel beginning Jan. 1. Analysts predicted that shipping fuel prices could rise 25%. Even before that added cost, vessel owners had struggled to make money. Financial data from 12 multi-billion-dollar shipping companies shows a median annual profit margin of 0.2% and the largest margin at less than 3%, according to analysis by Infosys Knowledge Institute. Anticipating higher fuel costs and needing to generate fatter margins, the industry for years built bigger ships and expanded ports. The Panama Canal was widened in 2016. New Jersey authorities in 2019 raised the Bayonne Bridge to accommodate larger ships. In April, carrier Hyundai Merchant Marine launched the new world's largest container ship. By spring, the COVID-19 pandemic had flipped the industry's fears and undercut their strategy. With the broad shutdown of other transportation, fuel costs have plummeted. While low-sulfur diesel sold at the port of Los Angeles for more than $2 a gallon in January, it plummeted to 57 cents per gallon in April. (Ocean carriers buy fuel by the ton, but their prices have dropped in the same pattern.) With social-distancing shutdowns and recession on the horizon, vessel owners now face falling demand for cargo spots just as they build larger and larger ships. Instead of building scale and efficiency, ocean carriers now must find ways to be flexible during a period of uncertain shipping volumes and rates. Carriers don't want to sail a ship that's not full. So in the face of decreased demand, carriers reduce capacity by delaying planned sailings. The Far East-to-North America shipping trade volume bottomed out at just more than 600,000 twenty-foot equivalent units (TEUs)

for sailings departing the week of Feb. 24, according to data from eeSea, a Copenhagen-based maritime and supply chain intelligence company (Figure 1). That works out to slightly more than 60% of that week's full capacity for the trade lane, according to eeSea's calculations. Figure 1. Shipping capacity since the pandemic has been mostly lower than normal despite a huge reduction in fuel costs. Source: eeSea, U.S. Energy Information Administration As China began reopening in March, production resumed and ships filled. By April 13, the Far East-North America trade lane reached full capacity, according to eeSea. But what pushed shippers back to that level reflects pre-COVID demand and planned delays around the Lunar New Year holiday in late January. As one shipping insider explained, U.S. retailers ordered their summer clothes in the winter of 2019. Since that full-capacity week in mid-April, carriers have been cutting back. Data from eeSea shows canceled sailings extending through the end of June. On average, 55 to 60 ships leave an Asian port each week for a North American one. In May and June, carriers have canceled seven to 13 sailings per week. In typical times, ship owners cancel sailings two months before their scheduled departures, but this year, companies have given as little as two weeks' notice, noted Simon Sundboell, CEO of eeSea. This newfound flexibility is going both ways. On May 14, an alliance of shippers Hapag Lloyd, ONE, and Yang Ming reinstated a pair of late-May sailings. Figure 2. How container shipping works Source: World Shipping Council Cargo owners bear more of the added cost for this flexibility than the carriers do, which is a reversal of the industry's prevailing power dynamics. Product buyers who sign up to deliver thousands of containers to a shipping line don't face a financial penalty or pushback from the shipper if they deliver less than promised, Sundboell said. "There's always been sort of a 'If you don't show up or commit volumes, don't expect me to be on time or commit to the weekly departure I've promised you,'" tension between carriers and cargo owners such as big discount retailers, he explained. Carriers certainly would like to maintain the flexibility to cancel sailings on shorter notice, Sundboell said, noting that carriers have managed through the process of withdrawing capacity better than most would have thought. Can carriers continue finding a decent balance in the face of uncertain supply and demand? Years of pursuing larger scale and efficiency does not bode well for that. Hyundai Merchant Marine's new ship has a record capacity of 24,000 TEUs, and is the first of 11 of that size it has on order. International shipping can deal with low shipping volumes by canceling sailings, or it can deal with low shipping rates by sailing very full ships. But it can't do both. Reduced demand caused by the pandemic could leave the container fleet underutilized for years to come. Their high cost may put even greater strain on carriers operating on already slim margins. =====================

How Innovation in Business and Technology is Driving Servitization

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/ innovation-business-technology.html ----- Insights Industry Stories Over the years, the success of the manufacturing industry has been shaped by various

trends such as the industrial revolution and the rise of new business models. One such trend transforming the manufacturing sector is servitization which is expected to play a critical role in helping manufacturers maintain their position in a turbulent marketplace swayed by heavy margin pressures, unpredictable global economic trends and dynamic supply and demand cycles. With the onset of disruptive digital technologies and customer demand for superior services over and above the products they purchase, manufacturers must transform their core businesses if they want to survive in the digital era. This paper considers the business and technology levers that are driving the increased adoption of servitization. It also provides guidelines for manufacturers embarking on the servitization journey. Introduction In recent times, manufacturers have been diversifying their operating models from manufacturing and selling pure-play products to offering end-to-end product-related services. This trend of servitization enhances their competitive edge by allowing them to differentiate themselves in a market governed by customer demand for superior services and solutions, not mere products. For instance, heating, ventilation and air-conditioning (HVAC) manufacturers are shifting from simply selling HVAC equipment to offering 'comfort' as a service for their customers. While servitization has been around for a while, there are some emerging trends – both business and technological – in today's economy that are accelerating the shift towards Servitization. Business levers for servitization With improvements in manufacturing standards, the products available today are tougher and more long-lasting. One look at the automotive industry illustrates this. The models produced today last much longer and end customers may not feel the need to upgrade to newer models. As product sales deplete, manufacturers are recognizing that providing end-to-end maintenance services is an important revenue stream for them to sustain their position. Servitization can drive significant revenue growth, allowing manufacturers to significantly increase their annual revenues without the steep investments needed to launch new products. Moreover, instead of one-time revenues arising from product sales, servitization provides a more sustained revenue source. This is particularly important because service revenue often comes at a premium compared to product or equipment sales. This capability can help manufacturers ease heavy margin pressures and gain a greater market share as service-based companies, rather than product-centric ones. From a business perspective, servitization balances the unpredictability of customer demand and the seasonality of sales. It also provides a way for manufacturers to retain customer mindshare by engaging with them continuously, which in turn may drive future sales and future product designs. Technology levers for servitization Apart from the business levers, the advent of new technologies is creating a new breed of consumers who value exemplary customer service above all else. These technologies are also transforming manufacturing processes by enabling cheap data storage, connected shop-floors, optimized maintenance processes, and faster product development cycles. The Internet of Things (IoT) allows manufacturers to collect real-time data through the use of sensors. The data collected provides information about products as well as equipment use, environment, storage conditions, etc. With the increasing adoption of IoT, the cost of implementation has reduced in recent years, making it a viable solution for manufacturers who want to design servitization offerings based on real-time data. Cloud computing offers a cost-effective and high-

performant solution for infrastructure challenges faced by manufacturers. With easy data storage, retrieval and security mechanisms, cloud acts as the foundation for manufacturers to leverage latest technologies and digital transformation that complement servitization initiatives. For instance, it supports advanced data analytics using data collected through IoT sensors, giving stakeholders access to actionable insights. This drives a host of servitization offerings surrounding equipment monitoring, predictive maintenance, timely responsiveness by field personnel, and more. All of these contribute to greater revenue and customer satisfaction. For example, the combination of cloud, data analytics and IoT allows HVAC manufacturers to track the health of installed equipment and respond to incidents or failure much faster than before. Advancements in artificial intelligence (AI) takes these service offerings one step further. AI coupled with digital technologies like augmented reality (AR) and virtual reality (VR) allows manufacturers to leverage digital twins that can assist technicians on the field, reduce time spent on complex repairs and even eliminate the need for human intervention for issues that can be resolved remotely. The Infosys maturity framework Infosys has designed a maturity framework that helps original equipment manufacturers (OEMs) understand how they can implement servitization. The framework offers four stages for adoption of servitization across products, products + services, as-a-service offerings, and digital platforms. The framework acts a valuable guideline for manufacturing companies seeking to transform their business models, improve existing offerings or design innovative services. Guidelines for a servitization roadmap Manufacturers seeking to venture into servitization must first develop an underpinning strategy that outlines what kind of services they plan to offer and whether the expected value justifies the investment costs. This strategy should include evaluating their strengths to be a natural owner for the service, the current and future demand of the service, how it impacts the core businesses, potential adverse impact from not offering the service, what ecosystem partnerships are needed to maximize the efficiency and value of service delivery, and what technologies are needed to deploy it effectively. Once these aspects have been properly identified, a robust roadmap must be created that includes the business and technology levers discussed earlier. For instance, how can manufacturers establish a digital foundation to improve the customer experience and service delivery, thereby forging lasting customer relationships? Other considerations for a successful roadmap include implementing advanced analytics that can scale as the business grows, new operating models that bring in revenue from as-a-service capabilities, and a robust AI base that makes decisions and executes actions based on the analytics engine. In some cases, it may even prove worthwhile to consider establishing a focus wing for servitization offerings rather than as a mere add-on to existing products. Conclusion The scope of servitization has been evolving over several decades driven by new technologies and business models. Today, manufacturers can no longer afford to depend solely on revenue from product and equipment sales. The delivery of product-related services provides a lucrative revenue stream for them to buffer against low sales cycles and market volatility. Technological drivers such as IoT, AI, data analytics, and cloud not only drive greater production efficiency but provide cost-effective ways for manufacturers to deliver as-a-service offerings to customers. However, before embarking on servitization, it is important for companies to develop the right strategy that

evaluates how servitization brings value to the business. Following this, a robust roadmap must be designed and executed keeping the business and technological drivers in mind. This approach will help manufacturing companies achieve greater revenue and customer mindshare, helping them sharpen their competitive edge. =====================

Innovation is Key to the Future of Insurance

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/innovation-future-insurance.html ----- Insights Industry Stories A discussion with Paul Tyler, CMO of Nassau Re, and Rohit Puranik, Associate Vice President & Portfolio Head, Insurance, Infosys. The insurance industry is in the midst of monumental changes. New competitors, an emerging insurtech ecosystem, evolving customer needs and a new future of work are creating both threats and opportunities for traditional insurance carriers. Industry leaders understand the importance of reinventing their legacy technology, processes and business models to compete in this rapidly shifting marketplace, but what that will ultimately look like isn't clear. We sat down with two industry leaders working through these challenges on the ground: Paul Tyler, CMO of Nassau Re, and Rohit Puranik, AVP and portfolio head insurance at Infosys. They shared their thoughts about the rapidly evolving insurance ecosystem, the keys to driving more innovation in the industry, the technologies that could transform employee and customer experiences, and what carriers need to start doing to be successful. Question: Traditionally, insurance companies only had to be concerned with competition inside the industry. Today, tech giants like Amazon, start-ups, and even retailers are offering insurance. What do you think about this evolving ecosystem, the potential disruption, and your organization's place in it? Paul Tyler, CMO of Nassau Re: The insurance industry is actively embracing this change. Many major carriers actively foster innovation inside their companies, participate in accelerators, and/or make investments in startups through new venture capital units. We are tapping into the innovation renaissance of Hartford, Connecticut. The University of Connecticut is investing money and putting people in educational programs that will be critical to our success going forward. We have a mayor who is focused on supporting the growth of the technology sector. Our regulators are very forward thinking as well. Within Nassau Re, we are building new digital platforms on the cloud and pushing our vendors to run harder to catch up and help us explore new technologies and ways of operating. Rohit Puranik, AVP and head of insurance portfolio, Infosys: The disruption is happening at an exponential pace right now and it's a big threat to the industry. But in my opinion it is also a big opportunity to innovate using new technologies to streamline and automate complex business processes and to find new ways of monetizing large amount of data that insurance companies typically generate and consume. Transformations should be executed keeping the customers' interests in mind. Infosys' insurance digital strategy covers all aspects of transformation and has the customer at its core. I am very optimistic about the future, as insurtech startups and other non-traditional insurance providers are demonstrating

new ways of improving customer value. There is a lot we can do with AI, data and technologies like blockchain. They promise not only short-term gains like operational efficiencies but can also change the nature of business to enhance customer experience and support long-term growth. Question: What are the biggest challenges with this kind of digital transformation? Paul, you've said turning around an insurance company is not for the faint of heart… Tyler: Yes, life insurance companies—even the smallest ones—are like aircraft carriers. If someone mispriced a product ten years ago, you may feel the effects for another 10 years into the future. Just solving the financial problems alone can require a massive team effort. Rewiring the company, at the same time, to compete effectively in a digital world adds an incredible layer of complexity to the challenge. Puranik: The biggest challenge is the existence of legacy infrastructure and presence of disparate application systems that are not integrated. A digital transformation program has high probability of success if the enterprise digital strategy includes modernizing the existing IT and Ops. These two should not be executed in silos. Then there is data, which includes a large amount of unstructured data coming from the industry, including brokers, agents, third party administrators and government. It is important for insurance companies to have the capacity to manage and utilize this data in a way that can serve them to deliver better customer services and add to the bottom line. The workforce in most insurance companies is process driven and are change resistant. We need a mindset that is agile and open to innovation with existing processes. Lastly, there is lack of clarity on which technology to adopt and how the digital strategy will tie in with business goals. If enterprises can manage the people and process part well, the technology change is an easier one to adopt. Question: What needs to happen for that kind of shift to occur? Tyler: Senior leadership at carriers must recognize the need for very deep change in their organization structure to effectively compete in the emerging digital arena. Functions that operated very efficiently in a centralized way may need to be pushed out to businesses and vice versa. Basic operating models of many functions will need to change dramatically to fully capture the benefit of machine learning and predictive analytics. Puranik: I think it's important to start with human capital. Employees must believe in the digital investments that the company is making. They should not look at technology as a threat but as a tool that can help them do their jobs faster and better while increasing the customer value. Secondly, insurance companies must look at new business models. Partnering with insurtech or tying up with other adjacent industries say automobile companies to design new products that take into cognizance the new realities of a digital world like driverless cars or fully automated retail experiences can throw open new revenue streams. The IoT market is also untapped in the insurance industry and that can revolutionize how claims can be avoided. Third – the CEO should be a key sponsor of the digital agenda and can play an instrumental role in making the transformation successful. The board has to understand and approve the digital transformation program and it should be a part of the company strategy. Question: Nassau Re recently launched an insurtech incubator that will support selected startups and provide complimentary office space and business development services to them. Could you share your vision around this initiative? Tyler: We founded Nassau Re only four years ago with the belief that we could create a new type of insurance franchise by reinventing the value chain. When we purchased Phoenix, we redesigned our

headquarters with an open workspace environment to foster communication and collaboration. The new configuration effectively created a great deal of unused space. We decided to give part of the space away to insurtech startups for several reasons. We want to bring innovation close to our company and employees. We want to support the growth of the insurtech ecosystem in Hartford. We want new startups and insurtech companies to view Hartford as a choice location to grow their businesses from. Finally, we hope our collaborative strategy will create jobs in Connecticut and attract new investment capital to the region. Puranik: We've seen other carriers work with startups for their own needs. But in this case, it's beyond self-interest. It's an investment in the broader industry and the exploration of how insurtech might disrupt the value chain. It's very complementary to what we're doing at Infosys' Hartford innovation hub. We have very horizontal capabilities and innovation in the areas of AI, blockchain, cloud, and advanced analytics. Question: As you're exploring how best to apply new technology, how do you find talent that is both tech-savvy and understands the insurance business? Paul: I was the only person in marketing when I started. My initial hires proved very difficult because we needed people who could do not one, but five things well. In many ways, it's easier to hire employee number 20 than employee number two. We struggled to find people in Hartford who were willing to come on board. But the more innovative work we do—like launch an incubator—the easier it is to attract the right people. We are also investing in training and education of our existing employees. For example, we have run large programs to teach our employees how to code in R. However, it's really hard to get people to want to take time out of their day jobs to learn new skills. How is Infosys dealing with this, Rohit? Puranik: We believe in capability building. When we hire employees, we're looking for a good attitude and an aptitude for learning. And we have a strong foundation for remolding skills. We take the same approach when we hire new graduates; we offer them 12 weeks of education on process, technology and domain knowledge that we call "finishing school." This is a very intensive training program. These trainings are executed from one of the innovation hubs in the US, and from the Infosys Global Education Center in Mysore, India. Question: Which technologies will make the biggest impact for insurance companies over the next five years? Tyler: I believe that machine learning will have a massive impact on the industry. I think 80% of the jobs could be dramatically altered by the effective application of machine learning. Blockchain should also have an impact. The challenge is building a team of people who understand what the possibilities of these new technologies are and how to link them together in this complex industry. Puranik: Historically, IT has been seen as a cost center. While there was investment in new technology—to deal with a regulatory change, to roll out a new product—the attitude was typically "If it's not broken, why change it?" There was not a lot of investment in the future. It will be the CIO's role to bring out the business value of new technologies, specifically anything related to data or customer experience. There are so many information sources available, and insurance carriers need to figure out how to make the best use of that data for insights. Looking ahead, any technology that can elevate the end-to-end customer experience will be key, and data will be foundational in that transformation. Question: What are the biggest considerations for insurance companies as they explore these innovative technologies? Tyler: For me, the big questions

are: "Why?" "Who?" and "What are the impacts?". It's critically important to understand the outcomes you're trying to enable through a new technology, rather than just trying to keep up with the neighbors. You also need to know whether or not you have the right people in place to make the best use of technology. Finally, you need to have a clear picture of how the systems will fit into the organization and its infrastructure and what changes you need to make to take advantage of the technology. Puranik: First, they must understand the technology they currently have and whether they are replacing an existing technology. 80% of companies have redundancies in technology and are paying duplicate fees because they have no visibility into their technology environments. Secondly, they must consider how the technology will impact the customer experience. Finally, they need to think about whether this new technology will enable them to become more agile or more data focused. =====================

A Vision to Make Insurance Painless with Insurtech

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/insurance-painless-insurtech.html ----- Insights Industry Stories Buying insurance isn't all that difficult in today's world. There are chatbots and virtual assistants that provide you with estimates, answer your queries, and help you select the best policy for you. Claim settlements have become a lot easier with apps that help you scan and mail photographs and claim documents. You rarely miss a payment, the systems ensure, you get an alert or your bank is alerted. Yet, most insurance customers are still not happy. Why? Investing in Infotechs has Not Delivered It All In the last few years, insurance companies are seeing insurtech startups as change agents to their business. They realize that technology start-ups have fluid organizational structures, fun-innovation and "google-cool" corporate culture run by teams of highly skilled people making a positive impact on any digital transformation program without having the legacy of working with the insurance industry. The 2018 Gartner-ACORD Survey found that approximately 54% of the respondents were already investing and working with insurtechs today, and an additional 14% had plans to do so by YE18.1 Unfortunately, with these investments, most insurance companies have brought in only limited or incremental digital capabilities into their organizations. As per Gartner's latest report titled "Predicts 2019: Insurance CIOs Must Shift Strategies from Digital Optimization to Digital Transformation to Compete", emerging vendors, like insurtechs, typically offer a narrow range of capabilities (for example, specialized best-of-breed functionality or boutique business applications) and so struggle to reach broad adoption and remain viable." 1 Another leading research report says that most insurtechs are investing in automation, data analytics, connected devices and machine learning to create new business models. This has helped change the way insurance companies create/underwrite policies and manage their claims. While these fundamental processes are seeing digital transformation by way of increased efficiency and better management of costs, the insurance industry is lagging behind hugely when it comes to

innovation around customer experience, new services in the portfolio or speed to market. A Vision to Reimagine the Insurance Business Digital transformation is not about taking care of one customer touchpoint. It's about empowering every individual/system involved in servicing a product or service with digital capabilities so that irrespective of the channel the customer chooses, the experience is the same. Similarly, it is not about optimizing one single process. All the processes involved in a product lifecycle, right from purchase to the product maturity must be digitized to generate true value to customers. Customers who bought their insurance online effortlessly, at the click of a button, would anticipate the same ease and speed at the time of making a claim. Disappointing them during the insurance claim process defeats true digital transformation. When collaborating with insurtechs for digital transformation, business leaders from the insurance industry need to understand what drives these technology startups and what is their mission or value proposition. They must identify insurtechs that share their vision of re-imagining the insurance business and not just bring new software capabilities. The insurtechs must understand the insurance business well enough to provide new insights, suggest new models, design new products and create appropriate customer experiences. Here are a couple of examples from the startup world who are invested in the idea of evolving the insurance industry using technology. Boundlss from Australia, helps predict risks and dynamically price health and life insurance premiums using real-time health and behavioral data. Their vision is to help transform insurers from payers to long term preventative health partners with their AI-powered, conversational member engagement platform. ViewSpection, from the US, is an app and web platform that enables a policyholder to do their own property inspections within days, compared to weeks with the traditional loss control inspection model. Their vision is to facilitate a transparent and collaborative operating model between agents, underwriting, loss control and claims. The Insurance Landscape is Changing News reports state that insurance technology investments have totaled over $525 million in 2nd quarter of 2018. New investments in startups are increasingly either serving insurers or disrupting them. Even non insurance players, like Amazon are showing an interest in insurance. Incumbent insurers today have no choice but to continue creating successfully collaborations with insurtechs or to create an ecosystem by themselves similar to a technology startup consisting of: With a view to creating these critical ingredients for a successful insurtech eco system that will help advance the digital transformation goals of the insurance industry, we created the Infosys Technology & Innovation Hub in Hartford, CT. Hartford is the epicenter of several global insurance companies. The Infosys Hub includes insurance, healthcare and manufacturing labs that focus on smart underwriting, claims fraud, IoT and Cloud among other things. It will employ cutting-edge data security and data-sharing features to help insurance companies comply with all applicable privacy laws while promoting innovation. We are finding new use cases for Artificial Intelligence, robotics, Internet of Things and Blockchain in the Insurance business. Infosys will also leverage the Hub to train its employees and develop pioneering techniques with agile, development operations, cloud and information security projects. 1 Predicts 2019: Insurance CIOs Must Shift Strategies From Digital Optimization to Digital Transformation to Compete https://www.gartner.com/doc/3893288/predicts--

Insurers Need to Reinvent Themselves to Become Future-Ready

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/ insurers-reinvent.html ----- Insights Industry Stories It is ironic to see the insurance companies grappling with massive disruption, given that the primary focus of the industry is to help customers manage risks. However, several factors have necessitated the industry to shift from being a slow-paced and highly regulated one, to one where a massive transformation has become an imperative for survival. With the rise of disruptive insurtech start-ups and emerging technologies like artificial intelligence, blockchain and drones entering the insurance mix, the industry is now compelled to rethink its business model. Acknowledging the urgency to adapt to the new environment and reinvent themselves to become future-ready, companies need to prepare themselves, focussing on what we call the 'Trends and Trinity' optimization; 'Trends' in terms of technology, regulations and business models, and 'Trinity' or the three dimensions of speed, efficiency and risk. It is important to note that Trends and Trinity are two sides of the same coin, where every company is trying to optimize speed, efficiency and risk, while keeping Trends in mind. On the other hand, Trends are being driven by how the industry optimizes the three elements of the Trinity. Insurance companies that fail to adapt to the dual play of Trends and Trinity will fail to compete with those who choose to take cognizance of these in their business operations to improve customer experience, reduce costs and derive better ROIs. Trends impacting Insurance - Technology, regulations and business models While the insurance industry is getting disrupted by new and emerging technologies such as AI, machine learning, cloud and predictive analytics, it also stands to gain the most from the same technologies with the right approach and adoption. Since most insurers run on legacy technologies that are not designed to support the slew of new-age services, this is the first place to look into. Digital technology is helping industries find new and better ways of functioning that not only leverage the existing legacy infrastructure but also bring new capabilities. Digital technologies have enabled insurers to improve operational efficiency, from underwriting and pricing to personalized product bundles and regulatory compliance. Robotic process automation (RPA) and AI-infused processes are increasing the speed and accuracy of operations and their widest adoption is seen in the area of fraud detection and prevention. Lastly, advanced analytics is being deployed to dynamically segment users and their needs, model behaviors, identify exceptions, adjust policy prices, optimize business strategies, and identify new growth opportunities. It is clear that executives also see technology transforming the front-end of their businesses,

enhancing customer relationships and boosting growth. Adoption of new technology bring in the need for new regulations and compliance practices. Even regulators are adopting technology to get a better view of the industry with real time monitoring. Global enactment of cyber security and data privacy regulations The EU GDPR took effect in May 2018, following a two-year post-adoption grace period. State of California enacted the California Consumer Privacy Act of 2018 (CCPA), that greatly expands data subject rights and introduces provisions for civil class action lawsuits based on statutory or actual damages. The law takes effect in July 2020. The US privacy law landscape is shifting and evolving as state and federal privacy legislative proposals continue to be debated. While CCPA-like bills failed to pass in Washington and Texas, Nevada passed its online privacy amendment and proposals in New York and Washington, DC. In addition, the insurance players are changing the game with new business models and personalised products. The digital economy is making usage-based, on-demand and 'all-in-one' insurance lifestyle products more relevant. Customers prefer personalized insurance covers instead of the one-size-fits-all products currently available. Non-traditional players are entering the insurance market. For example, many OEMs have launched their own insurance products. Ford and GM are offering insurance for their driverless cars. Tesla's "InsureMyTesla" program acts as an agency helping to procure discounted rates for customers on policies underwritten by insurance partners including Liberty Mutual, AXA XL and QBE. Amazon is reportedly preparing to enter the Indian market as a corporate agent for health, life and general insurance products this year. Lastly, technology has driven the rise of insurtechs, which are turning insurance on its head; creating new ways of pricing, producing, distributing and servicing insurance policies. As per a publication by DLA Piper, a global law firm, the proportion of organizations with a high level of engagement with fintechs and insurtechs is set to almost double (from 30% to 55% of FS organizations) over the next two years.1 The trinity drivers of speed, efficiency and risk As customers become more demanding than ever, every CXO wants faster time to market (speed) and better efficiency with minimum risks. But, improving one worsens the other two and hence, teams have to find the right acceptable balance among the three parameters. The insurance industry is working towards improving each of these parameters independently as well as in an inter-dependent manner. Adoption of new and emerging technologies such as cloud, agile infrastructure, and automation is key to help insurers improve efficiency, reduce cost, and mitigate risks. Automation plays an especially important role in eliminating human errors in repetitive processes. RPA helps streamline backend processes such as claims processing, billing reconciliation and subrogation. Machine learning can transform customer engagement. With technology empowering insurers to bring unprecedented speed, efficiency and superior customer experiences, it is also important to re-look at existing business models and tailor them to match the new realities in terms of risk, regulation and customer expectations. 1Technology and disruption in the insurance sector: 2019 and beyond ====================

CMA CGM's Journey from Digital Transformation to Business Transformation

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/ journey-digital-transformation.html ----- Insights Industry Stories We recently had a conversation with Francois Bottin, Director, Digital Factory, CMA CGM, on the company's digital and business transformation journey. CMA CGM is a French container transportation and shipping company headquartered in Marseille. It is a leading worldwide shipping group, operating 200 shipping routes between 420 ports in 160 different countries. Here are a few excerpts from the conversation: Infosys: As the head of the Digital Factory at CMA CGM, could you share with us the company's journey to a digitally transformed group? Francois: We have been working with legacy applications for many years for functions such as shipping, finance, etc. Digitization is one of the key priorities of the strategy implemented by Rodolphe Saadé, CMA CGM's Chairman and CEO. As part of this strategic move, Saadé decided to create, about 18 months ago, a dedicated digital organization, with Infosys as our transformation partner. We already had a few teams working on small digital projects. But whenever there was any need for prioritization, the decisions were always in favor of legacy because they were already in production. We decided to form a dedicated team by re-skilling and upskilling some of the existing employees to lead our digital initiatives. We made a conscious decision to drive 80 percent of the transformation effort with our existing staff because we wanted to provide them with new opportunities. Also, we realized it was the most efficient way as the staff already knew our systems well. We hired a few young data scientists to compensate for some of the missing skills. The digital team interacts regularly with other teams. As people come up to speed both in terms of new technologies and methodologies, the objective is to bring together the teams to build a mature digital organization. Infosys: What were the challenges and opportunities in your digital transformation plan? Can other legacy companies (irrespective of the industry they belong to) take any lessons from your experience? Francois: One primary challenge was to change the way business viewed IT. IT is usually seen as a support function. To become digital, it was important for the business to see IT as an enabler for new opportunities. It could potentially be a revenue-generating unit. For example, with digitization, there could be a way for us to monetize our APIs. One area where we are driving change is standardization. In fact, we have been working on it for the past 20 years. Unlike banking for example, where there are global standards, there are no such standards for the shipping industry. If we look at different domains within the container shipping industry such as booking, pricing, optimal routing, etc., everything is specific to each organization. There are typically huge teams within organizations that work on customizations, due to lack of standards. Digital transformation can help bring standardization in the business, which is very important for this industry and for CMA CGM to become a pioneer on this transformation and reinforce our leadership. Infosys: In a traditional industry, where the workforce is accustomed to working in rigid, process-

driven methods, what would you recommend are the top three things that organizations should take care of when it comes to change management of people in a digital transformation project? Francois: The first requirement is to reorganize to reduce hierarchies. While earlier there were three or four layers between top management and the doers, now with digital there is only a single layer. For example, if a business user needed any feature, he or she would earlier send the specifications to the IT team for translation into a language that a developer could understand. Then, there would be someone responsible for the graphical interface, etc. As a result, there would be too many layers between the end user and developers. Through digital, IT has brought the doers and the end users much closer. In another example, we had a small team working on automation of release/test management. Earlier, other teams were unaware of their work. Today, people realize the value of this team's contribution to digital transformation. The most difficult part of the effort was communication – explaining what digital means. People usually have stereotypical assumptions about IT teams and fail to understand the value of what they do. It is typically believed that they run their own agenda and experiment around innovative technologies. It was important for us to employ communication channels such as newsletters, presentations, etc. to change this. Saadé decided to organize 'digital days' in the Group's headquarters in Marseille, where we invited employees to help them understand what we are doing. We reached out to everyone from top management to the bottom rank. Even external audiences like our partners, customers, etc. needed to understand what digital transformation meant to them. We've had several informal conversations with all the stakeholders to convey what digital can do. Discipline is very important in any digital transformation effort. For example, if you organize a daily Scrum meeting, everyone needs to be present on time. True changes happen only after they are discussed with the business team and once we have their buy in. We are not here to break the rules; we are here to change the game. Infosys: CMA CGM has been in the news for the several acquisitions and alliances it has made. Did this pose a challenge to your digitization plans considering alliance structures vary and can make implementation difficult? Francois: Saadé's strategic priorities are to not only continue the development of the Group in maritime transportation but to also develop our inland and logistics activities in order to become an end-to-end player. This is important for us so that we can offer end-to-end solutions to our customers. We have now entered into the supply chain business. Digital is the only way to bring together all the people working in container shipping and the supply chain division. We used to have centralized and uniform IT systems across the world that did not allow our remote teams to customize the systems to meet their local requirements. Today, we have learnt the importance of localization to achieve true globalization. For example, some IT features could be managed out of Singapore if they are primarily used by the Asian teams. We are giving more ownership to the local teams. Similarly, we have shared detailed guidelines on giving out APIs to third parties. Local teams are free to give out APIs to third parties, as long as they follow these guidelines. The transformational foundation we are building with digital can help the company achieve standardization along with localization that is backed both by IT and business. Infosys: What are your future plans to ensure that digitalization and innovation continue to be central to CMA CGM's existence? Francois: Digitalization is already one of the main drivers

given by Rodolphe Saadé. Still, the most important thing for the next two years, is for us to ensure that the new style of working becomes more mainstream within the organization. This means that all teams within the organization need to adapt and adopt this model. Also, the journey needs to translate from digital transformation into a true business transformation which will be the game changer. =====================

Early Focus on Data – A Key Strategy for CIS Implementation Success

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/key-strategy-cis-implementation.html ----- Insights Industry Stories This blog post has been written with inputs from Parmarth Naswa, Principal Consultant, Utilities, Infosys. From our long association with Customer Information System (CIS) transformation programs across multiple utilities, we have observed that most believe a successful CIS transformation is driven by adopting the right technology and business processes. They often overlook the criticality of data transformation in such programs. Those who have been part of complex CIS implementations will know that data is often the long pole in such programs, yet the focus shifts to data mainly during the design phase. This is too late in the program lifecycle and introduces significant risks to the program's subsequent phases (testing coming to a halt because of lack of data) and overall success (incorrect bills being sent out to customers, post go live). An early focus on data, while helping mitigate risks, can also accelerate timelines and enhance quality. As we say, a new CIS system can only be as good as the data in it. How do utilities ensure that their data is ready to play the pivotal role it must, towards successful CIS implementations? By focusing early in the program on all the aspects of data - from strategy and planning, to data quality and conversion. Making data an early focus in your CIS program Even before a System Integrator (SI) is selected for a CIS implementation, utility companies should start identifying its sources/systems of data that will be decommissioned. While major sources are often known like a large mainframe billing system, there are often smaller but significant source systems, maintained independently by business users in the form of access databases or excel sheets that hold important data and are required by the new CIS system. Inventorying, documenting and removing redundancies in data sources is the first step for an early focus. Data cleansing is most effective when done early and directly at the source. Master data like customer and account, or meters and site are often the low hanging fruits for cleansing. For example, if there are email addresses missing for few hundred customers, an outreach campaign can help gather the missing data and update the source systems. Similarly, we often notice Personally Identifiable Information (PII) data gets stored in non-PII fields – like a driver's license or social security number is saved in the notes fields by call centers. This data, if migrated as-is, can cause audit and compliance concerns in the new CIS system and therefore should be taken up for

cleansing early in the process. Data cleansing at source acts as a pilot for establishing the data cleansing methodology that can then be easily repeated for higher volumes of cleansing during the CIS program. At the planning and analysis phase (pre-design), the CIS product and SI selection is complete and the target data model is known. With newer CIS products from major product vendors like SAP and Oracle, most data models and their foundational data needs are well defined. At this point utilities must start mapping the required data entities based on the target data model, without waiting for the detailed designs. This can free up the CIS program's focus on business requirements, business process, and solution design. By now, the data cleansing methodology would have matured and a data quality metric framework can be established to monitor the quality and data stewards identified to own the data. Finalizing the data conversion strategy during the pre-design phase makes sure that all the downstream work is well aligned and there is lesser conflict of activities post-design phase. The early conversion strategy gives enough time for other program workstreams like functional design, testing and infrastructure to plan their activities accordingly. Setting up the data staging environment and performing a full extraction early in the pre-design phase help in determining the size of the staging environment and improving the extraction performance. Full extraction is often required to avoid any transformation stress on legacy systems. This early extraction provides a sandbox environment for the data team to profile for quality and test the cleansing programs before implementing it back in source. Key benefits of focusing early on data An early focus on data allows a lot of activities to be complete before the design phase and gives the CIS program time to focus on key areas. Identifying data quality issues at the beginning of a program, gives the business enough time to rectify them. Early attention on data also allows accelerated readiness for integrated testing allowing the focus to shift to real issues rather worry about data quality or conversion issues. This also sets the stage for full cycle data mocks feeding into each integrated test cycle, user acceptance testing and other types of CIS testing. Lastly the real benefit of data transformation is realized when the new CIS system goes live and enters production with minimum data related issues. All these benefits make for a compelling case for upfront investment on data in a CIS program. To know more about how to build a smart utility, visit our microsite.
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Modernizing Legacy Platforms for a Digital Future

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/legacy-platforms-digital-future.html ----- Insights Industry Stories Some of the biggest enterprises are still running business-critical functions on decades-old, mainframe-based platforms which are simply not equipped for the speed and flexibility demanded by the digital world. Moving intensive, customer-facing functions out of legacy mainframes is something every enterprise should consider as part of their modernization effort to make themselves future ready. A global financial services firm realized this, and

undertook mainframe modernization to speed up two of their major platforms and bring down maintenance costs. See how Infosys helped and the five key takeaways from the project. =====================

Digital Transformation in the Life Sciences Industry

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/ life-sciences-industry.html ----- Insights Industry Stories As an industry actively transforming itself in the pursuit of reestablishing long-term sustainability, life sciences are just beginning to embrace true digital transformation. They are now adopting a more holistic strategy that embraces a broader organizational approach to transformation than the current incremental focus on near-term technological innovation, operational efficiency, and externalization of noncore competencies, common in industry transformation efforts today. Within the broader IDC view, digital transformation has the potential to fundamentally transform the organization, challenging the traditional approach to leadership, and incorporating technological advances (both near- and longer-term), more effective information usage, evolving social norms, and an increasingly collaborative mindset on the next step in operational excellence. With the increased urgency triggered by the arrival of the patent cliff, the industry has actively embraced both incremental and transformational change, where directly supported by measurable ROI. Once a taboo, industry leaders are also increasingly considering best practices from outside the industry as they seek to leapfrog the chasm, and quickly transition to operational excellence. While the limitations of a highly regulated operational ecosystem have made change significantly more difficult compared to other industries, life sciences companies are finding that change and the hurdles encountered are not unsurmountable. Concurrently, the industry is also continuing to expand, both geographically and into adjacent industry spaces (i.e., healthcare provider and consumer) as it pursues new business models to support long-term growth. In shifting beyond their traditional boundaries, companies are running into new business and regulatory hurdles that will need to be identified and overcome, although it remains to be seen which expansions will prove to add sufficient value to justify the added cost and complexity of these new strategies. As we at IDC define the industry transition to digital, we are not thinking about the transition of data as analog to digital, or the transition from computer mainframes to PCs, tablets, and smartphones. Striving for a holistic perspective, IDC is redefining discussions around digital to the more dynamic and all-encompassing need to access, process, and exploit data, information, and knowledge, virtually instantaneously by an agile workforce, on any platform, regardless of geography and more transparently, so that it can be directly linked to improved business outcomes. This mindset is strongly supported by IT innovation, enabled by the third platform – the increasingly ubiquitous adoption of the cloud, big data and analytics, mobile technologies, and social communications (also described as SMAC). While life sciences continue to lag behind other industries in the adoption of digital, particularly in mobile

and social communications, industry progress in areas demonstrating low-risk and high-reward, have been heartily embraced. For instance, improving accessibility and agility of unregulated research data by placing it in the cloud, analyzing increasingly complex datasets using big data technologies, shifting away from traditional PCs to laptops, iPads, and/ or smartphones, and mining the social ecosystem for customer sentiment and potential candidates for clinical trials. The life sciences industry has concurrently taken the notion of digital transformation further by actively reconsidering its entire information management infrastructure, including process-specific applications (e.g., predictive modeling, ELN, EDC, drug safety, other clinical trial applications, and collaboration platforms), business applications (e.g., BI, CRM, ERP, and project management), and general business processes (e.g., HR and accounting) with a view towards optimizing business outcomes. Large life sciences companies have rationalized their application portfolios, reducing the number of solutions from more than 10,000 to just a few thousands in a few years. In the clinical trials space, companies are no longer focused on the EDC platforms specifically, but are looking for ways to better share data across applications (including EDC, CTMS, drug safety, quality, and regulatory compliance), to directly improve process efficiency and increase patient safety. eClinical is the new EDC and the focus on processes is shifting towards a view focused on outcomes. As IDC looks beyond the 3rd platform to digital transformation, we have extended the discussion from IT and infrastructure to the data, information, and knowledge-centric processes that will yield actionable insights and improve business outcomes. Scientists, project managers, and senior executives are expected to benefit from some or all of the following: Many of these anticipated benefits will be enabled and empowered by technological and process innovations in the industry. Virtualized IT infrastructure via the cloud, complex analytics of increasingly oversized data resources, cognitive computing, anywhere anytime access on mobile devices, and other technological innovations are all powering these new capabilities, with support from solution and service providers, aligned towards the common goals of ubiquitous, real-time global operational excellence. With data volumes, variety, and velocity, all greatly exceeding the industry's ability to consume them, life sciences companies urgently need new ways to stay on top in an increasingly global competitive industry. Digital transformation promises to be a paradigm changer and will likely forever change the conversation, both now and for the foreseeable future. While organizational inertia ensures that change will never be easy, it is clearly time for the life sciences industry to begin to embrace digital transformation in the path towards long-term sustainability. For the life sciences industry, new scientific discoveries, continuing technological innovation, increasingly ubiquitous global interconnectivity, increased digital access, and the growing availability of new data resources (including EMR data, patient insights via social media, and HEOR data), are advancing independently as the industry focuses on its more immediate concerns. In looking beyond incremental innovation, the industry needs to embrace change at a more fundamental level. Building on the current technologically enabled data, information, and knowledge-centric approach to new drug development, the industry needs to further transition towards a more comprehensive 21st century operational experience, including changing the way that: For the life sciences industry, the strong inertial resistance to change has been overwhelmed by the much

anticipated arrival of the patent cliff, and its associated blockbuster revenue losses. The recognition that the traditional blockbuster drug model is dead has further driven the industry to look beyond traditional sources of new revenues, including niche small market blockbusters (especially cancer), and value-added products (e.g., drug associated diagnostics and direct patient monitoring). Because these more near-term strategies will likely not yield sufficient revenues to replace blockbuster losses, most companies will need to think bigger, taking into account a global transformation in business, industry, and society, enabled by technological innovation. With the traditional barriers between academia and life sciences companies and consumers / patients continuing to evolve and dissolve, leading innovators will need to expand their mindset towards a future where companies will participate in and contribute to a much more global and interconnected ecosystem. While the few remaining major medical unmet needs (e.g., Alzheimer's disease and other CNS diseases, regenerative medicine) will likely provide opportunities for a few companies to quickly regain their footing, the rest of the industry will need to quickly innovate, or slowly fade into the sunset. Status quo is not an option. Change is coming and those willing to embrace transformation will more likely succeed in the future. Learn about our offerings for the Life Sciences industry >> =======================

Making Marketing Simpler

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/ making-marketing-simpler.html ----- Insights Industry Stories Digital marketing is a growing priority for enterprises the world over, as more customers come online and consume content there. This is coinciding with the enterprises' need to consolidate operations and use shared resources, in the face of growing competition and the need to cut costs. The situation is even more critical for large conglomerates owning multiple brands, who have sprawling operations and different vendors and teams for each brand. A large global pharmaceutical and life sciences firm was facing the same dilemma – the need to cut and consolidate its digital operations but not knowing where to start. See how Infosys helped and the five key takeaways from the project. =======================

How are Customers Influencing the Utilities Behavior?

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/ mantras-winning-your-customer.html ----- Insights Industry Stories Spring is here! And as part of my spring project, I ordered some furniture last week from the 'build your own furniture' store, only to realize that I was going to travel to Tampa for the Utilities CS Week during the weekend and would not be around to work on assembling the furniture. So I texted Tim - the handyman, with a request for service. Within a minute, Tim replied to my text message asking me for my address, preferred delivery time, and giving

me a window of service. In the next 30 seconds, he texted me asking me for the furniture model number / parts so that he could look up the instructional videos and is better prepared to service me right, the first time. Sounds great? Can customers in the utility industry expect the same experience? My brief interaction with the handyman from the furniture store inspired me to define three key mantras that the customers of today are expecting. I shared my thoughts along with my fellow speakers at the recently concluded CS Week that included Henry Bailley from SAP, Justin Segall from Simple Energy and Eric Dresselhuys of Smart Energy Water. Collectively, we shared our views on the major changes in customer expectations and how they will impact the utility customer service in terms of people, process and technology strategies. Three Mantras for Customer Delight 1.Know your Customer 2.Communicate Proactively in the Medium the Customer is used to 3. Equip your Field Service to Serve your Customer Right, the First Time The above expectations are what I call 'outside in' expectations that need to drive the Customer Experience transformation. In addition, there are technology enabled transformations that the Utility is empowered to take on today. Bring Efficiency into Your Customer Experience with Technology Enabled Transformations To know how Infosys helps utilities create empowering customer experiences, visit Infosys.com
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Maximizing Your API Investment

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/ maximizing-api-investment.html ----- Insights Industry Stories APIs are an increasingly popular way for enterprises, particularly in the financial services domain, to monetize their services with none of the associated expenditure. However, making sure that the APIs are always available, scalable, and secure are vital for the API economy to truly realize its potential. A major financial services firm built an API platform, aiming to create a new revenue stream, but needed a partner to make sure the platform was well supported and available 24/7 to partners and developers. See how Infosys helped and the five key takeaways from the project.
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Mobile-first Banking

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/ mobile-first-banking.html ----- Insights Industry Stories Business Challenge A large Colombian bank wanted to implement a strategic digital banking initiative targeted at the mobile-first generation in Latin America. Infosys View A digital banking solution should provide a 360-degree single-source view into customer accounts, so that banks can empower customers with relevant information and delight them with the right offerings presented at the right time through the right channel. Business Outcomes And more... Read about the client benefits and the 5 best practices drawn from this engagement. ======================

Rethinking business models for European mortgage providers

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/mortgage-providers.html ----- Insights Industry Stories The European mortgage industry has weathered several storms in recent years, both causing disruption and creating opportunity. Following the Brexit announcement in 2016, the Bank of England dropped mortgage interest rates to an all-time low of .25%, encouraging homeowners to refinance. Meanwhile, Europe's 2018 General Data Protection Regulation forced mortgage providers to rethink data privacy or risk severe penalties. Heavily reliant on data mining for accurate underwriting, lenders consolidated tremendous amounts of consumer data and invested in technologies and training to ensure compliance. Now the COVID-19 pandemic has created an additional layer of uncertainty to an already complex industry. The issuance of new mortgages has come to a virtual standstill, and many countries have mandated payment holidays. The U.K.'s largest lender, Lloyds Banking Group, granted about 400,000 mortgage payment holidays and 480,000 payment breaks on business and personal loans, credit cards, and auto financing. Even before the current economic downturn, the European mortgage market was growing slowly, and profitability was thin. Falling loan repayments hindered the industry despite high European Union employment rates and a healthy loan origination trend. In the U.K., Europe's largest market, outstanding residential mortgages grew by just 2% per year in real terms between 2007 and 2018. And last year, the 15 biggest lenders in the U.K. were engaged in a price war. At the same time, the industry has been navigating the disruption created by emerging technologies. Deep-pocketed incumbents face tough competition from startups building new processes from scratch, at dramatically lower costs. Fintech companies created aggressively customer-centric banks, online offerings for unsecured personal credit, and peer-to-peer lending platforms for short-term liquidity. Even with these innovative models, it has taken fintechs significant time to make inroads into the mortgage industry, one of the most complex areas in financial services. Moreover, such models are less resilient to market shocks like the current pandemic. Under pressure to improve customer experience and deliver greater efficiency, many traditional lenders have started multi-year digital transformation initiatives. However, these transformation programs themselves present new challenges. Traditional mortgage lenders need to invest in many areas including origination, servicing, and collections. In a wide-ranging transformation, there is a risk that these areas could push aside efforts to improve customer experience. A recent Infosys survey of mortgage providers found that 77% were investing in their originations processes, 78% in servicing, and 78% in collections. Enhancing customer experience was only ranked ninth on their list of priorities. Among those surveyed, the most significant challenge was integrating data, systems, and processes. Fifty-seven percent of executives said this was very or extremely challenging, a reminder that managing IT-related issues is critical to a successful transformation. At the same time, mortgage providers are having to learn or incorporate technologies, such as artificial intelligence, machine learning, advanced data analytics, and robotic process

automation. Predictably, cybersecurity is also a high priority for most organizations. In many cases, banks are reconsidering their business models in response to growing pressure from fintechs. Startups, such as the U.K.'s Starling Bank, are building their banks as platforms, offering multiple services from third parties connected by open APIs. Solaris Bank in Germany offers white label "banking-as-a-service" to other companies that want to provide banking and payments services without owning or operating the infrastructure. This trend toward platform business models is part of the reason Infosys acquired 75% of Stater, ABN AMRO's mortgage processing business. Open APIs provide the ability to access data from multiple parties to speed up the application and closing processes. The technology also enables the creation of a services ecosystem, such as real estate and home insurance services, that should ultimately enhance the profitability of the core mortgage business. Currently, the platform serves €320 billion worth of mortgage assets and allows banks in the Netherlands and Belgium to mutualize the mortgage servicing costs. The long-term impact of the coronavirus pandemic is uncertain, although a global recession seems inevitable. However, the demand for digital transformation in the mortgage industry seems likely to grow as providers try to reduce manual intervention and improve efficiency. It will also force companies to consider very carefully the strength of their partners, mutualize costs structures, and ensure that their operations and the ecosystem is robust and resilient in a crisis. Even though some hardship is likely in the short-term, mortgage providers must fundamentally rethink their business models, decide where they want to focus their investments, and build those capabilities while there is still time.
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Nature is Life. With Green Chemistry, You Can Choose Life

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/nature-life.html ----- Insights Industry Stories Today, life sciences has a pressing imperative – providing effective and affordable medicine. Furthermore, the industry needs a sustainable business approach, since a majority of 'blockbuster' drugs are losing patent protection and returns on R&D spending are shrinking. Pharmaceutical companies invest, on an average, 12 to 15 years and incur a cost of US$2.5 billion to launch a new drug. Big Pharma has explored several options to address their challenges – internal restructuring, substituting batch processes with flow chemistry, mergers and acquisitions, outsourcing of R&D and manufacturing, and acquisition of experimental drug candidates. Another widely explored option, open source drug discovery, while economically viable, involves issues such as IP rights of discovered molecules. Green chemistry, on the other hand, offers lasting value in terms of lean manufacturing; but it has not been widely adopted The pharmaceutical industry generates substantial waste during the synthesis and purification of active pharmaceutical ingredients (APIs) in preclinical and commercial processes. Roger Sheldon, Professor Emeritus of Biocatalysis and Organic Chemistry at the Delft University of Technology, Netherlands, developed the 'E-factor' (kilogram

waste per kilogram of product manufactured), a metric to evaluate the environmental footprint of chemical processes. In industrial chemical manufacturing, he found E-factor to be the highest in the pharmaceutical industry, ranging from 25 to over 100. At the other end of the scale, E-factor of the oil refining industry is less than 0.1. Green practices deliver value across the pharmaceutical value chain. Since chemistry is the lifeline of pharmaceuticals, green chemistry offers a sustainable business approach. The US Environmental Protection Agency (EPA) defines green or sustainable chemistry as, "the design of chemical products and processes that reduce or eliminate the use or generation of hazardous substances." In life sciences, green chemistry safeguards the interests of the environment and public health and safety, and furthers the research, discovery, development, and manufacture of medicines. The 2005 Nobel Prize in Chemistry awarded to Yves Chauvin, Robert H. Grubbs, and Richard R. Schrock provided an impetus for green chemistry. The breakthrough contributions of the scientists in metathesis simplify the synthesis of carbon compounds, which paves the way for more efficient manufacturing of medicines and pharmaceutical products. The principles of green chemistry can be integrated in the formative phase of drug discovery. It ensures sustainability of products, while addressing public health and environment risks. Pharmaceutical companies and suppliers need to implement, monitor, and measure sustainable chemistry in the manufacture of medicine, whether in batch or continuous production. Regulations should mandate that companies avoid the use of toxic substances, explore the reuse of solvents, and replace hazardous solvents / reagents with biodegradable and energy efficient alternatives. Leading universities are sensitizing the life sciences workforce – chemists, biologists, chemical engineers, and drug researchers – about the environment. Harvard University's sustainability plan adopts green chemistry. It proposes to identify hazardous chemicals and eliminate their use on campus. "In our research, and our careers, we must endeavor for a toxicological understanding of the compounds we create and assume the responsibility for determining their ecological fate," says Allen Aloise, FAS Science Director of Graduate Studies at Harvard University. According to Professor Wei Zhang, the Director of the Center for Green Chemistry at the University of Massachusetts, Boston, "Green chemistry is not an independent field but a philosophy that will be a non-separable part of chemistry." Aqueous effluents and stoichiometric oxidants and reductants, such as $KMnO_4$, MnO_2, $LiAlH_4$, and Zn are the major sources of waste in pharmaceutical processes. Stoichiometric oxidants can be substituted with catalysts to increase process efficiency. Bio catalysis and heterogeneous catalysis production processes ensure higher conversion and yield in reactions. In addition, they realize sustainability through 'lean' manufacturing - optimizing resource consumption, minimizing waste generation, decreasing greenhouse gas emissions, and improving product quality. Solvents used in organic synthesis play a critical role in making a reaction homogeneous and in allowing molecular interactions to be more efficient. However, the environmental impact of several solvents is a cause of concern. Ionic liquids are an alternative, but the preparation of ionic liquids is tedious. Moreover, the jury is still out on the environmental safety of ionic bonds. The Indian Institute of Chemical Technology has undertaken extensive research to identify liquid polymers and low melting polymers to replace hazardous solvents such as benzene (carcinogen) and chlorinated

solvents (ozone depleting agents). The Institute has identified eco-friendly solvents, including supercritical carbon dioxide and Polyethylene Glycol (PEG) for industrial application. PEG, which has a low molecular weight (2,000 or lower), is an efficient reaction medium for Pd-catalyzed C-C bond formation. Organic transformation with PEG is rapid and high-yielding. It is superior to conventional solvents and ionic liquid media since reactions take place easily with electron-deficient and electron rich olefins, and high region and stereo selectivities. Green chemistry helps Big Pharma improve process efficiency. Janssen, the pharma arm of Johnson & Johnson, anticipates tangible value from green practices. It can reduce raw material requirement by 67%, water consumption by 75%, and hazardous waste generation by 87%, according to Philip Dahlin, Director of Sustainability at Janssen, in the FT Health Report June 2014. Pfizer is at the forefront of green pharma. The Pfizer solvent guide helps researchers and chemists select solvents for medicinal chemistry based on diverse sustainability criteria. The company's green chemistry and biotechnology program guides the creation of a portfolio of green compounds as well as the adoption of green practices in production processes. Pfizer, Merck & Co., and Bristol-Myers Squibb have been recognized with the annual US EPA Presidential Green Chemistry Award for implementing environment-friendly drug development and manufacturing processes. GlaxoSmithKline uses an eco-design toolkit for sustainable operations. The toolkit has five modules to help chemists, researchers, and process engineers adopt green chemistry, select sustainable solvents and reagents, and also gain a better understanding of hazardous substances. The American Chemical Society Green Chemistry Institute (ACS GCI) Pharmaceutical Roundtable seeks to promote green chemistry and engineering among companies involved in R&D and manufacture of APIs and medicinal products. Participating members include industry leaders like – Eli Lilly and Company, AstraZeneca, Merck, F. Hoffmann- La Roche Ltd., Johnson & Johnson, Dr. Reddy's Laboratories, and Pfizer. Cross-disciplinary collaboration is a prerequisite for process and product innovation in the life sciences. Scientists, product specialists, process engineers, and sustainability officers need visibility across the enterprise – research initiatives, procurement and production processes, and packaging. Software tools integrate green chemistry with pharmaceutical applications, while enabling real-time sharing of information between stakeholders, including suppliers, contract manufacturers, and research organizations. IT systems boost productivity of the research organization and rationalize the cost of drug discovery by eliminating errors and superfluous research / processes. Research scientists at Pfizer Global Research and Development use a web solution developed by Infosys on the Microsoft .NET Framework 3.0 and Windows Presentation Foundation to store and share knowledge. The application allows researchers to present research findings in 3-D images and graphs, and search databases containing millions of records for specific details such as results of an experiment or the chemical name of compounds. Interactive dashboards with visualization tools help identify areas where adequate research has not been undertaken. Collaboration tools and unified repositories enable biologists, chemists, and discovery scientists working in diverse therapeutic areas to build hypotheses in real-time, analyze results, eliminate ineffective drug candidates in early stages, and discover hidden connections between different experiments across time spans. A multidisciplinary approach vastly

improves research outcomes and facilitates repurposing of existing drugs. A stellar example is the use of anti-inflammatory drug, aspirin, to manage cardiac disease. Molecular modeling and in silico screening accelerates drug discovery. Continuous monitoring of ambient temperature and pressure, increases energy efficiency of chemical reactions. Significantly, in-process monitoring minimizes the formation of byproducts. Pharma companies should use tools to assess the environment, health, and safety footprint of their ecosystem. Sustainable life sciences requires more than environment-conscious pharmaceutical engineers and technologists. We need to encourage green chemistry across the supply chain and practice sustainability at a molecular level. =====================

Reimagine Your Manufacturing Business With Cloud

----- Arcticle source ----- https://www.infosys.com/insights/cloud/reimagine-your-manufacturing-business-with-cloud.html ----- Insights Cloud According to a recent analyst report dated December 2017, manufacturers are allocating more IT spend on Cloud because they believe it is the most pertinent technology in the next five years to digitally transform their business, however, most of them lack a strong cloud strategy. Manufacturers must reinvent themselves and drive new capabilities across the value chain leveraging Cloud as an enabler. It isn't just about production or supply chain Manufacturing companies no longer hold a myopic view about Cloud. Having gained significantly in streamlining operations and reducing costs, they are now looking at Cloud to see how they can serve their customers better, or how to draw value out of the trillion gigabytes of data that their systems are generating. There are several game changers in the market that are driving manufacturers to adopt or strengthen their cloud strategy. Check out this whitepaper to know what they are. As more and more customers and devices become connected over different platforms and geographies, companies need to innovate to meet new expectations/local requirements or to meet the demand for mass customization. Increase in the size and complexity of the global ecosystem of suppliers, partners, and distributors, along with the generation of enormous data, is creating a new set of dynamics for manufacturers to deal with. So how can a manufacturing company define or strengthen its cloud strategy to take advantage of new technologies like 3D printing, Internet of Things (IoT) or Artificial Intelligence. A scalable cloud platform provides the backbone to integrate processes, people and systems to provide the perfect environment for innovation. Let's look at a few areas where getting on the Cloud platform can help you: IoT and Automation: IoT based automation systems typically control connected devices through Cloud-based computing or Internet Protocols. For example, there are digital printers that send you a phone alert to place an order for cartridges the moment the sensor picks a drop in the ink level. As manufacturers add automation and IoT to make their products more 'intelligent' and 'connected', they will need strong Cloud computing capabilities. Cloud-driven analytics: Where do you store all the data you collect from your customer interaction points, connected devices, partner

touch points etc.? Cloud solutions provide a cost effective option to store, process, analyze and back up large volumes of data. This data can be used to bring efficiencies not just in the core manufacturing processes but also in marketing, customer service, HR, new product development. The possibilities are endless and exciting. Infrastructure: With Infrastructure-as-a-Service, manufacturers can focus more on building their capabilities than on keeping the lights on. This is particularly relevant when the load on the infrastructure is predicted to increase significantly to support the large amount of data that's being generated. Collaboration: Information/ knowledge sharing and collaborating with partners in a global environment can contribute significantly to smooth and efficient business processes and innovations in areas like co-manufacturing new products or tracking and risk management. Cloud-based collaboration hubs provide capabilities that facilitate easy and quick information sharing with clear visibility. Problems like why there was a delay in allocation of orders between suppliers and distributors can be sorted out faster. What does the future look like... The Cloud-empowered manufacturing companies are getting increasingly obsessed about making their products and processes more intelligent, faster and simpler....be it around supply chain, production, distribution or after sales. Cloud empowers you to rethink your manufacturing business in ways that you would not have imagined earlier. Visit the Infosys page to take a look at Cloud capabilities and see if you have made the most of it yet.
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Making Sales Teams More Effective

----- Arcticle source ----- https://www.infosys.com/insights/cloud/sales-performance.html ----- Insights Cloud Sales is among the most important business functions of an enterprise. Managing the performance of the sales team and making sure its goals align with the company's is even more critical. But how do you do that when sales teams are geographically scattered and use multiple, and in some cases rudimentary, methods to measure performance? A large communications equipment maker found their sales performance management lacking for the same reasons. See how Infosys helped and the five key takeaways from the project.
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Cloud

----- Arcticle source ----- https://www.infosys.com/insights/cloud/success-stories.html ----- Insights Easing Employee Assessment Managing Middleware Complexities Making Sales Teams More Effective An ERP Migration on Deadline Finding Cloud's True Potential in an Acquisition Insights Insights Insights Insights Insights
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Evolve Next Gen Telecom Systems to be Flexible, Scalable and Open

----- Arcticle source ----- https://www.infosys.com/insights/cloud/telecom-industry.html ----- Insights Cloud Most classic Network Management Systems (NMS) are proprietary in nature, supporting traditional services and telecom network infrastructures and their architecture is closed by design. Therefore, though they provide the basic interface for consistent control and management of the network health, they do not offer flexibility in deployment or easy scalability nor do they support new interfaces required for Open Network Architectures. With an increasing demand in services and traffic and a need to integrate with open network architectures, CIOs and CTOs of Communication Service Providers (CSPs) find it challenging to integrate their proprietary NMS with new and different vendor-specific solutions. This leaves them struggling to keep the lights on instead of focusing on innovation or developing new services. The emergence of IoT systems and services and the evolution of 5G network have redefined the NMS and cluster of Network Domain Managers. The new parameters of an efficient NMS and new domain managers are their ability to support flexible deployment, adapt to the changing market scenarios, and create new service capabilities like: CSPs are increasingly looking at cloud native network architectures to drive the digital transformation of their networks. Network Functions Virtualization (NFV) and Software-Defined Networking (SDN) are the two key technologies that harness cloud capabilities for networking and therefore form the basis of the Digital Telco networks. Microservices, DevOps and NetOps, Open APIs, and Containerization play a central role in the new telco operations and IT management. While network modernization is critical to the success of the telecom industry, the significance of keeping the day to day operations running smoothly cannot be emphasized enough for maintaining an agile service lifecycle. Why Operations Support Systems (OSS) and Business Support Systems (BSS) Matter It will be imperative for CSPs to modernize (simplify and automate), adopt Open Digital Architectures (ODA) for their operations and processes to ensure they have the required agility to support The Open Digital Architecture (ODA) program was launched in February 2018 by TM Forum, the industry association driving digital business transformation to replace / evolve the traditional Operational and Business Support Systems (OSS/BSS) architectures. The ODA is an attempt to bring standardization in the architecture of their open digital platforms in order to move towards a zero-touch and software defined operations for greater agility. The Open Digital Architecture offers an industry-agreed blueprint, language and set of key design principles to follow. It will provide pragmatic pathways for the journey from maintaining monolithic, legacy software solutions, towards managing nimble, cloud based capabilities that can be orchestrated using AI. - Whitepaper on 'Open Digital Architecture' from TM Forum How Can We Build the Environment that Will Help Bring Automation and AI to BSS & OSS Data Driven Organization: Creation of data lakes and adoption of big data technologies help in real time insights that can be leveraged for varied scenarios like AI led automation or software defined operations. BSS, OSS can evolve with this bundled data solution. Go Agile with DevOps and Microservices:

Telecom companies should build microservices to optimize existing services, rapidly build and deploy new services and for cost effective IT maintenance and upgrade. Microservices are small, flexible, installable and scalable independent software that are designed to perform a specific function. They are built using DevOps and other Agile methodologies and therefore bring a lot of flexibility, agility and speed to telco processes and operations. Make Customer Experience Central to Your Business Strategy: OSS and BSS systems can provide invaluable insights into customer behavior using analytics to drive activities that can help telecom operators respond to the market faster with new offers and services. Also, the run time, the design time dynamic templates and meta models provide an e2e integrated (IT and network), seamless flow through solution and drives one click orchestration of services. Open Ecosystem: Adopting open source throws open the door to a large new range of protocols, solution options and makes it easy to integrate with third party systems. It helps companies move away from silos to management functions that work in a multi-vendor environment besides opening up opportunities to collaborate and innovate Adopt New Ways of Working: Establish self-contained high performing distributed agile teams and create a culture of collaborative working amongst business, IT, network, partners and other eco systems Click here to know more about what are the guiding principles for BSS, OSS and NMS evolutions.
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The Power of Cloud at the Core

----- Arcticle source ----- https://www.infosys.com/insights/cloud/the-power-of-cloud.html ----- Insights Cloud For incumbent organizations, the biggest threat no longer stems from one of their kind, but rather from young and innovative born-digital players. To avoid being disrupted, these enterprises need to match the new competition at every step by finding and harnessing new opportunities, delivering great experiences, bringing cost efficiency to products and services through a variety of channels, and while doing all of this, also reimagine their business using new, digital models. The problem however, is that the burden of legacy systems at the heart of most traditional enterprises prevents them from doing this with agility and ease. Hence for an organization looking to digitize holistically, the journey of transformation must begin with modernization of its legacy core. The cloud can go a long way in enabling this. Many limitations of the legacy environment, such as their lack of agility and availability, can be overcome by migrating core systems and processes to the cloud. Note however, that this is not simply a matter of lifting and shifting those legacy systems along with their inadequacies to the cloud, but of changing them at the foundation to make them cloud-ready. For that, the enterprise must decide a number of important issues – which cloud (public or private) to use, what assets to divest, what process flows to reengineer and how, etc. As with any major initiative, it is best to proceed with caution, migrating non-core aspects of legacy before core, mission critical elements. Done right, the results can be very impressive. Take the case of an Australian financial services company, whom we helped move to an on-demand business platform on the cloud. The platform, which successfully supports 4 million users, is saving the company

so much money that it will likely pay for itself in less than 3 years. Infosys has helped many of its clients to devise and implement a strategy that not only puts their legacy infrastructure on the cloud but also transforms their business with it. The key elements of this strategy include: This strategy has met with significant success. When we replaced the legacy e-commerce solution at a well-known department store group, the new agile platform gave the client better control over the business. To make sure that the platform could support as many as 17,000 shoppers at a time, handle 100,000 product updates daily, while being available for at least 99.99 percent of the time, we had to undertake one of the biggest, most complex Azure e-commerce implementations in the industry. The moment of truth came on Black Friday, when the platform exceeded its business forecast by 20 percent without incident. Typically, we help clients follow a hybrid approach that is devised after assessing their readiness from a technology, process and people perspective. Here, a unified view of the enterprise cloud ecosystem is invaluable. Hence leveraging the capabilities of the Infosys Enterprise Cloud Ecosystem, we advise clients on how to transform infrastructure, data, and applications for the cloud, following which we jointly evolve their cloud itself. By bringing together all that is required to drive business and IT priorities we make sure that we don't just stop at delivering managed services, but also help our clients generate new revenue streams. A case in point is the work we did for an airline manufacturer. When the company asked us to help make it easy for their customers to find the right documentation for aircraft maintenance, we delivered a secure public cloud platform for hosting their extensive product manuals, thereby enabling ubiquitous access. The airline manufacturer not only saved more than a million dollars in customer servicing cost, but also monetized this facility by allowing other aircraft companies to put up their own documentation for a subscription fee. Our client earned substantially in new revenues in the first year itself. We believe that our vast experience in application development and maintenance in different areas and deep understanding of technology and its performance in different contexts is the key to our success. Infosys has a suite of vertical-specific reference architectures and accelerators to codify and automate workload migration, and thereby earn huge savings for clients. To that we add AI-led insights for further benefits. We enjoy the support of cloud service provider partners, including AWS, Azure, Oracle and Google, who bring their considerable strengths to any implementation. Last but not least, we bring a set of people committed to delivering unprecedented value to clients in their pursuit of digital transformation. ======================

CNCF. The reason why going cloud native just got a little simpler. For all

----- Arcticle source ----- https://www.infosys.com/insights/cloud/the-reason-why-going-cloud-native-just-got-a-little-simpler.html ----- Insights Cloud Beyond cost optimization, beyond user experience, beyond agility, the cloud

holds the tantalizing promise of digital business models and accelerated growth. Something that draws both 'born in the cloud' and large legacy enterprises alike. They often begin their cloud adoption journey with global cloud service providers like AWS, Azure, and Google. For migration, customer-facing landscapes, and even data analytics. In the process, they discover: But being a lean, agile cloud-engaged enterprise sometimes feels like it's easier said than done. Take the case of application development. While cloud frameworks provide high scalability and service resilience that work well for cloud-based application development, scaling them requires resource management capabilities. This means a user starts small and scales the application as usage increases. This is the key enabler for cloud adoption, and is the method Google and Twitter have adopted to build global scale operations for resource management solutions such as Kubernetes and Apache Mesos. But no one seems to have it easy. Enterprises are challenged by their internal maturity levels to adopt new technologies, operating styles, technology induction processes, and compliance and governance requirements. The traditional enterprises are shackled by their legacy systems and massive scale, not to mention the lack of interoperability between systems. That's perfect timing for CNCF - Cloud Native Computing Foundation - to help smooth the way. By creating and driving the adoption of a new computing paradigm optimized for modern distributed systems environments capable of scaling to tens of thousands of self-healing multi-tenant nodes. The objective of the CNCF is to bring together various projects in the cloud native space such as micro-services, containers, orchestration services, and beyond - under one governance umbrella. Making integration with existing IT landscapes seamless, and enabling wider and faster adoption of the cloud. The solution stack offered by the CNCF is fairly comprehensive with container runtime (containerd, rkt), container orchestration & networking (Kubernetes, CNI), service development (linkerd, CoreDNS, gRPC) and management (Prometheus, OpenTracing, Fluentd). These are evolving rapidly in their ease of use, deployment, and upgrades. The solution stack of the CNCF has been especially designed to ease the transition of enterprises to the cloud. And the benefits are varied and compelling. With major CSPs namely AWS, Azure, and Google being part of the CNCF, the process is on to collaboratively establish standards for cloud native technologies and introduce them on the CSPs' platforms. By reducing the complexity of integration, these new cloud standards provide tremendous opportunity for enterprises to adopt cloud native technologies easily, and upgrade directly through their preferred cloud service provider. Enterprises can confidently leverage these cloud technologies as all major cloud service providers are part of the open standards of CNCF, and expect a significant level of interoperability when the need for a hybrid cloud strategy emerges. Cloud native technologies such as containers, orchestration, service mesh, and others are available as services from cloud providers in the pay-as-you-go model pioneered for IaaS. The enterprise can experiment with new business ideas to drive growth by building new applications in a cloud native manner, without upfront investment or complex setups. When the business idea has been validated and it is time for the enterprise to scale the new applications, it can do that at internet scale with literally no change at all as the applications have been built on cloud native technologies. That's why, I believe the partnership between CNCF and CSPs, will truly help amplify the

potential of enterprises to do more with the best that cloud computing has to offer. And, it's also my view that it's a particularly great opportunity for large enterprises to capitalize and propel their growth in this dynamic environment. Explore the Infosys cloud offering >> =====================

Transformation with Cloud is a Continuum for Traditional Enterprises

----- Arcticle source ----- https://www.infosys.com/insights/cloud/traditional-enterprises.html ----- Insights Cloud Digital technologies have opened up new and exciting opportunities for businesses to deliver more value to their customers through immersive experiences with innovative products and services at very compelling prices. The born-in-the-cloud enterprises are doing this very effectively. They function like start-ups, with technology as the key enabler. As a result, business models of traditional large enterprises are getting disrupted and to remain competitive, they must transform to be more adaptive, innovative and agile. However, to leverage the same cloud technologies that the start-ups use so effectively, traditional enterprises need to consider certain critical elements: Unlike start-ups, these traditional enterprises have a lot of valuable assets built over a period of time with significant investment. Their ability to change, extent of change and the cost of change play a key role in laying out the transformation journey. The utopian state for IT in large enterprises would be consumable "as a service" across all portfolios, much like the start-ups. However, considering that most legacy organizations are well established in managing their current IT setup, moving to a "as a service" model may be challenging or may not be required. The cloud continuum is commonly defined as: These definitions focus on the different types of technology adoption and do not necessarily define the extent of adoption and how it is being used. For example, SaaS does not mean a higher maturity level, nor does IaaS mean a lower maturity level. An enterprise might choose to adopt SaaS for commoditized business processes (core or non-core), while build custom applications with IaaS and PaaS technologies for differentiating business processes. Cloud transformation for enterprises should look at how existing assets can be transformed, and new capabilities developed across the following five categories. Under each of the above categories though moving towards right implies higher abstraction and sophistication levels, enterprises do not necessarily need to reach the highest level in each of these categories. Similarly, across application portfolios namely core business applications, business support applications, end user computing and productivity, data and analytics, the journey on continuum in these categories would vary. To define the journey on the continuum, enterprises need to look at business objectives, current state, opportunities, threats, cost of implementation, and benefits. Like the start-ups who are continuously evolving, enterprises should also incorporate a model for innovation into their journey with an

option to relook technology and market changes at defined intervals say every six months, to recalibrate solutions. =====================

An ERP Migration on Deadline

----- Arcticle source ----- https://www.infosys.com/insights/cloud/transforming-erp-20-weeks.html ----- Insights Cloud Enterprise Resource Planning (ERP) systems are among the most deeply entrenched in the underlying infrastructure of enterprises. With enterprises taking steps towards digital transformation, it is important that this core component is refurbished to meet the needs of the digital future. However, the long migration timelines, which usually run into years, and the possibility of disruption during the migration or transition period, are a grave cause of concern for enterprises. A client wanted to migrate a subsidiary's ERP to a single system, and had only a few months to do so before they divested the unit. See how Infosys helped and the five key takeaways from the project. =====================

Finding Cloud's True Potential in an Acquisition

----- Arcticle source ----- https://www.infosys.com/insights/cloud/true-potential-acquisition.html ----- Insights Cloud Acquiring a new company often involves several structural and strategic changes to both the parent company and the acquired company. Leveraging the opportunity to modernize and adopt new technologies is something the parent company must consider in order to reduce the complexities of merging and managing two diverse environments. Nidec, a Japan-based manufacturer of electric motors, was trying to figure out the best way to integrate an acquired company's infrastructure, and realized that application migration to cloud was the right thing to do. See how Infosys helped and the five key takeaways from the project. =====================

Cyber Security

----- Arcticle source ----- https://www.infosys.com/insights/cyber-security.html ----- Insights ChatGPT presents new risks – here are five things you can do to mitigate them Rethinking Cybersecurity Through Blockchain Threat Hunting – A Cybersecurity Paradigm Shift Has WannaCry Set A Precedent? Enterprises Need to Stay Prepared It's Still Kinda Dark Behind Our Scrolling Bright Screens Protecting Patient Health Information - A Hard Look Securing the Ecosystem to Secure the Enterprise with Cyber Security Awareness New Cyber Security for the New Digital Enterprise The Digital Age Requires a Smart, Integrated Approach to Security Article Article Article Insights Insights Insights Insights Insights Insights =====================

New Cyber Security for the New Digital Enterprise

----- Arcticle source ----- https://www.infosys.com/insights/cyber-security/ cyber-security.html ----- Insights Cyber Security Today's enterprise is no longer bounded by four walls. In some domains, regulations are forcing organizations to become open, and share customer and transaction data with authorized third parties. Even IT infrastructure is exiting official premises to migrate to the cloud. The workforce has become highly distributed, as employees clock in at client sites, in the field, on the road, or from the comfort of their homes. The organization is no more a stand-alone entity, but rather, a part of a vast ecosystem and the Internet of Things, with myriad connections to their other parts. This open, connected, distributed organization lives on data, which like itself, exists more outside company walls than within. Imagine the challenge of securing such an enterprise, where the mandate for cyber security extends well beyond monitoring infrastructure, networks, and IT assets to include defending the entire value chain of systems, applications, user and developer software, and data regardless of location and ownership. If that weren't bad enough, there has been a steady rise in the range, frequency, ingenuity and audacity of attack. Constantly on the defensive, most organizations are managing security reactively, often doing too little too late. Their typical response is to keep adding point solution after point solution that neither work together nor offer adequate protection to a surface that is vulnerable to attack in a thousand or more places. The need of the hour is a strong security setup of adaptive, flexible, AI-enabled and integrated security solutions, robust policies, sound implementation, good governance and an experienced team to oversee it all. This is what we offer our clients. Our core proposition is to help enterprises consume an integrated package of security solutions "as-a-service" so they can not only achieve rapid remediation, but also put anticipatory defenses in place. What's more, this consumption model eliminates the huge operational and cost overheads that were going into managing a snarl of point security solutions. Freed of that, security leaders can focus on moving the organization's digital agenda forward. Here, they are ably supported by the Infosys Cyber Security Platform , a platform with AI-driven automation at its core that eases an enterprise's transition from fragmented, reactive security to a managed security services model guided by a customized roadmap. A beverage manufacturer is using the Infosys Cyber Security Platform to bring together an optimized tool suite, and leverage its predictive capabilities to defend against advanced threats. The platform also provides 24x7 security monitoring, and identity and access management services for the company's more than 40,000 users and 500 odd applications. A network of Security Operations Centers (SOCs), is already operational in Bangalore, Hyderabad and Pune in India and in Indianapolis and Raleigh in the US. In addition, several client premises add further value by bringing together best-in-class skills, an up to date solutions suite, and managed services for security operations that are delivered round-the-clock through a network of interconnected, global facilities. That's not all. The Infosys Security R&D Labs produces a number of cyber security innovations that clients can leverage to strengthen their threat hunting

abilities. All of these demonstrate our commitment to continuously improving our core services portfolio, creating solutions to combat new threats as they arise, and working with our innovation ecosystem to build solutions that produce great value for clients. Behind it all is our team of dedicated employees with extensive experience and skills. Besides implementing security, they contribute by anticipating new areas of vulnerability, discovering new problems and creating innovative solution combinations. Infosys makes sure that the security team's skills are continuously updated by entering into strong partnerships with well-known academic institutions. =====================

Rethinking Cybersecurity Through Blockchain

----- Arcticle source ----- https://www.infosys.com/insights/cyber-security/cybersecurity-blockchain.html ----- Insights Cyber Security Cybersecurity spending has increased exponentially in the past decade, with no signs of slowing. Worldwide, organizations plan to allocate more than $1 trillion between 2017 and 2021 to protect themselves from online threats, according to one industry report.1 Despite that staggering investment, criminal hackers are still exploiting both publicly known and unknown vulnerabilities, and intercepting device, application, and network communications. CB Insights calculated that about 6 billion confidential files were stolen between 2017 and 2018. Other industry research shows that the number and cost of cyberattacks have increased. These sophisticated assaults often outwit traditional security methods, including authentication, key management, cryptography, and privacy challenges. With a large percentage of employees working from home due to the coronavirus pandemic, vulnerabilities are growing in new ways. So, instead of building more powerful tools, many businesses are rethinking the systems that created these vulnerabilities in the first place. A new cybersecurity approach Blockchain offers a different path toward greater security, one that is less traveled and not nearly as hospitable to cybercriminals. This approach reduces vulnerabilities, provides strong encryption, and more effectively verifies data ownership and integrity. It can even eliminate the need for some passwords, which are frequently described as the weakest link in cybersecurity. The principal advantage of blockchain is its use of a distributed ledger. A dispersed public key infrastructure model reduces many risks associated with centrally stored data by eliminating the most obvious targets. Transactions are recorded across every node in the network, making it difficult for attackers to steal, compromise, or tamper with data, unless a vulnerability exists at the platform level. Another traditional weakness is eliminated through blockchain's collaborative consensus algorithm. It can watch for malicious actions, anomalies, and false positives without the need for a central authority. One pair of eyes can be fooled, but not all of them. That strengthens authentication and secures data communications and record management. Although blockchain contains many nontraditional features, it does take advantage of one of the most important cybersecurity tools: encryption. The distributed ledger can

utilize public key infrastructure to secure communication, authenticate devices, validate configuration changes, and discover confidential devices in an internet of things (IoT) ecosystem. Through encryption and digital signatures, a blockchain system can shield connected thermostats, smart doorbells, security cameras, and other vulnerable edge devices. A recent Palo Alto Networks report said that 98% of IoT device traffic was unencrypted and described it as "low-hanging fruit for attackers."2 Also, this technology can be a weapon against distributed denial-of-service (DDoS) attacks. A blockchain-based domain name system (DNS) — the protocol for directing internet traffic — can remove the single point that allows these attacks to succeed. In 2016, a large portion of the internet went down because of a DDoS attack on the servers of one DNS host.3 Blockchain challenges Organizations from multinational corporations to governments are clamoring to adopt blockchain-based cybersecurity, viewing it as the next big thing. But it's not as simple as updating an existing toolkit. This intertwining of blockchain and cybersecurity is still an evolving approach. Not all research ideas on digital identities, decentralized storage, securing edge devices, and smart contracts align with business needs. Without careful consideration, implementation can become impractical or even impossible. Here are some hurdles that organizations may encounter when considering blockchain as part of their cybersecurity strategy. Data Privacy In the public blockchain, anyone can see and retrieve data in transactions. That's a concern for businesses that want to closely control what information is publicly available. Permissioned blockchain can help mitigate many of those privacy issues. An enterprise blockchain platform can create a permissioned network that allows only trusted parties to participate in or view transactions and to vote on decisions. Scalability Scalability can become a constraint when implementing blockchain, mostly due to block size and response times. In this technology, every node stores, processes, and maintains transactions in a block to ensure security and privacy. But as the number of transactions increases, small and medium-sized businesses struggle to accommodate a growing number of transactions in a block. Those increases can also slow the validation process. With limited computing and storage resources, scalability is at odds with decentralization. Regulations Organizations are still trying to understand how blockchain's structure and complexity fit within the evolving data privacy, compliance, and regulatory landscape. Europe's General Data Protection Regulation (GDPR) and similar laws allow individuals to demand that their data be deleted; these laws also create a "right to be forgotten" in certain cases. Since blockchain prevents parties from modifying or deleting data, the technology risks violating government rules. Interoperability Some blockchain platforms use a varied ecosystem for their smart contract logic, transaction schemes, and consensus models. Weak interoperability limits scalability. From the developer perspective, roadblocks can also be created from platform misconfiguration, communication mistrust, specification errors in application development, and cross-chain smart contract logic problems. Thankfully, open protocols, multichain frameworks, and algorithms are taking root in blockchain and mitigating this issue. Business communications organization GS1 has published global standards for blockchain interoperability, and it is working with Microsoft and IBM on incorporating those standards into their enterprise blockchain applications. The Enterprise Ethereum Alliance is also developing business standards.

Technology risks Blockchain offers several benefits, such as efficiency, optimization, reduced costs, and improved security. However, the technology also introduces new risks into systems when not carefully managed. These risks include: Blockchain benefits Even with potential barriers, the combination of blockchain and cybersecurity has intrigued executives and technology experts. In a 2019 Infosys research report, one-third of respondents cited blockchain use in developing security solutions as a top cybersecurity trend.4 It tied for third among all topics and ranked even higher than increased demand for cybersecurity jobs. Here are some of the factors that make blockchain promising and ways it should be managed: Even with these advantages, companies should continue following security best practices, such as rate limitations, encrypting sensitive configuration files, and weeding out vulnerabilities in the development process. The authors of a related 2019 World Economic Forum paper warned about blockchain's hype and its "exaggerated security expectations."5 "Many have believed its cryptographic foundation to be the ultimate answer to security," according to the paper. "As a result, they have failed to implement the security controls required for trust in a blockchain to emerge." The technology is perceived as either inherently insecure or unhackable, the authors wrote, while the "truth lies somewhere in the middle." Although usage is still limited, this intertwining of blockchain and cybersecurity isn't happening only at the fringes. It's already seen as an important tool in places where security is paramount. The U.S. government's Defense Advanced Research Projects Agency is experimenting with the use of blockchain to create a more secure platform for transmitting messages and processing transactions. This is part of the agency's efforts to create an unhackable code for the U.S. Department of Defense (DOD). The technology immediately flags attempts to tamper with data and even provides intelligence on the attacker. The DOD's 2019 Digital Modernization Strategy report described blockchain as a way to "not only reduce the probability of compromise, but also impose significantly greater costs on an adversary to achieve it." The U.S. military is already moving in that direction by contracting with blockchain-based data platform provider Fluree.6 Government officials in India announced last year that they were creating a national plan to implement blockchain for several uses, including cybersecurity. And the Saudi Arabian government and GE Ventures have invested in the startup Xage, which is using blockchain to boost cybersecurity in industrial IoT devices, according to CB Insights. The use of blockchain to enhance cybersecurity has been gaining traction worldwide. However, the recent economic and logistics disruptions caused by the COVID-19 pandemic provide enterprises fresh incentives to find innovative solutions.7 Businesses now seek greater visibility and security from their networks and supply chains, even as the economy heads toward recession.8 Digitization and resilience are imperative in a more difficult and unpredictable world. Companies want to combine security and visibility with privacy and good governance. For many companies, the answers will be found in blockchain. 1Global Cybersecurity Spending Predicted To Exceed $1 Trillion From 2017-2021, Steve Morgan, June 10, 2019, Cybercrime Magazine. 22020 Unit 42 IoT Threat Report, Palo Alto Networks. 3Massive Internet Outage Could Be a Sign of Things to Come, Jamie Condliffe, Oct. 21, 2016, MIT Technology Review. 4Assuring Digital-trust — Infosys, 2019, Infosys Knowledge Institute. 5Inclusive Deployment of Blockchain for Supply

Chains Part 5 – A Framework for Blockchain Cybersecurity — World Economic Forum, Adrien Ogée, Soichi Furuya, and Nadia Hewett, December 2019, World Economic Forum. 6Air Force Selects Fluree's Data Management Platform to Support Secure, Distributed Global Communications for the Department of Defense, Feb. 6, 2020, Fluree, AFWERX. 7Supply chains have been upended. Here's how to make them more resilient, Rebecca Liao and Ziyang Fan, April 6, 2020, World Economic Forum. 8COVID-19 injecting uncertainty into a shaky world economy, Samad Masood and Isaac LaBauve, March 2020, Infosys Insights.
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The Digital Age Requires a Smart, Integrated Approach to Security

----- Arcticle source ----- https://www.infosys.com/insights/cyber-security/digital-smart-security.html ----- Insights Cyber Security With the massive adoption of digital transformation and digital technologies, the focus on cyber security has grown considerably. There is a heightened perception of threat in the minds of enterprises and boards of companies, as cyberattacks have become much more focused and advanced. Vulnerabilities could originate from several sources including unauthorized access, malware, legacy applications, poor governance or even natural disasters. The growing popularity of IoT and automation, as well as the cloud-first paradigm and the deluge of smart phones, have forced organizations to re-assess their cyber security strategies. Given the precedence of high-profile data breaches and growing dependence on IT, most companies are making cyber security a priority today. As per an industrial manufacturing survey that Infosys conducted, 68 percent of the companies surveyed picked 'better cyber security' as the trend that will make the most positive impact to their organization in the near future. Cyber security also came out on top in terms of the digital technology being utilized most by manufacturing companies. It was ahead of big data analytics, enterprise cloud and AI. The traditional approach to cyber security consisted largely of installing a network perimeter firewall and using patches to fix vulnerabilities as soon as they were discovered. Companies also typically invested in signature-based technologies and a multitude of software tools and point solutions, and on different experts who could work on these tools. Unfortunately, these are not adequate in today's technology landscape, and this was known to most enterprises for the last 2-3 years. The greater emphasis on security has not easily translated into bigger security budgets. Chief Information Security Officers (CISOs) and heads of security in organizations are expected to manage security operations and existing threats, and, at the same time, invest in futuristic technologies and transform the cyber landscape. Therefore, CISOs are often in an unenviable position of protecting and defending the organization's IT infrastructure without access to higher budgets. Today, the top concerns for a CISO as per an article on CSO Online are: A Look at Cyber Security Spend and Strategy Let us now examine the question of how CISOs, CIOs and Boards of companies should look at Cyber Security spend and strategy – a few pointers below: 'Smarter' Security

CISOs need to walk the tightrope between managing budgets while investing more to thwart attacks. They need to proactively manage digital data across the service chain of people, systems, and processes, to ensure security initiatives don't remain locked in ineffective silos. AI and predictive security can play a role in automating routine tasks. In turn, this can boost people productivity and create bandwidth for problem-finding and innovation. There are many claims from different software vendors and System Integrators (SI) about smart tools, with a lot of acronyms and terms like AI, ML and cognitive thrown around in abundance. CISOs need to sift through the tools and solutions carefully and invest where it makes business sense. The tools need to look at different system alerts intelligently. Fine tuning the methodologies for detecting errors or suspicious trends can help bring down the volume of alerts/issues. This can ensure that there are fewer 'false positives.' As a result, the surveillance net needs to be cast wider to look for issues that may be below the radar. Event correlation, analytical use cases and smart configuration are important considerations. From a spend and budgeting standpoint, partnering with integrators who can bring solutions together in a 'variable spend model' or 'opex model' is an important option they need to evaluate. Integrated Security In the age of cloud, core infrastructure does not necessarily imply that it is physically present on premise. A portion of the infrastructure may be on the cloud. While it may intuitively seem like on premise infrastructure is safer than the cloud, in practice, physical proximity does not imply better security. In fact, cloud-based infrastructure may often be safer than on premise because they are managed centrally, governed tightly, and, in addition, enterprises exercise greater care and governance over their cloud assets. Factors such as means of access, procedural rigor, and quality of governance influence security more than just the physical location. Therefore, any robust security system needs a thorough knowledge of the core, along with a proactive strategy to secure extended enterprise/partners since connectivity and data traffic are typically high in the digital era. Partners who understand enterprise core systems and infrastructure are valuable for enterprises and CISOs to trust and seek advice from. This is especially true as the core interacts regularly with a plethora of external systems that are part of the ecosystem – partners, customers, suppliers etc. Smarter Team A robust and comprehensive security infrastructure requires a strategic view, strong execution capability and technical/skill investments. It requires functional experts with disparate skills - incident managers, forensics experts, operations specialists etc. In such a scenario, it often makes sense for the CISO to find the right partners who possess these skill sets, rather than going through long cycles of investment into each of these. Sourcing expertise from all available sources, both internally and externally, to address capability gaps is a good approach. Given the vast threat landscape, existing security controls are inadequate to protect against new and emerging threat vectors. What's worse is that the lack of real situation awareness can create a false sense of security that can potentially cause great harm to the business. A smarter, integrated security infrastructure and a smarter team are needed to effectively safeguard your organization against cyber-attacks and mitigate organizational risks.
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Has WannaCry Set A Precedent? Enterprises Need to Stay Prepared

----- Arcticle source ----- https://www.infosys.com/insights/cyber-security/ enterprises-need-to-stay-prepared.html ----- Insights Cyber Security The WannaCry virus attack wreaked havoc in mid-May as it hit over 200,000 computers world-wide. The virus affected computers in 150 countries across North America, Europe and Asia, and the attack was the largest ransomware delivery campaign till date. The National Health Service (NHS) in the UK was affected. Critical medical procedures had to be postponed, hospitals were unable to admit patients, and ambulances had to be diverted to other hospitals. Doctors had to briefly go back to pen and paper. In China, college and university students found their data encrypted by the virus. In Germany, the railway was affected, as was one of the largest mobile companies in Spain, Telephonica. The virus made its way to numerous other industries and businesses around the world. The WannaCry ransomware, also known as Wanna Decryptor, leveraged a weakness in Windows SMB (Server Message Block) called EternalBlue, which allows remote hackers to hijack a computer running on an unpatched Microsoft Windows operating system. Once infected, WannaCry scans for other unpatched PCs connected to the same local network, as well as for random hosts on the Internet, and spreads quickly. After encrypting data on affected computers, the ransomware asked users to pay anywhere from 300 to 700 bitcoins to decrypt the data. Users were given an ultimatum of three days to pay-up or lose their data. Wondering how your enterprise can prepare for these increasingly common virus attacks? Shyam Kumar Doddavula, Associate Vice President, Principal Product Architect, Blockchain Center of Excellence, --Infosys Center for Emerging Technology Solutions (iCETS) explains. In this QnA with InfyTalk, he shared how enterprises can locate potential vulnerabilities, and find ways to protect against future virus attacks. InfyTalk: After WannaCry, there is much anxiety around virus and hacker attacks. Could you shed some light on how enterprises should respond to such attacks? Shyam: 2015 and 2016 have seen over a 1000 attacks each . Yes, the scale of this recent attack has been unprecedented and brought the criticality of security back in the limelight. Enterprises cannot afford to respond to a security breach in a reactive manner, and need to have policies that are continuously reviewed, tested, and improved as vulnerabilities are identified. One of the weakest link in an enterprise are its employees. Ensuring they are knowledgeable on the various types of viruses and phishing mails is important. This can be done through awareness programs, which are integrated into the security policy. If a ransomware is suspected on a system, it should be immediately isolated from the network to stop its spread. And antivirus software with the latest updates should be used to clean the system. If in error, a user does run a file that could contain a potential virus or ransomware, the user should be instructed to quickly disconnect from the network. The virus can be stopped from spreading by shutting down the network and restoring backups. Viruses and hackers continuously explore and exploit new vulnerabilities in software. Manually monitoring and preventing them is not a viable solution. Enterprises need to invest in technology solutions that can continuously learn and adapt to dynamic situations of threat. At Infosys, we

apply machine learning algorithms and AI techniques to immediately detect attempts to breach security. Our solutions find anomalies and correlations across various IT telemetry data in near real-time, like DNS lookups, network flows, proxy lookups, web logs, application logs and others using machine learning algorithms, and automate the isolation of suspected machines for further analysis. InfyTalk: While WannaCry affected enterprises across industries, do you see any that is particularly more vulnerable than others? Shyam: Enterprises that do not invest in preventive and predictive IT solutions are vulnerable to virus attacks like that of WannaCry. Enterprises need robust IT solutions that are monitoring their infrastructure and uncovering vulnerabilities. The maturity of implementing security best practices varies by industries. Those industries that have been slow to adopt security best practices have been affected in recent times. Many enterprises in these industries do not have strong security incident handling and response solutions, are slow to install software patches, and protect their assets. Some of the industries that deal with sensitive data like healthcare are especially vulnerable. In 2016, the industry experienced 450 breaches in the US, almost double from the previous year . 43 percent of these breaches were a result of human error. And these breaches came with a heavy price tag. According to research, each leaked record costs $402 , and when one considers the number of data points related to each individual - social security number, treatment record, payment information and sensitive personal information, a data breach can be potentially devastating to a healthcare enterprise. InfyTalk: Do you think 'online security' and 'hack-proof' have just been redefined by the Shadow Brokers who stole information from the US National Security Agency (NSA)? Shyam: Absolutely. The NSA getting hacked only goes to re-iterate that no organization is beyond a malicious breach. An enterprise can have best-in-class security, but it is often the weakest link in the chain that hackers exploit. The way to safeguard against hacking is to adopt a 'defense in depth' policy, wherein all the layers of security are constantly tested to ensure they can withstand an intrusion. Security has to be a collective responsibility. Security engineers need to have SLAs that require proactive monitoring and employees must be made aware of possible vulnerabilities through passive and just-in-time training. InfyTalk: Data loss is expensive, by way of penalties, regulatory strictures and fines. How do you think enterprises can avert such attacks? Shyam: Cyber-crimes are slated to cost $6 trillion by 2021 . The solution lies in adopting a proactive, intelligent and comprehensive security management solution. Enterprises should invest in advanced threat detection and prevention solutions which use AI and machine learning algorithms, which can adapt and learn quickly to detect and prevent attacks. A proactive process that focuses on prevention and fast recovery such as installing security updates, disabling unnecessary default settings and taking backups of critical data, is another important aspect. Employees should be trained and sensitized about security best practices like setting strong passwords, and identifying phishing mails. InfyTalk: What are your thoughts on the ransom being collected in bitcoins? Shyam: Unlike transactions with credit and debit cards, those with bitcoins are anonymous. This enables the hackers to keep their identity confidential. In the case of the recent ransomware attack victims, were told to deposit the ransom amount in a bitcoin wallet, linked to a bitcoin address . And since these wallets were publically accessible, online viewers could easily monitor the

amount being deposited into the wallet. And yet, nobody could know the physical location of the person to whom the payment was being made. This instance highlights the dark side of blockchain, which on the one hand is gearing up for primetime and on the other, its use in the recent ransom case creates a bad use case. With computing devices increasing and BYOD becoming the norm, enterprises must have stringent policies to protect their network and data. In today's digital economy, it is data that is the true competitive differentiator =====================

It's Still Kinda Dark Behind Our Scrolling Bright Screens

----- Arcticle source ----- https://www.infosys.com/insights/cyber-security/its-still-kinda-dark-behind-our-scrolling-bright-screens.html ----- Insights Cyber Security As October—the National Cyber Security Awareness Month—progresses, and we come together to reflect on the need to protect our transactions, and online businesses, it's natural to also think about protecting our personal data and privacy. Between the 8.4 billion sensor devices that are interconnected—in-home electronic systems, health monitoring equipment, cars, and smartphones, our digital-first living, smart cities, relentless social networking, and other things cyber, the world is already producing approximately 2.5 quintillion bytes every day. A year ago, we sent out 3.5 million text messages a minute; now it's about 15.2 million. And in the time it takes you to type out this sentence, 456,000 tweets would have hit the airwaves, Google will have been bombarded with 3.6 million search queries and Uber will have taken almost 46,000 rides. In that same time, more than 103 million spam email messages will also have been delivered to unsuspecting mailboxes. Read the full blog post on Medium>> Learn more about the cyber security offering from Infosys >> =====================

ChatGPT presents new risks – here are five things you can do to mitigate them

----- Arcticle source ----- https://www.infosys.com/insights/cyber-security/new-risks.html ----- Insights Cyber Security ChatGPT is the latest darling of the internet, a chatbot offering a remarkably convincing simulacrum of natural language. Launched in November 2022 by OpenAI, the US research lab, and built on GPT3.5, the tool is open via a public beta for anyone to try out. Microsoft is set to invest $10bn in OpenAI, and recently said that it will add ChatGPT to its Azure OpenAI suite. This lets businesses integrate AI tools, including the image-generation tool DALL-E, and Codex, which translates natural language into code, into their technology stacks. With any new tools, however, come new concerns and cybersecurity risks. High on the list of concerns for cybersecurity practitioners is the possibility that ChatGPT

could be used to generate malicious code. This means many more people could create malware, potentially leading to many more attacks and breaches. Cybersecurity researchers CyberArk recently detailed how their researchers bypassed ChatGPT's content filters and got it to create what they described as "functional code" to inject a DLL into explorer.exe. The researchers went on to use the chatbot to create polymorphic code that is difficult for antimalware software to spot and deal with. The CyberArk researchers also managed to get the chatbot to create code that could find files of interest to ransomware criminals, and then asked the chatbot to write and encrypt a file. There is however a difference between the kind of proof of concept work done by the CyberArk researchers and the leap from proof of concept into actual malware created by criminals. And it seems that malicious code generated by ChatGPT might have already made the leap. In January 2023, Check Point researchers reported that they had found users of cybercrime forums using ChatGPT to create malware. They said that a thread had been started in a hacking forum where the creator of the thread shared screenshots of Python code allegedly generated by ChatGPT that searches for common file types such as Office files and PDFs, copies them to a random folder, zips those folders and uploads them to an FTP server. As well as writing malicious code, cybersecurity researchers are also concerned about the use of ChatGPT to produce credible phishing and spear-phishing content to be used in social engineering attacks. Cybercriminals writing phishing messages by hand do however reveal themselves with their mistakes. For example, spelling and grammar errors can alert a target that the email sender is not a native English speaker. Criminals also often fail to hit the tone of voice used by the entity they are impersonating. ChatGPT makes it easier for criminals to impersonate an organization or even an individual. Researchers at WithSecure published a report in January detailing their experiments with using ChatGPT to generate convincing-sounding phishing and spear-phishing emails, such as an attempt to socially engineer a member of a company's finance team into transferring money to the scammer. WithSecure notes that the skill of creating convincing phishing emails with ChatGPT lies in the crafting of the prompts, and gives examples of detailed prompts that deliver detailed, tailored emails that are hard to distinguish from a genuine email. A further concern about ChatGPT is the potential for it to be used to craft misinformation. Therehas been a great deal of concern about the use of "troll farms" supported by hostile governments, such as the one uncovered by the UK newspaper The Guardian in 2015. The newspaper alleged that "hundreds of paid bloggers work around the clock to flood Russian internet forums, social networks and the comments sections of western publications with remarks praising the president, Vladimir Putin, and raging at the depravity and injustice of the west". More recently, troll farms were involved in pumping out content about the UK's vote to leave the European Union, as well as the US presidential election that swept Donald Trump into the White House. Researchers fear that those seeking to spread disinformation could turn to ChatGPT to create content that spreads misinformation. These are widely discussed concerns, but there are others, too. It's worth noting that at present, ChatGPT is trained on publicly available content on the internet: as yet there is no API available for third parties to train it on specific content. When it becomes possible to train the chatbot on custom content, we can expect disinformation, phishing, and other attack vectors to become much

more finely tuned and targeted. A further concern is that content created by ChatGPT can sound extremely confident and authoritative and yet be completely wrong: this is known as "hallucination", and it is feared that this tendency will add further to the torrent of misinformation online. It is difficult enough for individuals to pick through the firehose of content available and parse what is good information and what is not good information. Content created by a GPT-trained chatbot that confidently presents bad information is a threat. Ironically, given the concern about the potential for chatbots to produce more finely tuned and targeted information once it is trained on a wider range of content, not fine-tuning models trained on a specific corpus of work is also concerning. For example, a chatbot trained on a database of tax documents but which cannot differentiate outputs appropriate for the context could come back confidently with a response that's not only wrong, but which could cost money Adversarial AI is already a problem: so called "deepfake" technology that convincingly simulates both video and audio of people worries security researchers. Adding words crafted via an AI chatbot to sound like the person being impersonated adds a further layer of deception and threat, and could be used to create very convincing impersonations for targeted social engineering. It's not hard, for example, to imagine a deepfake version of an attack on a finance team to convince them to transfer money to a criminal. Cybersecurity professionals are constantly updating their threat models and not only trying to stay one step ahead of threats, but are also constantly keeping their audiences – whether that's a company's workforce, consumers or other security professionals – apprised of the current threat landscape. ChatGPT has made the task much more challenging. What can the cybersecurity community do in response to ChatGPT? Keeping abreast of the overall threat landscape is a full-time job, and the above concerns have intensified the burden of cybersecurity professionals. We suggest five strands of defense: ======================

Protecting Patient Health Information - A Hard Look

----- Arcticle source ----- https://www.infosys.com/insights/cyber-security/protecting-patient-health-information.html ----- Insights Cyber Security In the recent past, information systems in healthcare organizations have become vulnerable to hacking. This in turn is making patient data susceptible to misuse. A study in 2016, pegged the cost of data breaches in the healthcare industry at $6.2Bn . While some of these were small, the major ones affected millions of people. As in the case of Banner Health, one of the largest nonprofit health systems in the US, which suffered a data breach in 2016 that compromised the details of 3.7 million patients. Hackers gained access to the organization's data through the point of sale (PoS) system. A reason why healthcare organizations have become soft targets for hackers is because they store a large amount of sensitive customer data. Usually this data is stored in a single database. So when hackers gain access, they access the entire cache. This personally identifiable and health-related information is also valuable to organizations in a number of other

industries. In this blog post, I highlight areas that make healthcare organizations vulnerable to hackers and discuss possible ways to address the problem. Locating vulnerabilities that lead to security breaches Just as in other industries, data and technology are coming together as key drivers of the healthcare industry. Organizations are still firming up on strategies to collect, store and analyze their data. They are also trying to formulate AI-driven solutions that they can leverage to personalize patient engagement. The lowering of security to facilitate integration with apps and software is also contributing to vulnerabilities in the healthcare ecosystem. Connected devices and open networks: Healthcare organizations, with their complex network of connected devices such as medical devices, HVAC systems, patient portal, wearables, and even Point of Sale (PoS) terminals, provide a potential entry for hackers. Add to this, open Wi-Fi networks and an increasing number of third-party apps and you can guess why this connected existence becomes even more hack-prone. Business landscape is complex and fluid - Healthcare organizations collect data on individual health, socioeconomic factors, genetic factors, as well as resource use, outcomes, financing, and expenditures. This data is accessed by multiple stakeholders among payers, providers and compliance authority . As patient requirements and organizational complexity expand, mapping the flow of sensitive data within the enterprise becomes difficult. Adding to this difficulty are the changes that this data undergoes as business and network configurations change. In case of an attack, it becomes almost impossible to secure this sensitive and highly dispersed data. Limited budgets - Healthcare security budgets continue to lag behind those of other industries. According to Forrester, healthcare organizations spend 23 percent of their IT budget on security; other critical infrastructure industries such as utilities and telecom spend 35 percent. Regulations alone don't suffice - Data is becoming a new currency. And while the Health Insurance Portability and Accountability (HIPAA) Act of 1996 and the Health Information Technology for Economic and Clinical Health (HITECH) Act of 2009 set a minimum standard for data security, they alone are not adequate. Healthcare organization need to consider policies that allow for continuous monitoring of this data and put in place robust technology that facilitates encryption. In my opinion, one way to limit the risk associated with a breach is to change the approach to security. Business leaders move away from network-driven to data-driven security and view security through a holistic lens including business risk. Developing a security-first culture For security systems and practices to keep hackers at bay, organizations need to adopt a 'security first' culture. Security needs to be reviewed not just from an application or a node perspective, but from a business perspective as well - that is, loss of brand equity, reduced customer trust, financial loss and regulatory penalties. Mobile devices have especially put healthcare organization at a security risk. IT infrastructure needs to be constantly checked to ensure it can withstand an attack. Additionally, other systems need to be put in place to quickly analyze business impacts so that remedial action can be taken. These systems need to deliver immediate visibility, analysis and facilitate a faster response to contain the intrusion. It is important for healthcare organizations to identify behavioral indicators of an intrusion. This is difficult if done through monitoring tools alone. People are usually the weakest link in the security system. Healthcare players need to create, communicate and enforce security policies that continuously engage people,

helping and enabling them to make security a priority.
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Securing Access

----- Arcticle source ----- https://www.infosys.com/insights/cyber-security/securing-access.html ----- Insights Cyber Security Business Challenge A large banking client had massive log monitoring requirements of privileged account activities which their manual processes could not meet. Infosys View Organizations battling identity and access management issues must take an all-encompassing view of the security ecosystem and adopt enterprise solutions with scalable architecture and automation. Business Outcomes And more... Read about the client benefits and the 5 best practices drawn from this engagement. =====================

Securing Internal Applications the Smart Way

----- Arcticle source ----- https://www.infosys.com/insights/cyber-security/securing-internal-applications-smartway.html ----- Insights Cyber Security In the wake of data hacks and privacy concerns, enterprises are working to make sure they secure customer data from external threats. But what about securing data inside? Organizations unknowingly leave a big security hole in their own systems when they fail to have structured internal processes to handle access requests, which could have disastrous implications for data security. A leading US bank sought to move its internal applications to a secure system for a standard and consistent access rights experience. See how Infosys helped and the five key takeaways from the project. =====================

Securing the Ecosystem to Secure the Enterprise with Cyber Security Awareness

----- Arcticle source ----- https://www.infosys.com/insights/cyber-security/securing-the-ecosystem-to-secure-the-enterprise.html ----- Insights Cyber Security October is National Cyber Security Awareness Month – that time of the year when the annual campaign to raise awareness about the importance of cybersecurity is on. And a great time to give deeper thought to the billions of devices, people, enterprises, and institutions that connect with each other over the Internet, and give rise to the giant ecosystems that dominate our world. Securing these ecosystems against the rising threat of cyber-attacks is the shared responsibility of all their members, including large corporations, small enterprises, universities and research organizations, non-profit companies, government agencies, and all their

people of course. This is the thinking behind the just constituted Global Ecosystem of Ecosystems Partnership in Innovation and Cybersecurity (Global EPIC), which brings together 14 global ecosystems from around the world to facilitate knowledge sharing and co-creation of impactful cybersecurity solutions. There is also the National Institute of Standards and Technology's Cybersecurity Framework – now a federal policy by President Trump's executive order – which has been working to secure U.S. organizations and ecosystems by unifying the utterly fragmented cybersecurity landscape with common language, standards, and best practices. Since the ecosystem is only as strong as its weakest link, it is imperative to individually safeguard every constituent by putting the right security strategies, policies, and infrastructure in place. This applies as much to non-profit firms, which often deal in highly sensitive data, as it does to 'for-profit businesses' or educational institutions. Each of these entities must also empower their staff with cybersecurity knowledge appropriate to their role within the organization. Beyond that, they should think of evolving their security practices so that they are proactive rather than reactive, and preventative rather than curative. Bringing in skills around new technologies - especially Artificial Intelligence - can really help to realize these objectives. For instance, machine learning and predictive analytics can come together to monitor hundreds of parameters in network and transaction data, and identify patterns such as suspicious activity before it progresses into a full-blown attack. This is of great value especially in our times when the traditional way of spotting an anomaly - extracting the attacker's signature -is breaking down as hackers use more advanced methods each time. AI can also be used to automate the established practice of quarantining breached systems and networks to contain damage, as well as the sending out of alerts and quick fixes. AI may be deployed to conduct a root cause analysis that the security organization can consult before taking further action. Last but not the least, the ecosystem should develop a long-term vision for cybersecurity. Building an adequate knowledge and talent base to handle heightened future threats is of paramount importance. Unfortunately, cybersecurity qualifications are currently only accessible to those with advanced degrees or experience, which greatly restricts the pool of available professionals. If the rising volume and variety of cyber-attacks has taught us anything, it is that the need to understand systems security (and gaps therein) is not the prerogative of learned professionals. Career gamers and hackers come from a variety of educational backgrounds. The ecosystem could turn this to its advantage if we could make cybersecurity education part of high school and college curriculum, educational institutions implemented directives with zeal, and business organizations recruited students and nurtured them into seasoned security professionals over time. What a boost it would be to truly nurturing a 'secure culture'! As I write this, I recollect reading an article that compared cybersecurity to the thought experiment of Schrodinger's cat. (The experiment presents a cat that may be simultaneously both alive and dead, a state known as quantum superposition, as a result of being linked to a random subatomic event that may or may not occur.) The article argues that when it comes to the security posture of our information, we may be simultaneously compromised and secure. Much like Schrodinger's cat. As interesting as that may be, I think the real question that must be answered in the context of cybersecurity is - Who will bell the cat, and how? My sense is, it is up to us. All of us. Learn

more about the cyber security offering from Infosys >>
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Cyber Security

----- Arcticle source ----- https://www.infosys.com/insights/cyber-security/success-stories.html ----- Insights Securing Access Securing Internal Applications the Smart Way Insights Insights
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Threat Hunting – A Cybersecurity Paradigm Shift

----- Arcticle source ----- https://www.infosys.com/insights/cyber-security/threat-hunting.html ----- Insights Cyber Security The internet has become a utility as essential as electricity and water for organizations worldwide. But it's also an unparalleled security threat, an inviting doorway for global criminal networks. Malicious hackers still seem to have the upper hand even with billions spent on cybersecurity and a high level of awareness of the growing danger. The 2019 Hiscox Cyber Readiness Report found that 61% of firms reported a "cyber incident," an increase from 45% a year earlier. The median loss also increased from $229,000 to $369,000, not counting brand damage.1 New defenses are constantly introduced, but those work only until the next weakness is found and exploited. The relentless attacks on IT networks and systems make it imperative that organizations find new ways to recognize and hunt cyberthreats. Cybercriminals have developed countless ways of avoiding traditional defense measures, so the standard approach is not enough. An effective new weapon in this back-and-forth battle is "threat hunting." That is the process of tracking any abnormal or suspicious activity and continuously scanning networks to identify complex threats that were missed by existing security solutions, such as signature-based antivirus software. The purpose of threat hunting is to scrutinize activities on endpoints and servers that show signs of invasion, exfiltration or corruption of data. What makes this concept different from traditional measures — firewalls, antivirus software, intrusion detection systems, sandboxing and others — is that it is proactive. This approach attempts to track all possible threats and nip them in the bud, thus making sure that business operations are not affected. Threat hunting implementation Cyberattackers frequently steal login credentials for confidential accounts and then divert or delete critical data. The results can paralyze business operations, either through the loss of sensitive data or even ransomware. To effectively head off those dangers, threat hunting must be undertaken in a continuous loop. It is carried out by a team of analysts — "hunters" — who are cybersecurity experts possessing in-depth knowledge of data and malware analysis, pattern recognition, and data forensics. After collecting massive amounts of data, hunters then study patterns and behavior anomalies on networks and existing devices. That data is then processed and analyzed in detail by telemetry sources. The hunters then manually create a

hypothesis and action plan. As an additional benefit, security analysts get a holistic understanding of the environment being secured. This allows them to apply innovative approaches intuitively. While a human hand is required, analyzing vast amounts of cybersecurity data without the assistance of technology is impossible. That is why threat hunting platforms, especially ones based on advanced algorithms and machine learning, are critical to detecting network or endpoint abnormalities. A threat hunter should always possess the following in order to deliver the ideal solution: The SANS Institute's 2019 threat hunting survey found that few organizations have set up dedicated threat hunting teams and have focused much of their efforts on acquiring technology. "We question how useful a tool may be in the hands of an unskilled hunter, especially if training is not seen as a critical area to enable hunt teams," the authors wrote.2 However, finding those skilled hunters is getting more difficult. The number of unfilled cybersecurity positions is expected to grow from 1 million in 2018 to 1.5 million in 2020, according to Gartner.3 Stalking the threat A threat hunter must have a strong understanding of the environment being secured, its systems and networks, reasons for the security, what is at stake, and even the hunter's advantages and limitations. And ultimately, you must decide what would be the ideal outcome. Secrecy If attackers learn of an enterprise's security credentials, they will merely modify or change their attack strategies to avoid discovery. Threat hunting procedures should ideally be as private as the attack in order to make adversaries believe they are operating undetected. This gives the hunters opportunities to implement well-thought-out measures to minimize damage and quickly eliminate threats. Early traps An innovative way of securing a company's IT infrastructure is to create fake credentials and keep track of their usage. As soon as these credentials are used, a threat hunter can alert the stakeholders of a possible attack and secure the business from that specific direction. Scalability As new technology is introduced, threat scenarios and security requirements must evolve. That makes it important for systems to scale up, and adopt and support these digital tools flexibly. Threat hunting solutions at all enterprises need to be highly agile and responsive. Simulated attacks Self-testing is an important practice that should be used by threat hunters periodically. To assess the robustness of a system, it is always a good idea to create simulated attacks and record the rates and manners of system infiltration. Threat hunters can use these results to secure their organizations. Threat hunting feasibility Existing security solutions — based on old mindsets and antiquated threats — are no longer sufficient. But threat hunting won't replace all other approaches to cybersecurity either. Instead, it is expected to emerge as the leading tool to fight advanced persistent threats and fill the gaps that other techniques miss. Heading off security threats in advance pays off with quick detection, faster response and successful denial of exploits that can devastate business operations. An enterprise today is only as good as its security. 1 https://www.hiscox.com/cybersecurity 2 https://www.sans.org 3 https://www.gartner.com/smarterwithgartner/gartner-top-7-security-and-risk-trends-for-2019/ =====================

Data Analytics

----- Insights The Future of HHS: Navigating from Data to Action Professional Services Firms: Providing Better Services, Deeper Insights with Data Big Data Analytics Enters a World of Open Source Data, Data Everywhere: How can it be Monetized? Game, Set, and Match - Data Harvest Data Across Supply Chain to Make Money Minimizing Failure and Maintenance Effort with Digital Capabilities Navigating the Digital Journey in Insurance Technology Amplifiers for the Retail Customer Experience in 2017 Being Digital - Learnings from Client Conversations Data-driven Energy Ecosystems for a Sustainable Future AI- Going Beyond Labor Substitution to Data-Driven Experiences Augment your Master Data Management with AI to be 'Data Rich' Airlines Industry: Flying High With an Integrated View of Data Don't Plan your Customer Engagement Journey, Give them Data-Informed Experiences Insights Insights Insights Insights Insights Insights Insights Insights Insights Insights Insights Insights Insights Insights Insights ======================

Airlines Industry: Flying High With an Integrated View of Data

----- Insights Data Analytics Data is the new currency. Considering the large amount of data airlines gather, are they using data analysis and optimization to leverage this currency to deliver superior experiences to their customers? Most airlines would like to think so. This blog is an attempt to stitch together the data that airlines are probably missing in generating more revenue and creating better customer experiences. Data collection and data analytics is tricky especially when dealing with disparate airline systems and channels. Think about your own interactions as a passenger. We connect with airlines through various channels and agencies at various stages, making it difficult for them to have an integrated view of their customer data for effective data analytics. Let's map a typical flier's touchpoints with the airline. Your first interaction with the airline might be through a Facebook post or a promotional offer in your inbox or via Google. Next, you book tickets either directly on the airline's website or through a travel aggregator such as Expedia. Or you might call your trusted travel agent. On the day of travel, you interact with the ground staff and the inflight staff. Once you land, you may book a taxi or hotel at the checkout concierge. If we study these interactions, we see that passenger data resides in siloes. It could be with customer relations, corporate sales teams, partner websites or travel agents, reservation departments and call centers, marketing teams, social media, sales kiosks and inflight teams. There is no single integrated view of the customer data that is available to the airline, limiting its ability to analyze the data as a whole and thereby influence customer experience. In addition, airlines have two distinct set of travelers in the commercial segment, the business/corporate traveler and

the leisure/family traveler, each of whom have completely different set of needs and wallet spend. Corporate travelers rely on loyalty, hub and spoke convenience, fleet and class type, as important parameters whereas for leisure travelers, the choice of airlines is based on timing, price, route etc. Customer experience is a key differentiator for airlines to gain customer loyalty at a time when airlines are getting increasingly commoditized. Integrated View of Customer Data Technology now allows us to integrate these disparate sources of airline data stores to get one unified picture. Through personal attributes such as email ID, phone number, device ID etc., it is possible to identify customers through the click stream data. Broadly, we can divide the enterprise and external data under five major buckets: demographics data, sales data, browsing data, loyalty data and social data. Using these data points to create a comprehensive customer journey map from path to purchase can facilitate targeted recommendations, generate relevant loyalty points, provide inputs to partner sales and create a differentiated customer experience. Besides, integrating disparate data stores can empower airlines to improve operational efficiency, risk management, and explore newer revenue models. One great example, even though it isn't from the airline industry, is that of a global European sports and lifestyle goods retailer. We created a customer DNA gene factory model for the company using data on customer demographics, sales transactions, marketing campaigns, reviews, etc., to understand customer behavior. The results were brilliant because we literally turned the 80/20 rule on its head by optimizing data preparation and analysis using comprehensive and intelligent data products and prefabricated customer genes. Because the right people within the organization had the right information at the right time, decision making really improved. Our model covered almost 80 percent of all their business use-cases across marketing, sales, and operations. There are plenty of advantages of having an integrated view. Decoding the Customer DNA Since an integrated view of data leads to more effective customer experience management, we at Infosys have designed a solution called the Infosys Genome solution that can help enterprises decode their customer DNA. By collating enterprise, digital, partner, and external data, it creates a boundary-less data platform that enables the creation of networked data products in the data intelligence grid. These behavioral, marketing, digital, and social insights can be seamlessly embedded into the business processes of the enterprise. The solution also provides a user-friendly integrated 'marketplace' for data discovery and self-service analytics through a business semantics engine and a customer gene store that can be very relevant to airlines. Customer genes can be a great resource to build a self-service-driven and customer-centric foundation for explorative, predictive, and prescriptive analytics. More details on the Infosys Genome solution is available at Infosys.com

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Analytics to Avoid Risks

----- Arcticle source ----- https://www.infosys.com/insights/data-analytics/ analytics-avoid-risks.html ----- Insights Data Analytics Banking has been under renewed scrutiny and regulation post the recession, with banks

undergoing constant assessment of their health by monitoring their reserve assets and risk appetite. Banks themselves are proactively investing in risk management and are looking to use the vast amount of customer data available to help them in the endeavor. A US bank wanted to leverage their sizeable investment in risk management and convert the vast amounts of related data they had into usable reports and visual aids. See how Infosys helped and the five key takeaways from the project.
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Analytics for incident management

----- Arcticle source ----- https://www.infosys.com/insights/data-analytics/analytics-incident-management.html ----- Insights Data Analytics Business Challenge A Dutch bank's applications were plagued by a high number of incidents and events, application stability and availability issues, and heavy dependence on manual activities. Infosys View Problem Management Analytics solutions are key to data analytics and critical for the overall support processes, helping drive efficiency with a data-driven approach. Business Outcomes And more... Read about the client benefits and the 5 best practices drawn from this engagement.
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Analytics for Industry 4.0

----- Arcticle source ----- https://www.infosys.com/insights/data-analytics/analytics-industry-4-0.html ----- Insights Data Analytics Business Challenge An automotive parts supplier wanted to understand the factors affecting the success or failure of their programs with OEMs. Infosys View Engineering analytics services help resolve complex Industry 4.0 challenges by bringing together the best of the engineering domain and data science expertise. Business Outcomes And more... Read about the client benefits and the 5 best practices drawn from this engagement.
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Automating Big Data Testing

----- Arcticle source ----- https://www.infosys.com/insights/data-analytics/automating-big-data-testing.html ----- Insights Data Analytics Business Challenge A leading US jewelry retailer was unable to gain actionable insights from their data due to their slow-performing on-premise applications and high infrastructure costs. Infosys View For any big data implementation, a shift to cloud is as important as an optimal test environment and a comprehensive framework for big data automation testing, to improve pattern-matching algorithms and increase the usefulness of unstructured data. Business Outcomes And more... Read about the client

benefits and the 5 best practices drawn from this engagement.
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Big Data Analytics Enters a World of Open Source Possibilities

----- Arcticle source ----- https://www.infosys.com/insights/data-analytics/big-data-analytics.html ----- Insights Data Analytics Connectivity, big data and the bigger challenge The concept of a network of smart devices emerged as early as the 1970s. Around 1972 - Prancing Pony - a computer controlled vending machine selling snack foods on credit at the Stanford Artificial Intelligence Laboratory, became one of the first Internet connected appliances. There began the saga of pervasive connectivity – where every device is plugged into everything else – creating the defining trend of 2010 to 2020. In fact, the Internet of Things is anticipated to burgeon to about of 26 billion units excluding PCs, smartphones and tablets by 2020 – and perhaps several categories of these items, that will be connected in 2020, don't even exist at present. The Internet of Things will explode connectivity, and it will also create value – as much as US$ 6.2 trillion in annual revenue by 2025 says a global consulting company. But it will also create massive, massive amounts of data – 40 zettabytes by 2020, according to one estimate. And as we all know, the bulk – over 80% - of big data is unstructured, and in motion, existing in a variety of forms and formats both inside and outside company walls. Gathering this data is a huge challenge, but one that technology today is capable of. It's what comes next - extracting accurate insights in real time and creating foresight from it - that, enterprises are yet to nail. Several industries, such as financial services, telecom, retail and insurance, are among the leaders in collating, processing, and analyzing big data into reliable findings. Even more importantly, they have the ability to arrive at these insights in very quick, if not real-time. In telecom, big data analytics has helped providers mitigate the high rate of churn by predicting which customers are most likely to leave, enabling operators to target promotional offers more accurately, and even scouring social media conversations to spot telltale signs of defection. On the other hand, insurance companies have managed to speed up claims processing, improve risk management, price products based on predicted behavior (think auto insurance premium based on driving patterns), and accelerate report generation using analytics. Then there are retailers, who have learned to exploit the vast customer data at their disposal to identify customer behavior, seasonal trends, replenishment cycles, merchandising requirements, and so forth. Financial services firms, one the other hand, leverage data to quantify risk and provide transparency to regulators – which in turn is a great driver of operational efficiency. Note how differently each of these industries uses big data. It clearly signals the huge potential for sharing, and cross-pollinating learning between industries, even among those who are analytically progressed. One of the biggest lessons in big data analytics is that it is what an enterprise 'does' with its data and analytics software that counts. Defining – sometimes even discovering – the problem is the most important part of the insight generation process. Retailing's

success with analytics owes much to the nested question, a series of questions that, with each succeeding question, closes in on the problem. Unfortunately, in their impatience for quick resolution, most enterprises cut straight through to finding the answer to a problem they haven't identified in the first place. For them, the outcome in a best-case scenario is symptomatic relief. This is exactly what new-age "problem finding" concepts like design thinking seek to address. The overarching goal of design thinking is to get to the root of a known problem or identify one that hasn't been recognized – staying as close to business reality as possible. It does this in a succinct, three-step process of establishing (end user) desirability, (technical) feasibility, and (business) viability. Establishing desirability is all about understanding user need, and what the end user is trying to accomplish. A good indicator of desirability is the extent of empathy one has for the end user - The more empathetic the creator of the solution is, the more desirable the solution. Feasibility is essentially a matter of mapping problem-resolution to technical capability. The enterprise knows what problem to solve and how to solve it in theory, but must figure out if there's a technology that will do it in practice. Viability determines whether a problem that is both desirable and feasible to solve, is economically attractive. Here, business metrics, such as measurable business value, cost versus benefit, payback period, and return on investment, come into play. Design Thinking gives enterprises a mechanism to define the "What". Now remains the challenge of solving the "How". Proprietary statistical tools have proved to be of limited utility in crunching massive data of the order of millions of records into insights - and foresight thereon. They're sluggish, cost millions of dollars in capital expenditure, and worst of all, are not very amenable to change or expansion of scope. But now, open source technology has given us a very promising alternative. At its foundation is the notion of a data lake - "…a storage repository that holds a vast amount of raw data in its native format until it is needed." It is this absence of rigidity – on data structure, format, and also end purpose – that differentiates the data lake from any method of storage the world has ever known, and also enables it to overcome all the major limitations of proprietary statistical tools of analysis. Architecturally, the data lake comprises the Hadoop File System (HDFS) that pools in the data from every source. Because it is so accommodating on structure, the data lake is not constrained to support only a predetermined type of analytical problem solving; indeed, it can take on new analytical use cases endlessly, at virtually no additional cost. Unlike data brought into warehouses and marts, the "open" data in a lake needs no integration effort; using MapReduce and other algorithms, enterprises can quickly be on their way. Above all, the data lake stores information in a highly granular "microdata" form, unlike licensed off-the-shelf solutions, which aggregate or pre-compute data to expedite analysis but end up compromising fidelity. In contrast, the data lake has an almost infinite capacity to store data at the finest level, at the "power of one" so to speak, and refine, and add information at will. This data is fed into open source software, which can run through any number of data layers, and indeed any amount of data, in a very short time. The analysis arrives in real-time, is accurate, and keeps improving as the datasets become larger. When they want to solve a particular problem, enterprises need only pull the required data from the data lake on to a data foundation. This data – which should ideally be of high-quality and granularity to deliver accurate results – is now stored on

commodity hardware, such as Amazon Web Servers, Azure, or custom built commodity servers. The analytics or data science layer sits atop the data foundation. Using machine learning, data scientists run various mathematical models of statistical analysis, and make that data science available as packaged open source software. Finally, the analytics results are presented in business-consumable form by visualization software like Tableau, or open source components like D3. Open source technology has revolutionized data and analytics at every step of the value chain, from data storage to analysis, to visualization. Viewed from a design thinking perspective, open source makes every aspect desirable, feasible, and viable: enabling sharp insights into problem discovery and solution desirability; making it technically feasible to deliver accurate real-time analysis no matter how big the data; reducing cost of data storage, and processing dramatically to make every project affordable and viable. As open source throws open immense possibilities, its biggest challenge will be to assure security, access control and governance of the data lake. There is also the risk that a data lake that is not managed thoughtfully could end up as an aggregate of data silos in one place. Industry watchers caution about the need to train lay users in appreciating key nuances – contextual bias in data capture, incomplete nature of datasets, ways to merge and reconcile different data sources, and so on – which is a herculean task in every way. While potential users are quite concerned about these issues, overall they are very excited about the opportunity. Meanwhile, the technology industry is trying to accelerate adoption by making all the open source capabilities discussed here available in a pre-tooled, enterprise-ready "out of the box" format. A global office automation firm has deployed such a solution to crunch the time it takes to process two million records to a few seconds, from several dozen minutes earlier. It is now able to make business predictions of 80 percent accuracy. And all of this has come at an investment that is a fraction of the cost of a proprietary statistical analysis tool. Open source technology has enabled it to simply do more with less for more. Download article Learn how to build an analytics driven enterprise >> =====================

Big Data as a Life Saver

----- Arcticle source ----- https://www.infosys.com/insights/data-analytics/claims-and-fraud.html ----- Insights Data Analytics One of the most critical applications of big data analytics is in healthcare and life sciences, aiding healthcare providers and insurers to give the right treatment and life-saving care to patients. Big data also helps insurers resolve one of their biggest headaches - incorrect payments and fraudulent claims, which lead insurers to lose billions annually. One of the largest US healthcare insurers decided to put this to test, when they proposed implementing a big data analytics solution for insurance claims management. See how Infosys helped and the five key takeaways from the project. =====================

Being Digital - Learnings from Client Conversations

----- Arcticle source ----- https://www.infosys.com/insights/data-analytics/client-conversations.html ----- Insights Digital Imperatives for Every Organization Data-driven digital core: a holistic approach Data Analytics Organizations across industries are battling with legacy business models, fast losing their ground to the prevailing digital onslaught. According to Nigel Fenwick from Forrester Research, "By 2020, every company will become either a "digital predator" or "prey". Before we get to the organizational imperatives, let's talk about the three major phenomena that are leading to the adoption of digital. Quantity and Complexity of Data: Billions of users and organizations interacting through innumerable connected devices and media are leading to an unprecedented increase in the quantum and complexity of data. This data lends itself to infinite insights offering innumerable possibilities. Technology Price to Performance Ratio: Moore's law has become almost redundant today, with the price to performance ratio of available technologies dropping by the minute. Speed of Innovation: Data driven insights, powered by extremely affordable and high performing technology, is the superpower every innovator dreams of. This has led to overnight evolution of disruptive business models. Leveraging this very "superpower", Uber disrupted the traditional taxi / ride share industry across the world and is now on the path to reshape the food delivery industry and chartered aviation industry. AirBnb and Netflix are other prominent examples of major industry disruptors in the recent past. Traditional businesses should be worried. If they do not understand their data and are not set up to be responsive, they will become a "digital prey". I meet a lot of clients across different industries and have observed that a number of them are yet to realize the full potential of digital. A common problem I encounter in my client conversations is the lack of understanding on how to move ahead with digital transformation. The most common question is - Where do I start and what should be my roadmap? At this stage, I ask them a very fundamental question, "Why do you want to be Digital?" The responses that I receive vary from being completely non-inspiring e.g. "My competition is digital", "Being digital is sexy" to "I have been asked to be digital", "I have to adopt AI/Automation to be digital", to well thought of business objectives like "to be more relevant, responsive, proactive, insightful, cheaper, smarter, safer". As mentioned earlier, the first step of "becoming digital" is to establish "why" you want to become digital. The most common reasons (and there could be many more) why organizations should become digital are: A simple representation of a Digital Blueprint to aid with digital adoption Very often, the answer is "All of the above" for most organizations. However, what varies for every organization is the weightage assigned to each objective and a corresponding timescale, in line with the organization's vision and strategy. This predominantly helps define the velocity and shape of the digital organization and also provides pointers to where to start. For example, on a 3-year timescale, if an organization assigns 60% weightage to business agility, then its digital design will be significantly different from the one that assigns 60% weightage to productivity / cost out. Ultimately, it's your business priority that will define your organization's

digital design and velocity. It's not just about technology. The success of digital transformation in any organization lies in its ability to transform the DNA of the enterprise. It's a major organizational change, especially for those that are not digital natives. Once the organization has established weightages for its "why digital" objectives, it is about creating a digital design that cuts across the following components: Data Driven Digital Enterprise: Data is the new "money". Organizations need to focus on getting their data strategy right, powered by Artificial Intelligence (AI) and Automation to create insights and thereby new possibilities. AI / Machine Learning are all set to create a smarter and predictive future for organizations. Infosys NIA provides an integrated platform to seamlessly harness insights from enterprise data and translate that into prescriptive, predictive and interactive automation. Digital Service Experience: This layer focusses on creating a coherent and consistent service experience for its customers and employees across channels, journeys, products, and technology platforms. Organizations that get this right, are most likely to get their architecture, data, and operating model right. Digital Architecture: For organizations to provide superior experiences, their enterprise architecture needs to be simple, responsive and affordable. Adoption of the Cloud infrastructure, PaaS, SaaS, APIs, Microservices and open source components are some of the key elements of creating a digital architecture. In addition, with volumes of personal and enterprise data available, digital assurance (security) has become another very critical component of any digital architecture Digital Operating Model: This cuts across people and processes for every organization. To be truly digital, it needs to institutionalize New Ways of Working (NWoW). It needs to leverage the power of Agile and DevOps to enable speed to market, adopt principles of Design Thinking to create more human centric solutions, retrofit its enterprise capabilities like Testing and Service Management to the NWoW and create culture of pervasive innovation. All of these need a fundamental shift in the organization culture and mindset which is driven from the very top. Only those that are able to re-imagine their processes and re-skill their people will remain ahead in the digital adoption curve. The Digital Index for every enterprise is directly proportional to the extent to which they are able to move the dial on the four parameters mentioned above. In summary, following are some of the key learnings that I have distilled from my experiences with organizations wanting to become digital:
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Don't Plan your Customer Engagement Journey, Give them Data-Informed Experiences

----- Arcticle source ----- https://www.infosys.com/insights/data-analytics/customer-engagement-journey.html ----- Insights Data Analytics In today's digital world, there is no one defined customer journey but multitude of probable journeys. For organizations, multiple channels have become table stakes. As customers and enterprises interact on multiple channels there is

an overlap in the intersection points making it challenging for organizations to ensure that they provide a seamless and consistent experience to their clients. Digital is one of those channels but a critical one as it plays an invaluable role in not only capturing and analyzing data but in helping make data driven decisions - fundamental requirement for any organization aspiring to delight their customers. At Infosys, we advocate providing customized and data driven services to customers to enrich their experiences both in digital and outside in order to drive brand loyalty. In addition, we advise clients to ensure that their business objectives tie up with their technology ambitions. This is where we see maximum friction with our clients today. Within Infosys Digital, we are trying to connect the bridge between the CMO/CDO and the CIO to ensure the right digital platforms are being utilized to ensure a seamless customer experience. Digital Strategy – How to Get It Right When developing digital strategies, it is very important to put yourself in the shoes of your consumers. While working at Amazon, Jeff Bezos would say that to every business unit, and still does. What do your customers want? What are they looking to do? What are they looking for in a branded experience? Without putting yourself in the shoes of a customer, or minimally building out personas to help drive different patterns within an experience, many organizations will fail. These personas can be built from data that our clients have in some capacity. It may take us a while to find it and shape it, but at Infosys Digital, we help our clients shape and form these strategies from a multitude of data sources. We use an approach that focuses on User Generated Services (UGS) that leverages real-time data intelligence to drive contextual, automated and predictive experiences, products and services in order to increase customer acquisition, retention, satisfaction and revenues per customer. The UGS Approach: It's All About Data We help our clients move from Customer Engagement Journeys to Data-Informed Experiences using data models that identify and predict customer actions or engagements to drive the customers' Next Best Actions, offers, products, and services. We use machine learning to extract patterns that help us predict outcomes based on which we define the next essential touchpoints and triggers using automation. Through data we deliver the micro-moments whereby our clients will be responsive or proactive throughout the customer journey with: In addition, change management within the organization is key. Our clients must adopt an attitude that opens them up to wanting to change. Not just for the external experiences, but internal as well. There is no "digitize" button and our client organizations must manage to inspire a change both internally and externally to win in the marketplace today. Developing Digital capabilities for a Great Customer Insights Strategy There is no one way of developing an effective customer insights strategy for a client. We at Infosys Digital, kick the tires, pop open the hood to make recommendations and suggestions based on what we feel is in the best interest of the client. Sometimes a full retirement and scrapping is necessary, rather than continuing to hold onto expensive licenses. THE most important element to keep in mind, is to ensure that whatever technology or platform is selected, they all speak to each other intelligently, and provide data rich information that can guide our clients' experiences with their customers. We are helping our clients navigate the seamless integration between business and digital technologies, ensuring a strong focus on Customer Experience, Service Design, Content and Platforms. Our outside-in approach, which renews legacy technologies,

processes, systems, and ways of working, is a driving force helping our clients meet rising customer expectations, deliver individualized experiences at scale, and operate at the speed of the market. However, it isn't enough to develop only technological capabilities, people working in customer centric organizations need to be empowered with creativity and design capabilities in order to encourage innovation and strengthen customer experience capabilities particularly in the digital space. Creativity and Design is another key ingredient to success for our clients. At Infosys, we have made investments in companies like Wongdoody and Brilliant Basics. We have invested in the right partnerships like the one with Rhode Island School of Design (RISD). These investments are helping to shape the new and improved views and strategies that we are bringing to our clients today. These strategies are rich in creatives with strong content providing end to end experiences that carry different offers, appeals and representations. Lastly, we also create multipurpose assets that can easily be repurposed through our Digital Studios in LA, Seattle, New York, London and Berlin.

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Data-driven Energy Ecosystems for a Sustainable Future

----- Arcticle source ----- https://www.infosys.com/insights/data-analytics/data-driven-energy-ecosystems-for-a-sustainable-future.html ----- Insights Data Analytics It is that time of the year when policy makers, business leaders and academicians meet to discuss global challenges at the World Economic Forum (WEF) Annual Meeting. Shaping the future of energy is one of the focus areas of the forum. In the context of energy, big data and digital technologies will drive new efficiencies and open up possibilities, thereby playing a pivotal role in its future. Leveraging data in newer and more advanced ways will be a fundamental driver in creating an energy ecosystem for a sustainable future. This ecosystem could be predicated on what The WEF Global Energy Architecture Performance Index Report 2016 calls the "Energy Triangle", which benchmarks energy systems against three primary goals: Economic Growth and Development, Environmental Sustainability, and Energy Access and Security. The question is, how can data-driven energy ecosystems help achieve these goals? Economic growth and development Economic growth, in many ways, is based on having a robust energy ecosystem that includes an appropriate mix of fossil fuels and renewables. Creating a sustainable future for such an ecosystem is often talked about in terms of increasing adoption of renewables and reducing emissions. However, I would like to emphasize another aspect of sustainability – a relentless focus on economic efficiency of energy. This is not just about energy savings across the utility value chain, but rather, a broad focus on efficiency across the energy spectrum - from exploration and production of Oil & Gas, to every aspect of generation, distribution, and consumption of energy. In this context, there are critical questions that need to be addressed. How can we reduce the break-even price of oil by decreasing the cost of exploration, production and distribution, thereby reducing the impact of oil price fluctuations? How can we maximize

recovery in conventional reserves, and formulate field depletion plans to extend plateau time, rationalize cost of midstream operations, and mitigate risks in energy trading? How can we reduce losses from generation to distribution? How can we optimize usage by empowering consumers and providing advanced monitoring techniques? How can we improve grid operations with better grid planning, voltage regulation, customer and field operations, and improved fault detection systems? These perplexing questions are in some ways "use cases" for leveraging advanced digital technologies and for harnessing big data techniques. Increasing instrumentation, connected devices, rapid adoption of sensor technologies and the Internet of Things (IoT) network lead to better data collection and analysis, which in turn results in better and more efficient ways of managing demand-supply in the energy sector. The need of the hour is a well-defined and executed information and data management strategy that focuses on insightful analysis of data. Economies who adopt this - including the possibilities of predictive analytics, new frontiers in automation and big data, and advanced industrial control networks - improve their chances to strengthen a sustainable energy ecosystem. Environmental sustainability While energy drives economic development, it is also responsible for more than 65% of greenhouse gas emissions. The approaches to mitigating the environmental consequences of the production and consumption of fossil fuels continue to dominate discussions on climate change. Here again, data plays a pivotal role. Rigorous data analysis drives automated environmental management systems and enables dynamic management of international environmental regulations. Further, it helps strengthen industrial safety. In this context, Infosys implements digital Environment, Health, and Safety (EHS) systems to minimize carbon footprint of organizations. Further, we are also a member of the Carbon Pricing Leadership Coalition (CPLC), an alliance of governments, corporations, and civil society to drive effective carbon pricing policy adoption and accelerate implementation. Soil conservation and restoration with advanced chemical analysis and continuous monitoring is another area where a superior data management strategy can prove to be advantageous. Automated pollution control systems with mobile-enabled dashboards to track measurements ensure superior management of water, land and air pollution. This is another example of how digital technologies can drive a stronger energy ecosystem. Energy access and security Secure and reliable supply of low-cost energy holds the key to an equitable industrial and social ecosystem. A fine balance of physical, technological, societal, and regulatory elements is required to match global supply and demand. The growth of distributed generation of renewable energy has helped make progress in this direction. Needless to mention, digital technologies coupled with advanced data analytics can play a bigger role in ensuring sustainable growth and affordable energy. With increasing adoption of smart meters, data can be leveraged to empower consumers in the context of electricity/power usage. A growing green conscience among today's power consumers, especially millennials, will make such a move very effective. Here again, there are enormous benefits to a data-driven approach. For instance, Infosys is working on employing advanced machine learning techniques to reduce errors and increase the generation efficiency for wind turbines in wind farms. Statistical modeling and forecasting tools help eliminate functional and structural inefficiencies across energy systems. Use cases of functional modeling in oil and gas include predictive

maintenance of pipelines and equipment. Further, predictive analysis can be applied to avert overload of the gridlock and outages, identify demand patterns and adapt the power generation capacity to this. In addition, renewable sources can be incorporated into the grid and managed appropriately using data. Advanced Artificial Intelligence (AI) techniques, including rules engines, can be applied to achieve optimal flow. There is broad agreement that progressive nations need to focus on creating an energy ecosystem for a sustainable future. However, this is easier said than done - given the complexities in defining such an ecosystem. It consists of multiple sources of energy, different types of usage and consumption, different adoption levels, and different demand supply patterns - all of which stand exposed to geo-political and environmental risks, many of which are not in our control. However, a relentless focus on a data-driven approach to managing this can yield progressive benefits. WEF always throws up intriguing questions and new answers. At WEF 2017, I am looking forward to how stakeholders will address various aspects of this complex energy ecosystem. ======================

AI- Going Beyond Labor Substitution to Data-Driven Experiences

----- Arcticle source ----- https://www.infosys.com/insights/data-analytics/data-driven-experiences.html ----- Insights Data Analytics Many enterprises fail to capitalize on the potential that artificial intelligence and automation have to offer by equating it with labor substitution. For instance, I was recently interacting with the client team of a large bank. Their target was to reduce costs of internal and customer transactions by implementing 500-600 Robotic Process Automation (RPA) bots in a single year. They had already tried doing this with a toolset they had invested in, but were unable to meet the target. A few questions on overall process design revealed that they had not really thought through their plan. For instance, they had identified 50 use cases for immediate automation since these had a large number of people associated with them. However, the company did not know how to systematically identify new problem opportunities in the enterprise. I encountered a similar situation in a large manufacturer that was looking at IT outsourcing. They were keen to learn how artificial intelligence (AI) could help them automate work drivers and outsource the rest of the work. A retail customer, on the other hand, had already implemented RPA but needed assistance to leverage AI to respond to evolving consumer expectations. Consistently engaging in problem finding can be a struggle for enterprises, especially if they do not refer to the data existing within the enterprise. Many of today's enterprises find themselves overwhelmed by data. Unlocking the right data and making it available across the board gives users the opportunity to engage with stakeholders in a more meaningful way than ever before. Adopting the right approach to AI and automation is crucial in data-driven enterprises. Here are a few pointers that should help you set off on the right course. Process discovery and

design In the automation journey, the obviously manual processes are the first to be identified. However, rather than a one-time activity, it is necessary to continuously identify automatable processes. For instance, the bank I wrote about earlier was shown how to deploy a 'problem finder' probe by Infosys. The probe unearthed insights on how end-users worked with the current enterprise resources. This enabled the enterprise to identify areas of redundancy and optimization. Sometimes, analytics from these probes indicate that the enterprise needs to digitize their operations more comprehensively, and capture data from their customer interactions, supply chain, equipment, and internal processes to make the right decisions. In process discovery and design, enterprises have the opportunity to completely reimagine a customer engagement - right from the way data is generated, collected, organized and acted upon. In a retail scenario, it would require knowledge about the brand a customer likes, when the product needs to be replenished, ordering it for the customer in the right amount and variant through a virtual assistant, and placing the order with the right retailer. Operational execution in automation process design Enterprises must plan on how to respond to scenarios where robots repeatedly fail. Robots may fail due to changing business processes, and redundancy of the past method of resolving transactions. A scalable method of recording changes in business processes based on actual data, and maintaining a digitized reference-able knowledge hub of the initial process as well as changes, can prevent this. In industries where enterprises rely on a standardized set of data for decision-making, introducing fresh orthogonal data (data that can be used without considering its effects on other program functions) to supplement data sets already in use can change the basis of a product design and experience. This is how, for example, a large CPG enterprise can identify anomalies in the customer sentiment towards their product, and a positive sentiment towards the competition. This opens up an opportunity for possible change in the customer's product experience. The senior executives of the large bank with whom I was interacting were impressed by the scalable and repeatable ways of introducing data gathering probes into the various sources of truth, and how these could discover automation opportunities across business and IT operations. Driving next-generation operating models In the case of IT outsourcing that the manufacturing client was considering, an AI system of systems could completely reimagine their current model of executing IT programs. The erstwhile 'people only' model can be replaced by a 'people + software' model. So what does this mean? The new operating model could enable 'robot personas' to do the work, and augment it with human personas wherever needed. For instance, the role of an Oracle database administrator in an IT outsourcing deal can be fulfilled by a 'robot DBA' avatar. There can be a similar robot meeting the requirements in an infrastructure scenario or as a 'procurement specialist' in a sourcing-and-procurement business process function. In conclusion, organizations preparing to automate need to adopt a sustainable process design. Knowledge gained from their current data-driven experience is key to building an automation-based foundation. This knowledge is the fabric of the enterprise. It constantly evolves and learns from past decisions so that evidence-based decision-making gets better with every passing day. Read more articles on artificial intelligence and automation >> =====================

Data, Data Everywhere: How can it be Monetized?

Insights What How Why Data Analytics Walmart, the global retail major, processes one million customer transactions every hour. Akamai Technologies, a leading content delivery network, analyzes 75 million events every day for targeted online advertising. These examples barely scratch the surface. Predictions are even more staggering: IDC anticipates 450 billion online business transactions daily, by 2020! Digital technologies have transformed the data ecosystem, through the quantum and depth of data, the producers and consumers of data, and most important, the intrinsic value of data. Every business captures and analyzes diverse data streams – transactions, supply chain, operations, products, market dynamics, social sentiments, and customer data that includes their demographic profile, location, preferences, and behavior. The existence of petabytes of information assets raises pertinent questions that enterprises need to address: How can stakeholder's access quality data, on demand? What is the monetary value of the available data assets? Can data streams be monetized in terms of customer loyalty, cost-efficiency, revenue growth, risk mitigation, regulatory compliance, renewed operations, and/or new products and services? Robust data strategies that ensure on the- go data access, real-time data sharing, 360-degree view of customers and operations, and predictive insights can help enterprises monetize data. However, traditional database management systems, business intelligence (BI) tools, and analytical engines do not allow enterprises to capitalize on the compounding effect of big data, cloud computing, mobility, and social media. The primary challenge is: data boundaries. A hierarchical organization structure and functional boundaries create silos that prevent seamless communication as well as collaborative decision-making. In turn, it results in flagging productivity and subpar operations. On the other hand, in a boundary less enterprise – one without vertical or horizontal barriers, as envisaged by Jack Welch, the erstwhile CEO of General Electric in 1990 – internal and external stakeholders collaborate, making the enterprise more and more efficient, responsive, and resilient. Similarly, a prerequisite for data monetization is the elimination of data boundaries. The free flow of data can be inhibited by boundaries created by diverse factors – physical location, IT infrastructure, business processes, application portfolios, enterprise policies, and industry practices. Moreover, the separation of transactional and analytical workloads via operational data stores, data warehouses, and data marts affects data quality. Enterprises need to collect data from business processes, Internet of Things, and machine learning applications, while breaking down boundaries that confine data to silos, and create a 'golden copy' of data. It requires a data strategy that transcends mobile BI, data and process integration, and master data management initiatives. An integrated platform to gather, cleanse, query, analyze, and visualize data will help monetize data within and beyond the enterprise. Data-oriented enterprises discover value quickly and better manage information. In addition, accurate analysis enables enterprises to glean business insights. A boundary less data platform is the

backbone of such data enterprises. It serves as a unified data and analytics stack to monetize large volumes of complex data from diverse streams. A boundary less data platform breaks down system, technology, process, deployment, and organizational barriers, and integrates the data chain – from creation to consumption. The platform, whether hosted on premise or on the cloud, streamlines information management by simplifying the discovery of information assets, personalizing data, facilitating collaboration, and ensuring secure access. Boundary less data platforms support a consumption-driven approach, as well as the application of information semantics, to boost usability across all types of data, including master, transaction, machine-generated, social, and connected enterprises data. The platform incorporates a data lake to manage raw, enriched, and analytics data. A data lake is the building block of boundary less IT architecture. Metadata driven data lakes capture and store unlimited amounts of structured and unstructured raw data, irrespective of the format, source, or schema. It enables seamless interoperability between domains and applications with a business-centric semantic model. Data enriched using a data grid is stored in the 'enriched zone' and is used to build analytical models. Analytical reports are ploughed back into the data lake. The data grid addresses the challenge of boundaries at the portfolio and enterprise level with a secure semantic integration engine. It leverages virtual / federated / ETL technologies to connect heterogeneous data sources and convert raw data into meaningful information. Information assets connected to the grid by the metadata driven semantic engine help business users search diverse data assets easily and consume contextual data. The boundary less data platform adopts master data management (MDM) practices to create a comprehensive view of critical data domains such as customers, products, suppliers, and employees. The 'golden copy' of consumption-ready data can be referenced for all business transactions. MDM allows application of appropriate business taxonomies for data domain elements, thus eliminating data inconsistency, duplication, and redundancy. In addition, MDM enhances the accuracy and reliability of data, and improves data ingestion. A boundary less data platform renders the concept of 'internal,' 'external,' or 'functional' data obsolete. It automates data operations for smooth interoperability. All stakeholders can mine relevant data for near real-time decision-making. Visualization tools to analyze data from any perspective empowers users across functions, including finance, supply chain, sales, marketing, and customer service, to use common data sets for developing unconventional solutions to business problems. A unified data platform transforms the enterprise through self-service analytics. Business users can interpret data accurately, explore relationships between different entities across the data landscape, and uncover correlations as well as hidden patterns between seemingly unrelated data streams. Users can query interdisciplinary data, gain a nuanced view of the business, and generate actionable insights. Outcomes can be predicted accurately before the enterprise invests time and money. Boundary less data platforms maximize data harvested by the enterprise. This helps financial service managers create customer micro-segments, and consumer packaged goods companies predict demand for a product across marketing channels. Oil and gas companies can use the boundary less data platform to optimize their maintenance schedule. Unified data platforms help retailers improve markdown planning and enable airline carriers to adopt a dynamic pricing

strategy for passengers as well as cargo. Every industry benefits from seamless data flow and predictive analytics. Rolls Royce uses data and high-performance computing across design, manufacturing, and aftersales support for its jet engines. Telstra uses customer data to prevent customer churn as well as network data to address or preempt network dysfunction. Avis harvests several data sources, such as rental history, service issues, demographics, corporate affiliation, customer feedback, and social media references, to undertake a valuation and assess the profile of customers. Boundaryless data flow empowers companies to monetize data residing beyond their enterprise as well as the industry. Retailers and banks use customer location and activity data gathered by communication services providers for contextual offers and targeted promotions. Weather aggregators help shipping companies make sense of meteorological data and better manage voyages and operations. The GPS navigation system in 'smart' cars predicts feasible routes based on dynamic traffic conditions. In summary, analytics should be at the heart of the enterprise fabric. While quality data is essential to solve daily issues, analytical tools that capitalize on boundary less data flow provide panoramic and granular views of the business. The ability to see the hidden and predict the unknown, improves productivity, spurs decision-making, and determines the business trajectory.
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Augment your Master Data Management with AI to be 'Data Rich'

----- Arcticle source ----- https://www.infosys.com/insights/data-analytics/data-management-with-ai.html ----- Insights Data Analytics In today's connected world, business enterprises are witnessing data explosion like never before. It is not just the volume of data that needs immediate attention but also the variety of data from newer sources such as Internet of Things (IoT) sensors and connected devices. Further, evolution of cloud technologies has formed the basis of change in technology budgets from a concentration on hardware & infrastructure purchases to one that leverages technology & services to make best use of the corporate data assets. These factors make it extremely challenging for enterprises to remain committed to their traditional data management systems which restrict them from harnessing the full power of data under their control. It has become imperative for enterprises to become 'Data Agile' so that they can efficiently adapt to the ever changing demands of global data management. According to a recognized analyst report, organizations believe that over 27% of their revenue is wasted due to inaccurate master data. As enterprises continue to embrace Artificial Intelligence (AI) and Machine Learning (ML) technologies, businesses will continue to adopt improved data management technologies to stay relevant in a highly competitive marketplace. With rapid digitization of business ecosystems, enterprises are dealing with rapidly growing and changing data pertaining to their products, customers, suppliers, employees and stakeholders. The ability to manage this data and later master it becomes

imperative for enterprises to succeed and gain an edge over competition. Mine 'Gold' out of your Data with the right Master Data Management strategy As all elements of business and commerce become more and more digitized, every organization finds itself surrounded by immensely high volumes of data pertaining to critical stakeholders of their ecosystem. This is where an effective Master Data Management (MDM) strategy will become a game changer! At Infosys, we have observed that enterprises that do not have a well carved out MDM strategy are facing tremendous challenge to stay relevant as data has become their most critical asset. Inaccurate and inconsistent data could jeopardize businesses. The goal of MDM is to identify, validate and resolve data issues as close to source as possible, while creating a "Gold Copy" master dataset for downstream systems and services to consume. MDM provides many benefits, and when implemented correctly can ensure consistency, completeness and accuracy of core data sets. What's in the NextGen Digital Master Data Management MDM solutions will continue to be the source of truth and will serve as a logical starting point for Big Data analysis. Enterprises that are looking to invest in Big Data technologies need to have an enterprise-wide MDM strategy in place as it will serve as a building block for future proofing their data stores. This will further enable enterprises to gain better insights from all types of data regardless of where they were sourced from. It will also allow enterprises the flexibility to consider new types of data that could augment their decision making ability. The demand for MDM is moving towards decision making and knowledge management. Effective Data Management can help organizations to achieve the following benefits: At Infosys, we are working on NextGen Digital Data Management Offering that harnesses the power of AI and ML. Our flagship offering that focuses on data quality, is cloud ready and is highly scalable. Various ML algorithms perform Data Quality analysis activities such as outlier detection using unsupervised learning and MDM features like data enrichment using supervised learning methods. Further, ML algorithms allow it to extract data from existing data sources to create predictions which can be leveraged when new data is made available. ML allows enterprises to discover patterns in data, as well as propose associations, correlations, and adaptation. As the system learns more about data, it eclipses traditional extract-transform-load (ETL) approaches making it a thing of the past. The platform provides multi database support leveraging technologies like Spark, Big Data, R, Hadoop and Deep Learning. It also comes with a Business Rules Modeler that can extract business rules from enterprise applications like SAP and help validate the data quality automatically using the extracted rules. So, what does this mean for MDM? According to Andrew White of Gartner, "Deep learning will not make MDM go away. We just need to keep our feet on the ground and understand the kinds of problems that deep learning can help with."
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Predicting Inventory Requirements

----- Arcticle source ----- https://www.infosys.com/insights/data-analytics/finding-aircraft-predictive-analytics.html ----- Insights Data Analytics Predictive analytics, while finding application across industries, are particularly a priority for manufacturers, with their overarching need to manage supply chains, vendors, procurement, and production, and the movement of inventory between them. A large aircraft manufacturer wanted a system to monitor the inventory of parts for a new airline model under production in different locations, predict requirements, and initiate procurement accordingly. See how Infosys helped and the five key takeaways from the project. =====================

Game, Set, and Match - Data

----- Arcticle source ----- https://www.infosys.com/insights/data-analytics/game-set-match-data.html ----- Insights Data Analytics In the annals of tennis history, the 1980 men's Wimbledon final occupies pride of place. John McEnroe matched wits with Björn Borg. The match was a character study in contrasts. McEnroe, 21 years old, was making his first appearance at a Wimbledon final. Borg, 24, was the defending champion, having won the title for four years in a row. On one side, McEnroe, the fiery New Yorker, was known for his aggressive serve-and-volley game. On the other, Borg, the cool Swede, wore down opponents with his passive-aggressive baseline game. Borg led two sets to one. In the fourth set, McEnroe pulled it back with an astonishing 18-16 tie-break, during which he saved seven match points. In the fifth set, McEnroe won the first two points on Borg's serve. Borg fought back and took the next 19 points. He abandoned his baseline game. Borg served hard at corners, rushed to the net and volleyed. One statistic summed up Borg's change in strategy: he faulted only 6 of 31 first serves, which proved decisive in winning his fifth straight Wimbledon. The epic 1980 Wimbledon final riveted the attention of thousands of courtside spectators and millions on live TV and radio, notably Nelson Mandela in a prison on Robben Island. Today, the ATP World Tour is followed by a legion of fans at home, on-the-go, and at work. The drama of every point during a tennis match is broadcast over the airwaves in real-time to the farthest corners of the globe. It showcases a sport in which players – who could easily be mistaken for students of Pythagoras – work angles, unleash top spin, and alternate between forecourt and baseline play. Every time the ball pings back and forth across the tennis net and a point is won or lost, it is recorded by the match umpire on a tablet device. Just as a player times his advance to the net, similarly today, cloud, big data, analytics, and mobile technologies complement each other, ensuring that the action on court is stored, used, and repurposed for future. Data is relayed to the scoreboard system, the broadcasters, and media channels in real-time. Significantly, each detail or outcome is a data point that helps players better understand their own game, and identify their strengths and weaknesses, and even

analyze the strategy of their opponents. The treasure trove of data harnessed from matches provides fans with an immersive experience. In effect, match data asks questions and uncovers fascinating possibilities for player, fan, and broadcaster alike. "He served well in the fifth than he might have in the whole match," said McEnroe in 'Fire & Ice,' an HBO documentary on the 1980 Wimbledon final. Borg changed tactics and rushed repeatedly to the net to take McEnroe by surprise. Tennis professionals now have the benefit of analyzing match statistics to understand nuances of the game. For instance, at the Barclays ATP World Tour Finals, London, in November 2015, we found new correlations between the top-spin that certain players were generating and their win-rates Data is adding a new dimension to the game. While fitness, athleticism, and innate skill remain at the heart of the sport, insights from historical match data may well tip the scales in tennis. Coaches can mine historical player data to understand correlations between tactics and outcomes. It can lead to shifts across the board in match strategy against specific opponents, a deeper understanding of a player's game to avoid repetitive strain injury, circadian rhythm before matches, variations in diet, and so forth. Tennis, more than any sport, lends itself to data amplifying the dynamics of a game. The unique character and structure of the sport, the diversity of court surfaces, and playing styles of elite players make fans follow the game. Data adds to the stickiness quotient with player comparisons, insights into player strengths on different surfaces, and endurance over five-set matches. Data helps tennis engage more intimately with the millennial generation. It brims with interesting possibilities – in-the-moment insights are fast finding a place along with post-match analysis. With access to historical data during a match, on a video streaming app, millennials will be able to amplify such insights by sharing thoughts and predictions on social media and offering sharp analysis worthy of pundits. Speaking of which, data analytics also provides commentators with granular insights on live TV, keeping millions of viewers glued during a high octane match. Nuggets of wisdom and quirky anecdotes of commentators contribute to tennis classics being part of tennis folklore. A case in point is Brad Gilbert, former tennis player and ace tennis commentator today. 'BG' is popular for his perspective on what players are thinking as much as his game plan catchphrases, "give 'em the fearhand!" and "bach-hand." The ATP has a rich repository of match data going back to the 1990s. It offers context and shares hidden patterns that allow players to take crucial decisions before, during, and after each match. From a fan standpoint, data provides the tennis community with a 'long tail' of information, which helps fans interact with each other and connect with iconic players. Data that captures every ball pinging across the net and each ball hitting chalk on tennis courts increases the engagement and magnifies the appeal of tennis. Of course, data cannot be the be-all and end-all to determine player performance and outcomes in tennis. Intrinsic factors such as match day fitness, mental approach, stamina, and endurance have an important bearing on the final outcome. All factors being equal, data can uncover subtle points, which can influence the trajectory of a match at the highest levels of tennis. While modern players can benefit from rich data visualization, tennis history could have been rewritten if data supported a player's strategy. Borg might have won one of the four US Open finals he played, if he had access to useful data. At one level, the game of tennis is a purist's delight with two players striving to outwit each other across the net.

At another level, tennis is a fascinating subject for a classical mathematician unveiling interesting formulas every time a point is won or lost. In the not too distant future, we could witness a tennis champion thanking his data scientist in addition to his entourage and coach in his acceptance speech after a final. It may well be the ultimate compliment, and a smashing one, to the science of data. Infosys is the Global Technology Partner of ATP World Tour, leveraging mobility, cloud, and analytics to transform the experience of tennis fans and players the world over. Learn how Infosys helps ATP unlock decades of tennis data >> ======================

Harvest Data Across Supply Chain to Make Money

----- Arcticle source ----- https://www.infosys.com/insights/data-analytics/harvest-data-make-money.html ----- Insights Data Analytics Can you predict the most popular menu items across upscale restaurants in New York, in the next quarter? Do you know how many fish fillets can be delivered by supplier X next week? Are your fleet maintenance engineers minimizing vehicle downtime by evaluating vehicle repair history and component replacement trends across equipment classes? Digital technology has radically altered the market dynamics of the food industry. It now offers more choices and enhanced convenience to customers. It allows chefs to personalize the dining experience with insights into tastes and order history. Technology also helps restaurant owners foster customer loyalty by analyzing past behavior including visit patterns, spend on appetizers and beverages, and customer recommendations of a new main course to friends on social media. Most important, it offers real-time visibility into operations and ensures sustainability across functions -optimizes replenishment schedules, enables accurate forecasting to reduce wastage, and shrinks the carbon footprint. Data tools help food service enterprises simplify operations. Robust data solutions enable the enterprise to become a reliable supply chain partner by connecting data end points and maintaining data quality. A unified ecosystem ensures seamless data flow across the farm-to-fork value chain. Cloud-based platforms use simple protocols for secure exchange of large volumes of data between the ERP, point-of-sale, warehouse, transportation, and inventory management system. In addition, it supports unstructured data from mobile devices, sensors and social platforms. Scooping insights from data A well-defined big data strategy converts qualitative and quantitative data into a revenue-generating asset. It helps analysts identify sources of valuable enterprise and third-party information, select tools to enrich primary data, and develop analytical models to gain contextual insights by analyzing data from diverse perspectives. For example, a weather alert can be used to predict the effect on the harvest of a region, sales of supplementary products, and logistics to or from the area. Big data solutions integrate disparate sources of data into a data lake for real-time analysis and actionable insights that influence business outcomes. Advanced analytical solutions correlate disparate datasets. For example, customized algorithms map a tweet about a snack with socio-demographic attributes of 'followers' and the season to uncover

business relationships, this helps in preparing a bottom-up sales plan. Adopting analytics tools that are ready for innovation Analytical platforms monetize both big data and granular information. The food map of 'hot-sellers', cuisine, dishes, ingredients, and flavors in a city or community is essential for strategic and operations planning. A drill-down analysis of products, categories, customers, and suppliers ensures the plan is always updated and relevant. For example, an accurate analysis and simulation models can help replace fresh produce with an enhanced frozen version, eliminate an unprofitable non-food supply item, or reallocate a work schedule among warehouse employees. A big data platform automates onboarding of new data streams to address business and regulatory requirements, and incorporates analytical insights into operations. A self-service analytics tool empowers business analysts and planners, besides others in an enterprise, with a nimble approach to innovate. User-friendly tools can quickly predict scenarios, analyze the root causes of unexpected events, and locate actionable insights. One of the pre-requisites of a holistic lifestyle is healthy food choices. Just as a diet plan provides data about calories and nutrients that need to be consumed, the food services and logistics industry too needs to harvest data across its supply chain to get lean and fit. Reinvent, Reimagine, #RethinkRetail with Infosys offerings >> =====================

Minimizing Failure and Maintenance Effort with Digital Capabilities

----- Arcticle source ----- https://www.infosys.com/insights/data-analytics/minimizing-failure.html ----- Insights Adaptive Inspection Management System Solves Different Industry Challenges Insurance Energy and Utilities Agri- Business Manufacturing Data Analytics The traditional inspection methods for detecting faults in oil pipeline networks are increasingly failing to detect anomalies. In 2016, Shell's Sao Pablo Bay oil pipeline ruptured near the Californian town of Tracy, spilling over 900 barrels of crude oil into the surrounding soil. Even with the advent of sophisticated technologies, most companies deploy antiquated human-centric paper-based asset inspection methodologies. These activities are rigorous and challenging in nature and many times the workers have to perform them in remote and risky terrains as well as hostile weather conditions. This utilizes a considerable part of the operational budget, with companies spending billions of dollars on asset inspection and monitoring. According to statistics, the oil and gas industry alone spends more than $37 billion per year, while rail companies in Europe spend around $5.4 billion annually on inspection. But still there is a probability of human error, which might lead to some anomalies being overlooked. This may lead to critical damage to assets in the long run and health hazards to the workforce and users. There is a dire need to overcome these challenges in current inspection processes, for which, an effective application of technology is essential. Inspecting a Million Miles of Railway Tracks? Adaptive Inspection Systems Make It Easy

Effective implementation of technologies like autonomous agents (drones, robots etc.), sensor fusion and orchestration of these numerous agents, can help in conducting inspection and asset management in new ways. An adaptive inspection management system, comprising multiple autonomous agents, collects continuous imagery and conducts detailed analysis to identify possible anomalies. The system is able to report on the type of risk and the exact location of the anomaly in real-time. Key platforms and enablers like control centers continuously monitor and create or modify a plan of action for the system and the multiple agents that operate within it. Integrating with an analytics platform and a learning system through a digital twin can help the maintenance staff to efficiently identify anomalies and operational deviations, conduct root cause analysis, and generate more effective predictive maintenance schedules. In order to understand it better, let's look at a use case where railway line inspections can be enhanced through an adaptive inspection management system. Most of the current rail inspection methods involve inspection cars with various sensors moving along the track. This takes a lot of time for inspection and is futile in case an obstacle blocks the track. With an adaptive inspection management system, the control center deploys multiple drones, which periodically navigate the whole length of the rail network, taking live images with coordinates. The drone's on-board edge computing capabilities ensure adherence to regulations, while enabling precise positioning, scanning and deep re-scanning – especially where anomalies are found – to arrive at the most suitable images. These images are sent to the inspection management platform for further analysis, where exception management and maintenance workflows – human-centric or autonomic – are invoked with minimal human intervention. The adaptive control center present also has a bird's eye view of the agents, and helps coordinate their activities for the most efficient approach to inspection. This reduces both time taken and inspection errors, thus improving track repair and maintenance effectiveness. Support risk assessment, fraud detection and Claims Management to solve the challenges of physical inspection of assets, lengthy document process and fraudulent claims with continuous collection of asset imagery and advanced AI. Help with data collection from hazardous locations and streamline maintenance activities for the network of high valued assets that energy & utility companies often own across geographies. Offer efficient crop monitoring solution for weed detection, crop damage assessment and fertilizer optimization for effective monitoring of large tracts of land. Perform labour-intensive activities while improving worker safety and reducing throughput time, cost and human involvement in the manufacturing industry. Other instances where adaptive systems play a prominent role to enhance process effectiveness include inspection of underwater assets and pipelines using autonomous robots, wind wane and turbine inspection using drones, IoT-based machinery inspection, high rise building and chimney inspections, grid and transmission line inspection and asset/building inspection for insurance claims. All these use some form of intelligent capabilities in software, hardware or sensors to allow for an adaptive inspection management approach. The Mechanics of an Adaptive Inspection Management System The adaptive inspection management approach covers orchestration of multiple agents (automated guided vehicles, unmaned aerial vehicles and fixed cameras) to acquire, process and manage evidence of inspection during the lifecycle as well as integrate

with remediation workflows. The goal is to expand coverage and reduce the time to cover the area under inspection. With benefits like real-time dynamic sensing of anomalies, enhanced safety, and continuous, proactive monitoring among others, an adaptive inspection management system is bound to increase process effectiveness and efficiency across sectors. Be it by enhancing workforce productivity, reducing errors or saving time and costs, adaptive inspection will play a vital role in future-proofing industries and enhance the prospects of innovation in inspection and maintenance.
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The Future of HHS: Navigating from Data to Action

----- Arcticle source ----- https://www.infosys.com/insights/data-analytics/navigating-data-action.html ----- Insights Data Analytics Health and human services (HHS) agencies have unprecedented access to data sets, which are growing in number and size. The presumption is that more information is always better. However, that's true only if organizations can utilize those data sets to take the "next best actions": decisions that help agencies and case managers provide care at the lowest cost, with improved outcomes, and in a timely manner. To do this, HHS agencies need to rethink how they collect, analyze and use their growing data collection. That information can include: The Organisation for Economic Co-operation & Development identifies data analytics as an important component for transitioning to a digital government and a way for agencies to gain better insights. A Center for Digital Government report found that the most popular digital tools were dashboards or portals (79% using), enterprise data warehouse (51%) and data mining (34%). However, not all agencies have been able to realize the desired benefits. Only 14% of respondents in the CDG's survey said their government's analytics capabilities are effective. The rest rated the impact as somewhat effective or neutral. While analytics continues to be an HHS priority, their efforts need to go beyond data mining and intelligence. The goal should be real-time decision-making that can define and deliver the right care interventions and strategies. Data challenges Generating and disseminating next best actions requires agencies to operate at the highest level of analytics maturity, not an easy task. The diagram below outlines the standard analytics maturity model, the type of insights that agencies can generate at each level, and the challenges that they face. How: do you effectively manage the data life cycle, monitor data quality and meet objectives? Challenge:Aggregation and integration of many types of data, which are in varying formats and sizes. WHAT hidden relationships must agencies know to create a 360-degree client view? Challenge: Inconsistent, inaccurate and overwhelming reporting due to lack of a common language to explain the WHAT [above]. WHY are things not happening as they should be? What are causing roadblocks? Challenge: Inefficient techniques to research and discover previously unknown facts through proper data mining and statistical correlation. WHO (or WHAT) will be affected most if today's issues are not addressed? Challenge: Lack of skilled data specialists and inability to generate rapid insights that help organization see the future.

WHICH action should be taken, and WHEN, to mitigate future risk? Challenge: Inability to quickly build AI models that can analyze insights and generate and recommend actions for stakeholders. Most analytics projects that fail are generally the result of inflexible analytics systems and inefficient data management. Information about patients, physicians and other stakeholders is generally available in silos. It is difficult for agencies to semantically combine and harmonize different datasets to create an integrated longitudinal record. This lack of data standardization and interoperability turns data lakes into data swamps. As a result, it is difficult or impossible to obtain real-time, reliable and accurate information to generate relevant insights and recommendations. This affects agencies' ability to improve their analytics maturity, unlock the power of data and generate next best actions. Beyond insights to action Advanced data science, supported by technologies like automation and cloud computing, can help agencies re-imagine analytics initiatives. The diagram shows how a modular data and analytics solution, built using emerging technologies, enables an agency to address challenges at each stage of its analytics maturity and successfully generate next best actions. Component: Data manager Capability and insight: As-is integration of data irrespective of format and type. Automated master data management and data mastering. Component: Data harmonizer Capability and insight: Automated harmonization of data to create a complete profile of the client. Component: Data analyzer Capability and insight: Automated data profiling for in-depth understanding of root causes or uncovering hidden information. Component: Data predictor Capability and insight: Machine learning-based modeling to predict future states. Component: Data insights generator Capability and next best action: AI to analyze information from previous stages and recommend actions. This process starts with the creation of a more flexible data store that includes clinical, financial, administrative, social determinant and weather information. Ideally, there will be no need for upfront extract, transform, load tools. And automated master data management will accelerate data harmonization and standardization. This enables the creation of a dataset with a complete view of every patient, provider and constituent by combining their past with their present. This enables agencies to get a holistic understanding of patients and their relationships to providers, caregivers, friends, family, and social and demographic groups. Data predictors analyze this information to understand how relationships have influenced patients over time and how they will influence them in the future. This creates a broad profile of each patient. By using artificial intelligence (AI) models, doctors, case managers or agencies can utilize this new information to take further action. Navigating to better outcomes The hypothetical case of Mark, a 78-year-old diabetic enrolled in a state Medicaid program, shows how data is used in this new system. Mark's standard data includes his medical records, doctor visits, claims, care management notes, lab reports and prescription history. The agency also has Mark's social determinants of health, such as his eating habits, transportation, caregiver support, care program engagement and other information. The data is cleanly aggregated to create a quality patient record. Higher-level analysis finds that Mark is missing doctor's appointments, not re-filling his prescriptions on time and isn't engaging with his case manager. As a result, he visits the emergency room too often. There are no supermarkets near Mark's home, and public transportation is

inadequate. So, this restricts his access to fresh produce and leads him to eat out frequently. Also, Mark does not have a community support system. A case manager can analyze these factors and develop a more detailed profile of Mark. Through predictive modeling, he will likely be placed in a higher risk category. An AI-based analysis will provide the case manager with the information needed to deliver targeted interventions. Those can include booking an appointment with a nutritionist, connecting Mark with food resources programs to help him manage his diet better, arranging transportation so that he doesn't miss medical appointments and developing a consistent outreach plan to ensure Mark's care gaps are tracked and closed. Harnessing the full power of data The next generation data science models will allow HHS agencies to unlock the full power of their data through a three-phased transformation approach [see figure below]. It will generate insights and recommendations that amplify and empower healthcare professionals, and ultimately, improve outcomes. The approach also builds a foundation for HHS agencies to adopt other emerging technologies, including digital avatars, conversational AI, autonomic computing, augmented reality and virtual reality. The results can be improved constituent engagement, which enables stakeholders to become more productive and deliver successful outcomes while optimizing public funds. Phase 1 Save to Invest Process simplification: Patients are more easily managed with in-depth health intelligence. Enhanced decision-making provider and care manager can predict high-risk cases and hidden factor and, then act. Phase 2 Expand the experience Intelligent routing patients at risk are better prioritized and routed to correct care support. Control center Cross agency collaborations are more streamlined for prompt action. Intelligent dashboard Providers and care manager receive real-time updates featuring next best action Phase 3 Enable Business End-to-End outcomes Care management productivity and health outcomeshave greatly improved. The approach also builds a foundation for HHS agencies to adopt other emerging technologies, including digital avatars, conversational AI, autonomic computing, augmented reality and virtual reality. This drives improved constituent engagement, which enables stakeholders to become more productive and deliver successful outcomes while optimizing public funds. =====================

Navigating the Digital Journey in Insurance

----- Arcticle source ----- https://www.infosys.com/insights/data-analytics/navigating-digital-journey.html ----- Insights Data Analytics As various industries reap the benefits of digital transformations, the insurance sector needs to adopt technology as a hedge against ever-increasing risks. In this article, we explore why insurers need to turn to data and analytics to not only stay afloat, but also meet the rising expectations of consumers. The insurance industry safeguards diverse assets and covers multiple risks, including oil and gas facilities in the deep sea, subsurface structures in megacities, employees and cyber systems of digital enterprises, commodities and perishables in transit across continents, and the reputation of risk

managers. The risk quotient, however, increases exponentially with the meteoric rise in population and economic activity, and the corresponding impact on the environment and society. In addition, stringent solvency regulations, low-yield assets, penalties for negative spread, and fierce competition only increase the odds for the insurance industry. In such a scenario, global insurance companies can reduce their liabilities by adopting a holistic approach to investment structures. While insurance enterprises can redeploy capital based on risk-adjusted metrics, cross-border hedging and treasury management strategies still carry risks. In such situations, digital technology allows insurers to transform core systems by offering innovative solutions for unforeseen risks. It helps enterprises keep pace with the social, technological, environmental, economical, and political landscape by anticipating requirements and identifying opportunities in real time. Seamless connectivity, automation, and data analytics alter the entire insurance value chain, which comprises products, underwriting, distribution, and claims management, across both personal and commercial lines. Price cannot be the only differentiator in insurance. Unlike comparison shopping for books, shoes, and phones, a policy is not a standardized product that can be easily compared before making a purchase decision. Risk protection requirements vary from one individual / business to another. Moreover, due to differences in liability categories, deductibles, exclusions, restrictions, riders, and claim settlement practices among insurance carriers, insurance cannot be commoditized. Yet, customers accustomed to the convenience of online comparison shopping expect insurance quotes to be offered à la carte. Digital channels help insurers offer a premium vis-à-vis cost of risk-mitigation comparison to help customers make informed decisions. It is not a good practice to strip down insurance products to accelerate the quotation process or gain a price advantage. A denial of claim due to insufficient coverage will incur a prohibitive cost for the insurer as well as the insured. Further, millennials share their experiences on social channels without the back story, only adding to insurers' woes. Digital channels should thus save them effort, time, and money while providing customers with visibility into service levels. Every policy must fulfil its objective: Ensure adequate protection and facilitate smooth settlement. Consequently, purchase of an online health or auto insurance plan can mimic grocery purchases from Walmart. Claims transformation programs powered by automation tools and intelligent bots can raise the bar in customer experience. Bots will eventually eliminate middlemen — such as insurance brokers and independent agents — who are quickly being made redundant by the do-it-yourself millennial generation. Significantly, digital intermediaries rationalize costs, reduce turnaround time, and boost efficiency across the underwriting, premium collection, and claims settlement processes. Smart agents can be integrated with big data analytics and social media in order to enhance marketing and sales. Chatbots blend contextual content with artificial intelligence to enhance customer service through meaningful voice conversations, instant text messaging, and proactive content distribution. Automated processes and seamless collaborations ensure 'zero distance' to the customer. However, such disintermediation shifts the responsibility of brand building and marketing to the insurance carriers. The online product suite should address the broad spectrum of insurance needs, engage customers who 'search' for products, share comprehensive information to replace advice from agents, and enable equitable comparison to close a new

policy. For customers who prefer interactions with agents, enterprises should enhance the independent agency model with a digital sales ecosystem for real-time collaboration. The combined use of telematics, sensors, global positioning systems (GPS), and digital devices enhances the value of insurance products. Connected homes with smart security solutions benefit from lower rates on policies as well as prompt service in the event of a security alert. Progressive Corporation, National General Insurance, and several other leading auto insurers offer behavior / usage-based insurance products that reward safe driving and low usage. Real-time monitoring of vehicles minimizes the risk of theft and ensures swift response to accidents. Further, the social benefits of pay-as-you-drive auto insurance include fewer accidents, less traffic congestion, and reduced carbon emissions. Digitization is unleashing new business models and products that redefine service. Swiss Re collaborates with local insurers and the Syngenta Foundation for Sustainable Agriculture (SFSA) to provide index-based weather insurance coverage to farmers in Kenya and Rwanda. The project, funded by the International Finance Corporation, offers insurance as a business service to marginal and large farms by using weather stations for automatic claims disbursement. The agriculture micro-insurance model covers inputs as well as harvests of crops. Weather data from monitoring stations is used to determine insurance payouts during a crop failure caused by excessive rainfall or drought. Payment is made via a mobile transfer service without farm visits. Risk managers and insurance professionals need visibility into risk characteristics, claims statistics, and emerging threats, in order to target customer micro-segments, accurately underwrite policies, and effectively manage claims. To this end, the Internet of Things, social platforms, and mobile apps accumulate and disseminate contextual information. Additionally, real-time data feeds from a digital ecosystem provide visibility into potential risks, which pave the way for a superior customer experience across the insurance lifecycle — initial research, moment of purchase, and settlement. Data-oriented enterprises collect demographic, behavioral, asset, location, and other types of information in comprehensible formats, and provide interfaces to consume / monetize this data. Digital insurers become more responsive by listening to customers. For instance, a mobile application from Progressive Insurance uses a digital format of a driver's license to generate an auto insurance quote for policy seekers. Several insurers leverage apps to improve auto claims management; wherein policyholders initiate the claim from the accident site by uploading photos on the spot. In addition, drones are now being used to accelerate the assessment of damages when site visits by an appraiser are unsafe or time-consuming. Analytical tools capitalize on the customer's digital trail — such as telematics apps, connected home devices, health-monitoring wearables, spending patterns, and social interactions — to generate real-time risk profiles. Credit risk scores help insurance companies determine liability limits and deductibles, and pre-approve plans. Moreover, accurate risk assessments help insurers offer discounts and bundle requirements / products to minimize the cost of coverage. Predictive analytics platforms connect the dots between diverse data sources to anticipate risks, including fraudulent claims. For example, data from a telematics device plugged into a car monitors driving data, while also transmitting its location data. Analytical solutions integrate this data with information from other sources, such as healthcare records and traffic

monitoring systems, to identify and prevent processing of false claims. Simulation models facilitate risk evaluation while minimizing dependence on old claims records. This helps insurers offer adequate coverage and to better serve high-risk segments. Advanced modelling helps forecast diverse risk scenarios, from damage due to faulty plumbing in a high-rise building to production shortfall in a wind farm. Most importantly, it prevents overselling, especially in health insurance. Brokers often pitch wrong plans or oversell coverage. Insight-driven pricing models make use of an applicant's data and consolidated statistics to rationalize the cost of personalized healthcare plans. Big data analytics helps configure products with benefits that transcend policyholders and financial criteria. Insurance solutions that align premium rates with a customer's driving history, lifestyle, well-being, and energy efficiency help achieve socio-economic goals through investments in wellness products, hybrid vehicles, green buildings, energy efficient industrial equipment, and renewable energy. The insurance industry lags in digital adoption. Digital tools are not used uniformly across business functions and lines of business. A digital transformation will help insurance carriers bundle products with an added layer of experiences, configure new forms of coverage for emerging risks (including self-driving fleets and cybercrimes), stave off competition from non-insurers and peer-to-peer insurance companies, and stabilize industry growth.
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Predicting Equipment Failures

----- Arcticle source ----- https://www.infosys.com/insights/data-analytics/predicting-equipment-failures.html ----- Insights Data Analytics Business Challenge An oilfield services company wanted to be able to predict breakdown of equipment producing a critical component for generating shale gas. Infosys View Enterprises aspiring to be part of Industry 4.0 must focus on making existing machines smarter by combining the capabilities of Engineering Data Analytics and AI. Business Outcomes And more... Read about the client benefits and the 5 best practices drawn from this engagement. ======================

Predicting Future Business

----- Arcticle source ----- https://www.infosys.com/insights/data-analytics/predicting-future-business.html ----- Insights Data Analytics Business Challenge A financial services company wanted to use predictive analytical models to be able to forecast business volumes for various product lines in a timely and efficient manner. Infosys View Statistical Analysis System can be used to build statistical models to deliver marketing and customer insights, meet risk and compliance needs, and create planning and optimization solutions for clients. Business Outcomes And more... Read about the client benefits and the 5 best practices drawn from this engagement.
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Professional Services Firms: Providing Better Services, Deeper Insights with Data

----- Arcticle source ----- https://www.infosys.com/insights/data-analytics/providing-better-services.html ----- Insights Data Analytics If you are wondering what makes professional service firms flourish, especially those that offer audit, tax and advisory services, well it's a combination of their deep expertise, differentiated services and relentless focus on client success. But what does this translate to when the firm also needs to address fee caps on audits, tight regulations, and the demand for deeper insights quickly. The answer lies in agility and maximizing the use of data. Making the most of data at the enterprise level Companies get their transactions audited quarterly, once a year, or continuously depending on the regulations that they comply with. Each industry also has several different parameters for conducting audit and taxation. For instance, it is acceptable for the health industry to have 3%-4% expenditure in unmanaged transactions, but this would be a big no-no in the financial services industry, where unmanaged transactions cannot exceed 0.5% of total expenditure. There are similar regulatory parameters across departments, states, regions, and countries. Add to this the fact that enterprises – depending on their size – have millions if not billions of transactions each year and a professional services firm has humungous quantity of data points to review. To address this situation, most firms are required to audit samples based on risk profiling. Even then, this is an effort-intensive task, and automation is emerging as a trustable option to effectively do repetitive work which is often considered 'hygiene'. And when professional service firms need to up their game – introduce speed, accuracy, insights, and cost-efficiency – they can leverage the power of data analytics, machine learning, artificial intelligence, and data visualization platforms. This allows professional service firms to review every single transaction, and data visualization bubbles up rich insights and recommendations. With ML and AI, professional service firms can also collate and review data for multiple years. Visualization dashboards can enable tax consultants to drill down to a granular level, unearth deeper and complex trends and use these to the clients' advantage. For instance, the procurement department of an airline preorders excess fuel during a particular month, which exceeds the legal stipulation. The audit firm accessing historical data can inform the client that while this was acceptable in the past, it is no longer legal. Similarly, internal information could also be combined with economic market trends and the client could be advised on the correct approach to align with existing circumstances. Another area where data empowered by automation can play a crucial role is in Mergers and Acquisitions (M&A). With hundreds of millions at stake, the professional service firm managing due diligence needs to be accurate and drill down to the very last transaction. Systems built on business rules can review workflows and transactions, and enable strategy, advisory, and deal teams to easily read historical data, recent trends and make the right recommendations. Making data work beyond the enterprise While data powered by automation plays a key internal role in improving enterprise-

level monitoring and assurance it can play an external role as well. Keeping in mind factors such as global regulations, economics, client portfolios across geographies, and related complexities, data can be accurately analyzed, benchmarked and standardized. More so as regulators closely monitor compliance. For instance, legal documents and contractual agreements can have different meanings in different industries, auditors ensure that the client is consistently compliant. Regulatory bodies are favorable towards the use of software in compliance when it is also supported by the intervention of auditors. As professional service firms usually provide audit services to many clients, they are able to observe industry trends early and as they emerge. These insights can be used for competitive advantage or to enable clients to stay compliant. For instance, these insights could be used to build AI models that are reusable across the industry. Any compliance or regulatory changes – for instance, geo specific, or revenue split across entities can be managed by AI models. These can alert auditors to anomalies. Previously, these trends were observable only to highly skilled personnel. The added technical validation provides better quality outputs even with changing regulations. Professional service firms can write about these trends and observations, educate clients and enhance their credibility. For instance, a professional services firm notices that their client is spending more on transport and advises them to shift to electric vehicles which are cost effective and also offer tax benefits. In turn, the client could write about how they as an environmentally conscious company actively engage in reducing their carbon footprint. Certain geographies have a mandate to rotate auditors every 4 or 5 years. When this happens clients need to determine the requirements of the new auditors and supply that data. If a governing body publishes standards of data - a full set of requirements that can be leveraged by any auditor - this will make the task of the client and their succeeding auditors much easier. Similarly, on the tax business, standard data requirements for tax filing would help immensely. Data visualization and data auditing can become game-changers With automation, data from an enterprise ERP can be converted into meaningful insights without human intervention. Data can be used in new ways of auditing, say by applying standards to workflows and auto-completion based on history. This can assist not only in auditing, but prompt the right data points based on history, extract the data and visualize it post-processing. Data security can be a concern during auditing and both professional service firms and their clients need to plan for cross border data policies while applying automation, analytics, and data visualization. Automation enables frequent if not continuous auditing as required by regulations. AI can be used to achieve a high level of assurance cost-efficiently, resulting in better quality auditing, and reduced risk and liability. Data from the tax and auditing systems can also be leveraged not just by the professional service firm but the company as well. A single transformation platform which houses both historical and current data can be used by c-suite executives to access insights into areas which were earlier inaccessible. For instance, if an IT company is engaged in R&D and their work can benefit the public at large, or a company invests in renewable energy, they could access tax reliefs for their technology and people investments. Informing the c-suite that they can capitalize on these tax reliefs allows them to make larger investments in a particular area. The combination of analytics, AI, and data visualization helps bridge the gap that existed in many parts of large organizations and

build more accurate continuous data-driven solutions with less human interventions. =====================

Making the Most of Data

----- Arcticle source ----- https://www.infosys.com/insights/data-analytics/real-time-data.html ----- Insights Data Analytics In the digital age, data is often termed as the new oil. But just having it is not enough. Much like oil, data needs to be dug out, refined, and processed to make it usable for taking business decisions. A leading confectionery brand had plenty of data, but not the processes to glean insights from it, and hence make it useful. See how Infosys helped and the five key takeaways from the project. =====================

Data Analytics

----- Arcticle source ----- https://www.infosys.com/insights/data-analytics/success-stories.html ----- Insights Analytics for Incident Management Predicting Future Business Analytics to Avoid Risks Analytics for Industry 4.0 Automating Big Data Testing Big Data as a Life Saver Predicting Inventory Requirements Making the Most of Data Predicting Equipment Failures Insights Insights Insights Insights Insights Insights Insights Insights Insights =====================

Technology Amplifiers for the Retail Customer Experience in 2017

----- Arcticle source ----- https://www.infosys.com/insights/data-analytics/technology-amplifiers-for-the-retail-customer-experience-in-2017.html ----- Insights Data Analytics I find it extraordinary that shares of Amazon have a price-to-earnings ratio of 173.35. That is amazing for any stock, but Amazon's unique situation tells us something important about the retail success of the company. Especially when it comes to amplifying the customer experience. That is, investors in the stock market place a premium on Amazon's ability to innovate and make its website and associated digital devices and platforms a seamless, one-stop shop for today's plugged-in consumers. Why else would a company have such a high p/e ratio? The answer: Investors have confidence that the company will keep pushing the digital envelope. As I prepare for the annual "Big Show" of the National Retail Federation, where Infosys is presenting a host of tech showcases, I can't help but give readers of InfyTalk a brief preview. I am constantly asked what I see as the top technologies that amplify a customer-centric retail experience. The fact is: You don't have to be a global retailing giant to harness these technologies. They are available to all, and if you are able to get the combination of technology with responsive customer strategy right,

you could well be on your way to being the next big thing. Here are my top technology bets for retail in 2017: Big Data: Retail sales through digital channels grew by a significant 23% in 2015 and as more customers go digital and mobile, this growth trajectory will continue. As online buying increases, so does the digital footprint of customers, and it makes sense for retailers to gather data from a host of digital platforms so as to better understand their buyer. However, big data comes not without its own challenges. Some companies like Macy's have got closer to unravelling this mass of data when they were able to realize a 10 percent growth in sales, largely attributed to big data. However, analyzing millions of data points, nudging out hidden insights – like how weather patterns are linked to in-store buying behavior, or using data from web searches and social media conversations to predict a spike in demand for a particular product, and aligning decision making to these findings – is something retailers need to smoothen out. Machine Learning and Analytics: It's well known that retailers - especially of the Big Box variety - use sensors, beacons, and wi-fi to know when a customer is either in the store or on the website, or both. One of the best developments of amassing all that consumer data is 'planogramming', which is the act of laying out a store to optimize a bricks-and-mortar experience. Retailers can work with consumer packaged goods companies to determine where, for example, their selection of laundry detergents should be displayed. And there is an organic way customers prefer to walk through a store that can be captured through machine learning and analytics. The in-store sensors and beacons relay important information about not only what she is buying, but how she progresses through the store. Websites are no different. There's a certain methodology to how each customer clicks through a site and loads items in the e-cart. Thanks to data from sensors, beacons and machine learning coupled with analytics, stores and websites can forecast inventory and experiment with pricing to improve the customer experience. To see how machine learning is being used in a highly sophisticated way, I can't help but look a little away from retail toward the transport industry. Here, Uber has effectively used machine learning on a large scale to better predict the travelling habits of its customers, improve its maps and even create algorithms for its autonomous vehicles. Retailers can definitely take a leaf out of Uber's approach. Chat-bots: With retail online sales on the increase, combining visually rich apps and chat-bots are a great way to offer a personalized customer experience. These AI-powered bots can be integrated with sensors and message notifications to know when a customer is in the store and becomes accessible through a smartphone. Customers can chat with these animated bots, ask them where certain items are, or when a big sale is scheduled, or simply where the clothing department is located. An artificial intelligence (AI)-powered ultra-efficient chat-bot interface can reshape the way retailers do business as they work alongside human sales associates. After a particular point in the conversation, when it is clear what a customer needs, the human associate can take over from the chat-bot, and with a digital pad help a customer locate the right color or size, and afterwards - the digital device becomes a check-out kiosk too. North Face wanted to help customers on their website pick a jacket from an array of 350 options. The choice of jacket also depended on the weather and style preferred by the customer. North Face leveraged natural conversations through an intuitive, dialog-based recommendations engine to ask questions to their customers,

better understand the need, deliver a highly personalized experience, and offer the most desirable set of jackets. Chat-bot technology got a huge fillip recently, when Jarvis was launched at Mark Zuckerberg's home. In all likelihood, AI chat bot assistants will truly power conversational commerce and enable customers to access a seamless omnichannel retail experience . Blockchain: Today Millennials and gradually, the rest of the consumers as well, are becoming cognizant of the source of raw materials and manufacturing processes. The thrust is towards sustainability, and blockchain as a technology enables the development of a tamper-proof digital trail for a product. I meet more and more customers who are interested in how and where products are sourced, and today it is possible to know when, where and by whom cotton was harvested, for example; where it was warehoused; when and how it was processed; how it was transported to the garment factory; when, where and by whom the fabric was converted into a garment. A product that boasts of a fair trade, eco-neutral provenance commands higher prices and engaged customers - two things every retailer loves. Ascribe, a startup gives us a glimpse of blockchain in action as it lets artists upload their digital art, watermark the definitive version, and share it online. It simplifies the process of creators claiming intellectual property rights. In conclusion, customers, whether millennials or not, are becoming digitally savvy and so retailers have the opportunity to capitalize on a host of AI-powered technologies to actively participate in the purchasing process and make it personal for their consumers. =====================

Creatively Logical – Accelerating Digital Transformation with Data and Design

----- Arcticle source ----- https://www.infosys.com/insights/digital-future/accelerating-digital-transformation.html ----- Insights Digital Future For more than 15 years, Infosys worked with a major global bank headquartered in the US to create much of the IT infrastructure that underpins the organization's enterprise systems. This work is vital because it provides the platform on which the bank's complex global operations run, but it is largely invisible to end users. As time went by, Infosys built a close working relationship with the bank and became a trusted partner, however, the bank seldom engaged with Infosys in any discussion around improving user journeys or experience for its customers. The bank trusted Infosys' core strength in technology services but rarely did they reach out for any of the end-user experience related initiatives. That changed in April 2018 when Infosys announced its agreement to acquire Wongdoody, a full-service creative and consumer insights agency that has won more than 250 national and international awards and repeatedly been named "Small Agency of the Year" by Advertising Age. The acquisition gave Infosys stronger capabilities than ever before in creative development, branding and digital customer engagement. So, when this global bank decided to digitize and improve key elements of the user experience for its business customers, Infosys could

now step up and offer to help in new ways. "Thanks to the skills that Wongdoody brought to the table, we won the engagement to reimagine the mobile banking experience for our client's B2B customers," says SP Singh, Vice President, Delivery Head at Infosys. Specifically, the bank asked Infosys to redesign its treasury function. "Consumer banking customers have a great digital experience these days, but corporate treasurers are still stuck digging through piles of paper documents to find all the necessary regulations governing the countries where their companies do business," explains Ben Wiener, CEO at Wongdoody. "Working together, Infosys and Wongdoody created a better experience for our client's B2B customers by integrating multiple data sets and presenting the information in an intuitive and visually engaging way." This all happened quickly too. It took Infosys and Wongdoody only a few weeks to develop a prototype. To generate excitement and awareness about this new solution, they leaned on Wongdoody's marketing experience to create a promotional video that could be shared internally and with prospective end users. Accustomed to working on tight deadlines, Wongdoody produced, edited and had the video ready for distribution in just three days. The smooth Wongdoody-Infosys collaboration made a strong impression with the client. "Your work elevates our message and brand," said one of the bank's executives. "It's slick, innovative and powerful. It stands out." Creative Solutions on Solid Platforms Infosys regularly works on massive digital engagements with timescales that measured in years. It has established proven, trusted client relationships that stretch back for decades. Wongdoody is accustomed to working on quicker cycles of days or weeks. The agency is comfortable with delivering results under the pressure of looming deadlines and pants-on-fire urgency levels. By combining their strengths to deliver the best of both worlds, Wongdoody can help Infosys realize its vision of offering clients agile digital at scale. "Wongdoody gives us tip-of-the-spear capabilities to transform our clients' digital footprints," says Singh. On the flip side, the merger enables Wongdoody to implement its creativity in new and powerful ways. "Joining Infosys gives us instant scale and expertise to leverage data and user experience insights to build brand platforms for the future," says Wiener. To apply this vision across its client base, Infosys is building a global network of Digital Studios that are designed to foster creativity, innovation, and collaboration among employees, partners, and clients. In these Digital Studios, Infosys has gathered an international team of experienced innovators who combine human insights with next-generation technology to help companies transform their customer experiences anytime, anywhere, and on any channel. "We have a scalable process to get the most creativity out of people," says Wiener. "We will use the Digital Studios to bring those lessons to a broad set of leaders who can drive results at scale while maintaining excellence in both design and execution." Creative Democracy: The Common Thread On the surface, a boutique agency like Wongdoody and a global consulting and IT services company like Infosys might seem to have little in common. In the popular imagination, IT experts are sober, logical and careful, while creatives are carefree, intuitive and impulsive. That's not the way that Wongdoody's award-winning Chief Creative Officer, Tracy Wong sees it. He says that the best creative decisions are made through logical, democratic processes. Wong believes that Infosys and Wongdoody work well together because both organizations value data-driven problem solving. "Logic too often goes out the window when evaluating creative

ideas," warns Wong. "Clients typically get the best results if they use logic to analyze data that gives them a better understanding of target audiences and what drives their behavior. Focus-group findings and data-driven insights often point you in the right direction for a creative campaign." In solving the complex, challenging problems facing organizations grappling with digital disruptions, Wong says it's crucial to have all sorts of people at the table—strategists, technology experts, and creatives—all working together in a democratic, egalitarian way to solve problems. "True, ego-less collaboration always produces the best creative solutions," says Wong. "If people don't check their egos at the door, the process will go sideways." Bringing B2C Techniques to B2B Wongdoody recognized a long time ago that the business decision-makers are people who can be engaged with the same compelling imagery, messaging and storytelling skills that creative agencies use to reach consumer audiences. Wongdoody brought this creative ethos to a multi-platform, integrated campaign it ran to raise awareness of a cloud computing service among C-suite decision makers. Combining a variety of media including broadcast, digital, social video, billboards, the campaign featured more than 200 unique whiteboard depictions of real cloud solutions. A smart, targeted media buying strategy made sure that the messages reached the target audience in major metro areas. Following the launch of the campaign, the client saw its business surge by 35%. Wong sees B2B campaigns from a brand-building perspective. "When you think of any digital product, app or experience, it goes through a design phase and then a deployment phase, but you also need to generate demand," he points out. "Our job as marketing practitioners is to attract, engage and acquire those customers. If Infosys helps a logistics company develop a digital product, we can use our brand marketing skills to engage employee and customer audiences to convince them to download and use the product." Infosys excels at building enterprise-level, durable technology platforms that deliver cost reductions, improve efficiency, and manage vast data flows. Wongdoody has mastered the art of continuously refreshing the experiences that live on top of those platforms to match changing consumer or employee preferences and needs. "Infosys has established a strong track record of delivering on the promises we make," says Singh. "This trustworthy reputation helps us attract new clients and also explains why the vast majority of our business comes from satisfied repeat customers with whom we have built deep relationships over many years." Having joined forces with Wongdoody, Infosys can now extend these relationships beyond the technology sphere to encompass design, branding and all the other creative services that clients need to accomplish their data-driven digital business transformation.
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Gamification: Building New, Meaningful Experiences

----- Arcticle source ----- https://www.infosys.com/insights/digital-future/building-meaningful-experiences.html ----- Insights Digital Future Gamification is the go-to idea today for making consumers love brands, buy products, and stay loyal. We analyze this trend through one of the most

resounding gamification success stories the world has ever witnessed — Pokémon Go. Games have been around for over 7,000 years — Senet, Mancala, the Royal Game of Ur, and more dot our history. Our past is replete with trials that pit competitors against one another for the chance to win. We are hardwired to compete — it is part of our DNA. The concept of 'gamification' too has been a part of our lives, even before there was a word to describe it. The British Parliament 'gamified' the development of a navigation device as far back as 1714 with the Longitude Prize. In fact, most people don't know that Charles Lindbergh braved the transatlantic flight because a hotel magnate named Raymond Orteig put up a prize incentive of US$20,000 in an attempt to catalyze the aviation industry. Brands have gamified the shopping industry since as far back as 1896, by selling S&H Green Stamps to retailers in order to reward loyal customers. Since then, we have gamified just about everything we can; from 'choose your adventure' books and movie serials to TV shows and video games through massively multiplayer online games (MMOGs) and branded entertainment. Brands have tried desperately to play in this arena, with mixed results. While they endeavor to employ game mechanics to drive brand engagement, many sacrifice a satisfying game experience by obsessing about the brand and their traditional return on investment. For every 'McDonald's plus Monopoly' or 'Starbucks Rewards' program, the marketing landscape is littered with failed attempts at creating emotional connections and tapping into the consumer's innate desire to compete and win. 'Nike+ Fuelband' broke new ground when it first arrived on the scene, gaining nearly 30 million users in just two years. What it offered was a way to not only gamify workouts by pitting users against each other to achieve their personal best, but it also connected them to a larger community that they could challenge and compete with to drive their fitness commitment to whole new levels. This social integration elevated a historically solitary, chore-like activity (working out) and turned it into a social experience that tapped into the human spirit of sharing, competition, and achievement. Once the wearable tracker market became cluttered, Nike pivoted away from hardware to focus on community and experience, with the more recent Apple Watch Nike+. At its best, gamification creates memorable experiences; and at the end of the day, it is the experience that consumers remember. In the good old days, a brand could just launch a TV campaign, throw in some print and radio, and watch their business boom. Why go through the expense of creating 'experiences 'when all you had to do was invest in a megaphone? Well, the times have changed. Creating a memorable experience that surprises and delights customers pays exponential dividends in terms of brand loyalty – eventually leading to profits that are sticky. Think of it this way: You can give a customer a good deal today and they will tell their friends about it tomorrow. However, savings fade over time and give way to newer bargains and newer savings. It's fleeting, much like getting a raise at work. It's exciting when it first happens, but soon after you expand your lifestyle to fit your new salary, you're back where you started — in need of a new fix. A memorable experience, on the other hand, lasts a lifetime. Niantic built it. And they came. What we wound up with is a fun experience, and the money followed. An estimated US$1.7million per day of in-app purchases is generated on Apple devices alone in the US, not including thousands of business location sponsorships. The magic of Pokémon Go is that, for the first time, brands have a variety of ways to leverage gamification that are

endemic to the game. Hence, the headlines: 'Pokémon Go is driving insane amounts of sales at small local businesses' 'How to invest in the Pokémon Go and augmented-reality revolution' 'McDonald's sponsors 'Pokémon Go' in Japan' By leveraging augmented reality (AR) technology to create real world gamification, Niantic has tapped into a player's desire for sharing and competition, while driving an 'electronic empathy' that connects them to the broader community. And now, they are taking it up a notch with the new 'Buddy System,' which will allow trainers to select specific Pokémon to 'bond' with. By making a Pokémon your 'buddy,' you can walk around with it and the game will reward you with candy. It's designed to deepen the experience by facilitating an emotional bond between the player and their virtual Pokémon. As Pokémon Go players search for creatures, local stores, restaurants, movie theaters, and other businesses are leveraging the opportunity to drive huge amounts of foot traffic, with both simple in-app purchases and creative marketing campaigns. Revenue opportunities are either seamlessly integrated or completely invisible to players, which allows the game to be pure entertainment, doing what it does best — tapping into the human spirit of community and competition. Here's how some businesses are playing: Gyms and PokéStops: A business that has been designated a PokéStop or gym will attract foot traffic without even trying because players flock to them for rewards and battles Virtual fishing leads to real sales: 'Lures' increase the rate of Pokémon generation in the area around a PokéStop. For a little more than a dollar an hour, businesses can drive practically guaranteed traffic with an impressive ROI Capitalizing on a location near a Pokémon gym: Gyms generate self-perpetuating traffic. Users meet at gyms regularly to fight each other for control. Businesses near gyms can capitalize on this by employing creative marketing techniques, ranging from giveaways to discounts Promoting local Pokémon on social media: Businesses that are PokeStops, or near gyms, can also promote rare Pokémon in their area to drive traffic and create referral programs. Many brands are striking while the iron's still hot, finding ways to reap the benefits of increased traffic and relevance by inserting themselves into the game. McDonald's became the first official Pokémon sponsor in Japan by turning its restaurants into PokéStops and PokéGyms. T-Mobile created a promotion to exempt the game from data charges for a year, provide US$15 Lyft rides to key locations, and offer discounts on chargers and battery packs. Sprint's Boost Mobile stores are attracting Pokémon Go players with 'lures,' alongside providing on-site 'Pokémon Go experts' and free charging stations. Yelp has added a filter to their site that helps players find restaurants or stores that have nearby PokéStops. UK retailer, Marks and Spencer, has engaged in a lengthy Twitter exchange about a customer catching a 'Muk' in their Liverpool store. Australia's ME Bank, Oporto, and Australian Bananas have posted Pokémon sightings on social media and Chobani yoghurt used their actual product as a lure. While everyone is trying to understand the success of Pokémon Go, the data shows how the game has tapped into consumer behavior and how this 'experience-first' brand is expanding beyond its 20-year heritage. Here are a few key highlights of the brand: Large fan base: We can't ignore the fact that this is a 20-year old brand with a large fan base that is emotionally connected to these characters. Much like a Disney or a Warner Bros., a whole generation grew up with Pokémon Mobile-only experience: While limiting the 'anywhere, any screen' nature of what makes many digital experiences

compelling, Pokémon Go is driving communities of gamers into the streets, making them travel from location to location and business to business, and encouraging them to engage with each other digitally as well as physically Catalyst of good health and wellness: While not a primary driver of the game, Pokémon Go is, unintentionally, driving health benefits that Nintendo Wii originally touted. On average, players are spending two to over four more hours outside than they previously did. Further, 43 percent of them have said that they lost weight while playing Promotes social networking: Gamers are comparing collections, competing with each other, meeting on the street, and congregating at gyms. It's bringing disparate people together because players are easy to spot and the outdoor and social aspects of the game are also being attributed to its appeal amongst women News-making: Record-breaking sales, unauthorized downloads, rumors of people falling off cliffs while playing, and the president of Israel posting a screenshot of a 'Meowth' in his office. Besides, having Justin Bieber, Demi Lovato, and Jimmy Fallon playing the game doesn't hurt either As 3D sensors and more sophisticated augmented reality and digital technologies evolve, their applications are limited only by our imagination. Advanced AR could allow brands to gamify activities to enhance otherwise ordinary marketing programs. Digital marketers could hide their products in unlikely places, contextually place a car insurance offer at a car dealership, or even position their product next to a competitor's. When you think about it, the possibilities are endless because the game enhances everyday life experiences. One thing is for certain — Pokémon Go is sure to teach us volumes about the potential of new technologies that drive gamified experiences to engage and delight consumers. Its current success provides further incentive to mature the technology to create what has yet to be imagined. Brands are well-advised to prioritize the customer experience, journey, and engagement to connect with their customers on a more visceral and emotional level. Ultimately, the companies that will win are those that pay attention to these seismic shifts in order to capitalize upon them when the time is right. =====================

The New Communications Industry Model: Be an Ecosystem Enabler

----- Arcticle source ----- https://www.infosys.com/insights/digital-future/communications-industry.html ----- Insights June 2018 Digital Future The TM Forum 2018 was the confluence for all telecommunication companies seeking answers to the challenges of the Industry. As a regular participant in the event, I was excited to see over 200 Communications Service Provider (CSP) companies attending this year and sharing their best practices, insights, challenges and more and all of them were around digital transformation. Nik Willetts, CEO, TM Forum, summarized the state of the industry, its challenges and the way forward very crisply in his key note. The communications industry needs to transform from being a connectivity provider to being an ecosystem enabler by changing the way the industry

serves its customers through new technologies, digital partnerships and, flexible and agile business models. From Being an Inventor to Being an Enabler Nik emphasized on two key demands on the Industry for it to be an ecosystem enabler: The Infosys Way to be an Ecosystem Enabler In alignment with TM forum's agenda, we, at Infosys, with our extensive experience working with communications service providers and Original Equipment Manufacturers (OEMs), believe the way forward to business agility is through business transformation that is driven by IT capabilities. We work with our clients on their digital journey with a three pronged approach: Energize the core: The infrastructure of most communications industry is over four decades old. To be able to support new digital capabilities and new ways of working in an agile environment, it is essential for CSP companies to refresh their existing infrastructure with a new genre of nibble architectures, exploiting AI, automation, Blockchain, cloud and more. For example, roaming and interconnect can be managed using Blockchain so that it becomes near real time and reduces revenue leakage. Reskill People: An organization with a modern core needs to prepare its people to respond with agility to the new digital environment. It is important to continually impart new skills and learning from technology domains and industries outside their own. Technology needs to be made usable by closing the gap between design and human-centric skills. Localization in delivery: In order to be relevant and be more contextual to the client needs, we focus on building local capabilities with continuous collaboration with our clients by setting up units where our engineers work side by side from the same location as engineers from our client offices. While the world of communications is being disrupted, the telco OEM space is set to experience seismic changes. The networks and hardware are moving from chip to cloud. At Infosys, we are partnering with a number of OEMs to help navigate this shift. We have done collaborative projects around industry specific solutions, utility transformations and uses cases, virtualization of network and more. TM Forum is an important partner for Infosys for the Catalyst programs that they run which bring together partners and vendors to solve existing and emerging business challenges. Infosys showcased five Catalyst projects at TM Forum. In the area of Mobile Edge Computing, our BladeRunner Catalyst demonstrated how we can create new revenue streams with network availability for operators such as Vodafone and Du in Dubai. It won the award for 'Outstanding Catalyst Innovation'. We also won the award on 'Outstanding Use of TM Forum Assets' for our 'Connected Citizens – a Smart City Enabling Digital Platform' Catalyst program. In another Catalyst project, we explored using existing systems and technologies such as Blockchain to transform and digitize systems. We also explored several technologies at TM Forum promoting Open Digital Architecture, using Open APIs. While we work at the strategic level through partnerships to come up with new innovative industry solutions, we continue to work in parallel with our clients at the ground level to help them navigate their way to the next level of digital maturity through our capabilities and deep expertise in digital technologies to deploy solutions in co-creative cycles of agile development. =====================

Dedicated Innovation Hubs for a Successful Approach to Modernization

Disrupting the status quo at big companies can be a difficult proposition. Though effective innovation introduces new ideas and can help improve the bottom line for businesses, it can also create a host of complicating problems. Many companies trying to innovate run into problems they didn't know existed, and their innovation efforts can drag on at great expense. However, there are some proven and successful innovation strategies. The best approach uses a dedicated "innovation hub." Why Innovation Efforts Fail There are several reasons innovation efforts can falter. The most common is that a company does not engage the right people. The most innovative employees are those who approach day-to-day responsibilities like entrepreneurs. These team members aren't afraid to find out what doesn't work and try something else. Many companies seek to hire people who think this way, but may not have the perseverance or the capability to bring concepts to life. Another cause of innovation efforts stumbling is that a company doesn't have a process or protocol for conceptualizing, planning and executing on new ideas. An effective approach doesn't have to be set in stone, but it must provide a healthy amount of guidance. A third problem can be the process itself. Many processes focus on ideation and incubation but don't facilitate scaling which is an important part of any proof of concept. Finally, there is teamwork. Even the most carefully orchestrated innovation efforts can fail if they don't engage partners who specialize in solving aspects of a larger issue. Sometimes, admitting when and where an innovation effort needs outside help, perspectives, or support can make the difference between failure and success in a business. The Solution: Innovation Hubs An effective way to overcome these problems is to use an innovation hub, which brings together developers, internal clients, external clients, and partners to design and build solutions using an established and tested process. Hubs also facilitate specialists from different functions, such as engineering and design, working together to develop radical new ideas. Hubs encourage creative thinking while applying discipline to the process of determining which initiatives are likely to be most fruitful. Take the case of a luxury retailer. In early 2018, the company wanted to revolutionize their customer shopping experience. Their goal was to incorporate real-time concierge service and tablet computers to eliminate the need for shoppers to go to a register. And they wanted to do it in under six months. The solution included portable point-of-sale (POS) units that link to the company's inventory in real time. The team redesigned the customer experience around the tablets instead of cash registers. Today, at stores using the pilot, the entire transaction runs through the portable POS. If a shopper sees a sweater she wants, she tells her concierge, the concierge puts the request into the tablet which pings the warehouse to check the inventory, someone from the warehouse brings out the sweater, and payment is handled right on the device. The solution was designed by the retailer together with Infosys in

one of five innovation centers we launched in the last year, including an 87,000 square-foot hub in Indianapolis. Another center is scheduled to come online in Arizona before the end of 2019. Five steps to innovation Infosys uses a tried-and-true five-step process to streamline innovation efforts within its centers: In addition to having a process, it is essential to educate design teams about innovation's potential. Infosys uses an "Innovation Gallery" for this, a museum-style area with featured exhibits, each of which tell a story about the development of a solution, emphasizing the intersection of business and technology, and drawing attention to the fact that technology should only be applied where it adds business value. How Innovation Hubs Unleash Solutions Following this process and prioritizing business value leads to benefits for companies and their customers. Because the approach is well-defined, clients can innovate within a budget. Also the five-step innovation process has the advantage of providing a clear endpoint that tends to keep teams stay focused on the problem at hand, and less likely to digress into "science experiments." The process also makes it less likely that the engagement will fall victim to scope-creep, and that team members will lose confidence or change their minds midstream. It also often helps companies achieve successes in short timeframes. The luxury retailer's project lasted six months. An engagement for a money-transfer service was completed in four weeks. The money-transfer company had a clear problem; they needed a way to send cash to people who weren't near any of the company's physical locations. After a few meetings, they settled on a concept for a lockable and secure, 3D-printed moneybox that could be attached to and delivered by a drone. An authentication app and code sent via text message would allow the customer to unlock the box. Field tests were a resounding success; the cash was delivered safely every time. And at the time of writing, the company is planning to roll out the solution in certain remote markets. Companies in every sector are feeling the pressure to improve their speed of innovation to stay relevant and maintain an edge. Yet many attempt to try and innovate alone and miss the opportunity to bring together different stakeholders to spark new insights and ideas. But by coming together with experts in innovation, and using a proven approach in a conducive environment, companies can maximize efficiency more quickly to design and build a brighter future. =====================

Immersive Learning in the Era of Digital Disruption

----- Arcticle source ----- https://www.infosys.com/insights/digital-future/digital-disruption.html ----- Insights Digital Future Human perception is a powerful ability that allows individuals to build their own understanding of concepts by gathering cues from their environment. Traditional channels of communication including spoken and written techniques, have their own limitation while communicating business ideas to stakeholders. Over the last few decades, we have moved from physical experiences to digital experiences in a steady manner. With advancements in mixed reality technologies, we can now provide enhanced experiences for simulating, learning, training, modelling and visualizing abstract business concept,

regardless of geographical and spatial setup. While today's enterprises are transforming their business and operating models by leveraging digital technologies, it is important for them to adopt new learning methods to facilitate employees to upgrade their skills and help consumers adopt new products or services. New Learning Paradigms Enterprise ecosystems today have progressed from technologies that helped participants to see & hear to those that enable them to sense. Digital engagement, a convergence of sensory, cognitive computing and immersive experience technologies provides a plethora of opportunities to enable adaptive learning. This is being realized today by Augmented Reality (AR) & Virtual Reality (VR) along with various sensing technologies that enable accurate information gathering allowing enterprises to reimagine communications by designing, creating and delivering rich immersive experiences. Through such experiences we can understand real world scenarios and situations through the lenses of the virtual world. These can then be personalized for participants which was not possible earlier through traditional communication channels. Immersive technologies are powering new possibilities where the amalgamation of underlying technologies such as Internet of Things, Machine Learning and Artificial Intelligence are enabling the design and development of NextGen experiences. It is also important to enable continuous learning in order to arrive at the best knowledge imparting strategies. Advancements in Learning Ecosystems through Virtual & Augmented Technologies Enterprises face a dual challenge of training employees and customers on an on-going basis. To add to this, enterprises are observing the 'Uberization' of staffing and services which makes it challenging to provide continuous training for an ever changing workforce. It is often stated that training is one of the biggest budget line items of an organization. This encompasses employee, staff and client training. According to the Brandon Hall Group's 2016 Training Benchmarking Study, e-learning is the most expensive learning experience to develop, and video learning is the least expensive. This necessitates a relook into traditional training approaches employed by enterprises. Traditional induction training is carried out in classrooms and is usually instructor led or delivered through a digital tutor program. This is an area that can become more experiential by providing contextualized learning to the participants of the training program. Digital engagements help enterprises to cope with changes in their learning ecosystems. For instance, Japan Airlines is experimenting with training co-pilots in a virtual cockpit. Walmart had deployed VR technology to train its staff in 187 training centers for different types of learning, including how to service customers, preparing for situations like Black Friday or emergencies where you can't set up a simulation in a store, etc. Fast food chain KFC has implemented VR-based employee training where workers are taken through the process of cooking chicken in just 10 minutes, as opposed to the 25 minutes it takes through Interactive Responsive Learning (IRL). At Infosys we are developing a new learning platform using VR for enabling employees to experience scenarios like 'VR based Interactive Safety Training Programs' for enabling parking skills and guidelines for vehicle parking during field repairs. We are also developing a mixed reality based solution for effective store planning. Expert Assistance: Real-Time Remote Assistance Working along with experts is one of the most preferred options to learn on the job, but it is not a scalable solution. Many organizations grapple with the problem of expert

knowledge, as it is hard to capture tacit knowledge in an explicit format. Integrating AR technology with enterprise collaboration solutions helps one to reach out to remote experts on a need basis. This not only saves costs but is far more efficient than traditional training done over documents or video tutorials. A useful innovation here is by Atheer - the company has developed an Augmented Interactive Reality (AiR) smart glasses platform which enables users to collaborate with remote experts via video calls and receive guidance through real-time image annotations to increase efficiency. At Infosys, we are working towards building offerings to transform current 2D based trainings into an immersive VR based training experience for scenarios such as compliance training and equipment repair training. We are also working on providing on the job training/learning aid to field engineers for identifying, fixing & maintaining underground field equipment. We are developing solutions to provide need based expert assistance by integrating enterprise collaboration platforms with AR technology. Contextual and Personalized Training Experiences Training is usually need driven but does not capture the specific needs of individual learners. In a digitally enhanced ecosystem, such specific needs can be captured to provide personalized training which can be more efficient and effective. For example, in the context of an employee's relocation, or change of roles, sensing technologies can help with employee location identification and current work profile. By leveraging Augmented Reality technologies and Conversational User Interfaces like chatbots, enterprises can provide context specific experiences. At Infosys, we have pioneered a world- first virtual reality tennis experience delivered on PlayStation® VR, that transports fans into a live stadium environment from wherever they are. In addition to creating 360 degree views of matches from different viewing angles, we also integrate tennis statistics into the screens, so fans can truly understand the science behind all the action. We have also developed AR-VR solutions powered by data analytics for ATP Tennis Tournaments, which utilizes historical / real-time tournament data including statistical data on players' movements. Infosys has created an augmented reality HoloLens experience showcasing a tennis retail store of the future. This interactive 3D space provides virtual dashboards with holographic displays. Users can try different products without really trying them on – like picking a tennis shoe, changing its colors, increasing its size, and even getting access to the entire store inventory – all with just voice and gestures. These solutions help provide a contextualized and personalized experience of the tennis game and also helps players to get deeper insights into their game. Conclusion At Infosys we strongly believe that immersive learning in an era of digital disruption, will enhance the overall learning experience. With advancements in immersive technologies , we are today better equipped to provide experiential learning that can improve the overall effectiveness of an enterprise. Infosys is committed to incubating and scaling technologies that can help future-proof our business ecosystems and help enterprises to scale their transformation journey using Adaptive Learning methods. Our constant exploration of technologies and our contextual experimentation with client partners is helping us navigate through such digital disruptions.
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Poor IT Service Experience Can Disrupt your Digital Plans

----- Arcticle source ----- https://www.infosys.com/insights/digital-future/digital-plans.html ----- Insights Digital Future We all love what a smart product can do for us. Take Alexa. Think about Watson. Almost every day businesses are finding new opportunities in applying Artificial Intelligence (AI) to solve major challenges in their industry, in developing new, innovative products and services and in solving problems around their operations and other functions. Similarly, buoyed by the promises the technology brings, customers and end users are expecting and demanding more from the systems and the environment around them. As we continue to develop AI enabled IT systems, we need to think about how it will impact service support and delivery. Read our Point of View 'Achieve 'digital reality' with an AI-powered core engine' on Infosys.com for more information. What Hurts IT Operations the Most IT service management gets complex not just because there is a rise in AI powered systems, but because most of the organizations still have a mix of the old and the new infrastructure from multiple providers that often function in silos. Enterprise policies often do not take care of a uniform SLA. And the biggest challenge is that - no one really spends time visualizing how a missed SLA impacts business. The challenges, thus, center around operations, governance and user experience. And AI can play a significant role in addressing these challenges. What Will Make IT Operations Tick in a Digital World Hardware typically creates silos, islands of systems that are run by different vendors. A digital world envisions an organization that is well integrated, where the interplay between systems are well defined, clearly visible and run in tandem. Software can act as the thread that ties together the fragmented hybrid IT infrastructure of an organization for a synchronized functioning of all its operations and data related processes. We can no longer afford to employ experts who specialize in a particular vendor technology or platform. Rather the focus has to be on solving problems around a business function irrespective of the technology domain being used. Making software the brain behind your IT Infrastructure is key to achieving this. It will also help make IT operations and infrastructure more agile, cognitive and automated. So What Needs to Change Everything moves in real time in a digital environment. One needs to be fast, needs to have deep visibility into functions, and have the ability to respond timely and accurately to resolve issues as soon as they arise. Automation is key here. Next is the skill to be agile, to re-engineer workloads as per demand and past experience, and lastly to create a great user experience that is meaningful and pleasant. Organizations need to think over and strategize about: In an attempt to help organizations, answer these questions, Infosys designed an Integrated Service Experience Transformation Framework that provides guidance on how to rewire the IT infrastructure and improve the service experience of users. Read our Point of View 'Achieve 'digital reality' with an AI-powered core engine' on Infosys.com. =======================

It's the Happy Slam. For us too!

Picture this. A packed stadium around the tennis court. So full that it feels like even an extra mug of that beer at the stalls will take some much-needed elbow room. Everybody is sweating a tad more than is comfortable. But no one seems to care. It's almost surreal. Expectant, excited and charged, the sound of the ball syncs perfectly with the several thumping hearts. Only to be broken by ear-splitting screams of delight from fans when their favorite player makes a winning move. A billion tennis fans around the world know exactly what I am talking about. They know the feeling. They love it. In a way they care about few other things. And I find myself wondering what it'll take for a brand to be the object of such passionate adulation. That was the thinking that got us started on our sports marketing journey. And it's the same aspiration that has got us where we are today: shaking hands with Tennis Australia as we become their Official Digital Innovation Partner for the Australian Open http://www.infosys.com/ausopen. And with this partnership we aspire to further enthrall tennis fans. To wow them with experiences they haven't even begun to imagine. And find ways for brand Infosys to become an inextricable part of that fan euphoria. We know a little help from technology and lots of natural human ingenuity is what it'll take for us to serve it, smash it and win it. After all, over the past three years that has helped us completely reimagine the player and fan experience for ATP, the Association of Men's Tennis globally. Now we will help Australian Open navigate their next. We are exploring leveraging a number of technologies that can include our AI platform to gather insights from the millions of records of game data, building holographic simulations of game play and strategy, leveraging next-generation VR experience to simulate on-court viewing from anywhere, or our deep analytics to analyse and perhaps predict player performance - it's truly about creating the future of the tennis experience. As a marketer I am excited too - this is not just a brand or a tech partnership, it's a brand AND tech partnership. For I firmly believe that a credible brand of the future is likely to be the one that participates in creating that future. And sports as a platform does offer that unique playground - billions of fans around the world, captive eyeballs and footfalls (in the marketer's lingo) and immense tech potential to serve the digital-first generation. Instead of just marketing our technology to these fans, we have chosen a path of marketing with technology - not just talking the talk by plastering our brand across crowded sporting extravaganzas, but walking the talk by making the brand integral to the technology experience. For us the game plan now is very much like the game of tennis – as Billie Jean King said, "A perfect combination of violent action taking place in an atmosphere of total tranquility". It's the Happy Slam. For us too.

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Leapfrog Barriers with Innovations in a Disruptive World

Insights Why does protectionism happen at all? Digital Future Protectionist trade policies and traditional governance can create barriers for digitalization and have severe consequences for businesses, but market participants can circumvent or overcome such barriers through innovation, particularly leap-frogging ones. Prof. Dr Jürgen Weigand, Professor of Economics, shares his view on how to break traditional barriers in a digitally disruptive world with innovation and strategic thinking. Digitalization in a restrictive trade regime Q: While digital disruption is actually helping lower traditional trade barriers, recent developments like America First have threatened open markets and globalization. In the event of a more restrictive trade regime, what sectors of industry would be impacted and how will organizations make the most of digitalization? What does this portend for companies like Infosys that have significant international operations and revenues? Prof. Weigand: Digital disruption impacts business organizations in at least two dimensions: Protectionism affects advances in digitalization in two ways: While physical barriers can harm the infrastructure and eco-system of a business, digital barriers can have severe consequences for an entire business because they expose its core idea and purpose to risk. Trade barriers, such as quotas, tariffs, subsidies or bans, put significant pressure on a company's value chain encouraging it to "produce where it is consumed". Historical experience tells us that protectionist trade policies target physical products and manufacturing industries, repudiating Ricardo's paradigm of comparative advantage of nations and thus lowering overall economic welfare. However, this protectionist approach may induce market participants to circumvent or overcome such barriers through innovation, particularly leap-frogging ones. Digital filtering, censorship and data regulations are lethal to digital products or services, such as social networks, news services, web searches, photo and video products, digital finance, analytics services, and digital offshoring industries. These political developments are threatening the core businesses of companies operating globally, such as Infosys. Novel laws and regulations have been initiated in some countries to define domestic data and services as part of a country's sovereign territory and disallow their processing and delivery in or to a foreign country (e.g., European privacy law forces companies to physically store data in the EU). Therefore, a countermeasure would be risk diversification across multiple countries, building deep trustworthy relationships with customers and abiding by their cultural and economic needs. Traditional Governance in a Digital Era Q: In a digital environment, organizations function differently - their business cycles are faster, operations don't work in siloes but are integrated, with social media playing a key role; they no longer have complete control over their branding. Last but not the least, protecting personal data and meeting regulatory requirements are a major responsibility. Given these, what are the challenges for traditional governance mechanisms as organizations adopt digital technologies? Prof. Weigand: What you refer to is the typical VUCA

(volatile, uncertain, complex, and ambiguous) environment described by Bennett and Lemoine (2014), where markets become more volatile, competitors and societies become more uncertain, businesses operate in a more complex environment, and stakeholders' interests and business objectives are more ambiguous. For example, Infosys as a multinational company must adhere to dozens of unique regulatory environments and cultures. Start-ups and increasing speed of change Start-ups are disrupting the digital economy at an accelerating pace, compelling large corporates to respond by either acquiring these challengers, exposing the corporate's core business to dilution, or risk losing market share to the newcomers. Continuing territorial conflicts over resources (Middle East), diverging political interests (EU), or hyped technologies like Bitcoins induce unpredictable market movements such as large price fluctuations. Unforeseen technological disruptions or protectionism can make complete business models obsolete. This is accompanied by the overall theme of the digital economy and an exponentially increasing speed of change. It's a great time to leap-frog From a systems theory perspective, this means that from top to bottom, from the high-level societal perspective through the firm level perspective down to the individual level, relationships and environments are increasingly complex dynamic systems. A complex dynamic system cannot be adequately controlled, and thus traditional management tools will become less useful, or might even be replaced by intelligent artificial systems. In my opinion, the focus needs to shift from traditional leadership in the world of linear business models to strategic leadership in the era of the digital economy, supporting and guiding people to deal with exponential growth and changes. VUCA in the context of the digital economy induces changes for management and leadership positions. Following Mack et al. (2016), management must implement more flexible work frameworks, emphasizing agile project management and workflows, self-regulating mini-organizations, collaboration, profound risk-management, and a digital mindset and culture. Specifically, corporate leaders need to plant in the minds of their employees - with mindfulness and appreciation - the corporate seed of vision, mission, and strategy and nurture it to let it grow. There is no single point of communication anymore between the firm as an organization and its external environment (cf. the traditional public relations unit). Due to ubiquitous connectivity and its implicit global reach, every employee is a "press speaker" of his/her company. Hence there is the necessity and need for a profound all - encompassing cyber-security strategy, which shouldn't just be considered as a hygiene factor, but, much more than that, as a value proposition to the customer. In this digital challenge, leadership needs to provide clarity of vision and a sense of direction, filter the VUCA noise, and empower and encourage employees to experiment in order to drive the business. As Johansen and Euchner (2013) highlight, for some companies "It's too late to keep up. You can't keep up. But it's a great time to leapfrog." Get curious. Get inspired. Get innovative. Effective leadership sparks the curiosity to seek novel ways of doing things, of creating innovative products and services to gain and sustain competitive advantages instead of perpetuating the boredom of known daily routines. Digital-savvy leaders focus on establishing a co-existence of educated humans and intelligent machines and educating their workforce to foster knowledge creation, rather than simply substituting labor by capital for cost-effectiveness. Because, as Peter

Drucker (2001) emphasized, knowledge, or meaningful information from data, will be the crucial new resource, and knowledge workers will be the dominant group in a company's workforce. Leading in a digitally disruptive world Q: In the era of the Fourth Industrial revolution, what lessons can countries and companies derive from the preceding three? What are the key elements that will differentiate the front-runners from others? What should growth nations like India, with its favorable demographics, be doing to ensure that they capitalize on this wave for inclusive development and global competitiveness? Prof. Weigand: Industrial revolutions are characterized by an inherent, inevitable and irreversible state of change. Once novel technologies are in place and penetrate all layers of an economy, they can only be superseded by more advanced technologies. The Fourth Industrial revolution, which may be described as smart or advanced manufacturing, focuses on the digitalization of vertical and horizontal value chains using cyber-physical, intelligent, and autonomous systems. This is not an entirely new scenario. In the 1990s computer integrated manufacturing (CIM) was a promising paradigm, but failed due to human resistance, lack of understanding, lack of technical standards, and organizational incompatibility (McGaughey and Snyder, 1994). Firms just tried to substitute legacy technology by a revolutionary one and, therefore, put the integrity of the organization at risk. To win, transform data into knowledge To push the Fourth Industrial Revolution, holistic strategies governed by sovereign authorities are vital to foster a digital economy with coherent and consistent technological advances. The previous industrial revolutions were originating from a few technical breakthroughs which changed society for ever. Just remember the geographical effects of the first and second industrial revolution: steam power fostered the formation of industry hubs and urbanization. With electricity and the advent of affordable mobility, companies could exploit locational advantages. The key driver of the Fourth Industrial Revolution is digitalization in combination with intelligent systems which transform data into knowledge. From a societal vantage point, we should carefully observe this transition and start to understand the consequences. According to Brynjolfsson and McAfee (2014), in this fourth wave of transformation, a growing economy (regarding GDP) may face increasing unemployment rates due to automation and the use of machines and robots. The fundamental difference that will distinguish forerunners from others will be the strategic foresight of leaders and the managerial skills to capitalize on knowledge and data. Knowledge and data are fragile resources, without borders. Companies with a highly educated workforce and a digital culture will be more likely to reap the benefits from the knowledge resource than others. India must reform its education system For India, this could mean pushing harder on advancing the education system. Similar to the mobile network coverage where India leapfrogged by just bypassing traditional cable landlines and pushed mobile communication, it can now jump ahead in the international competition for talent if educational strategies and resources are in place and materialize.
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The Metamorphosis of the CIO

Profound transformations don't happen overnight. Just ask a Chief Information Officer (CIO) of any global enterprise who's been in the position for about a decade. I choose 10 years because that's roughly the amount of time we've witnessed it takes for a complete metamorphosis of the CIO's role in digitally directed enterprises. Today, large enterprises spend, on an average, a quarter of their marketing budget on the digital medium. This amount is expected to increase to 75 percent in the next five years. As such, CIOs are more than simply technology-minded executives who 'keep the lights on' and oversee large enterprise resource planning (ERP) projects. The most progressive global enterprises now know that the CIO is perhaps the most important C-suite executive, other than the CEO himself. That's a bold statement, to say the least. So you're probably thinking to yourself: Just what is the job description of this modern CIO? Should he have business skills or technology skills? Should he be internally focused or externally focused? Today, the marketplace has begun to change, and with it, some forward-looking enterprises too. CIOs of these enterprises have moved closer to their enterprise strategy to drive efficiencies in an effective and structured manner. Some of those CIOs have understood the importance of being customer-focused and have started assisting businesses with technology innovations. For instance, refer to the four quadrants below that I use to illustrate the transformative role of today's CIO. There is no quantum leap from quadrant to quadrant. The CIO must still thrive in the lower left-hand quadrant. From there, he can use his skills to influence both the upper left-hand and lower right-hand quadrants. These are the two quadrants that contain elements that a CEO notices when improved or changed for the better, and that ensures the CIO's movement to the upper right-hand quadrant. It is in this quadrant that he should be collaborating with the CMO and setting strategy alongside the CFO. "Tell me what your business wants and we will find a technology innovation." If a CIO uttered this sentence a decade ago, eyes might have rolled at board meetings. But today, with social media, mobile, analytics, and the cloud driving corporate strategy, the most effective CIOs are pushing strategy, rather than being pulled along by it. This shift within the C-suite is not as seamless as it sounds. It calls for unlearning some of the basics, adapting to the new environment, and innovating with speed. I would like to share the story of two CIOs who were attempting to implement an e-commerce platform. The first CIO embarked on a traditional IT exercise that involved running a tender process, selecting the packages, and setting up the infrastructure. Everything took more than a year, yet he was not close to delivering the program. The other CIO took an innovative approach. Because he understood the need to deliver business value, he stitched a portfolio of cloud-based solutions and delivered the program in 12 weeks. The cloud-based solutions costed the company US$5 million. But since he was up and running in three months, his company posted a revenue of US$2 million a month from the online platform. That is US$18 million in revenue in the nine months in which the first CIO was attempting to set up his own infrastructure. Although the first CIO thought he saved his company money,

his efforts essentially cost the company US$13 million in wasted time-to-market, assuming (generously) that he was online within 12 months instead of his competitor's three months. An industry that demonstrates that some CIOs are firmly at the helm of strategy formulation, is retail. I know of a leading apparel company that tests its new designs, not in the physical world, but, online. Based on consumer responses, the company decides what will be in its product launch and plans its supply chain accordingly. Then there's a consumer packaged Goods Company that is focusing on changing its business model and selling products online, directly to consumers. This way, it is competing head-on with its physical distribution channel and online retailers. Yet another company analyzes its sponsorship deals and systematically mashes multiple sources of data to determine marketing investments for the future. CIOs have the power to transform once moribund enterprises into nimble, digital savvy ones. The paramount role of the modern CIO – as part of the C-suite executives in an enterprise, while they formulate strategy – is that of the security chief. Take an informal survey – scan white papers, press releases, and company communications, and you'll find that very few address online security breaches because it's the issue most enterprises wish would go away. But hackers appear to stay one step ahead of enterprises – even those companies with the most technology heavy budgets. It's up to CIOs to assert their expertise in this area and demonstrate just how much money they could be saving their companies by checking cybercrime and fraud. On January 8, 2016, for example, Time Warner Cable, one of the world's largest media and entertainment companies, discovered that approximately 320,000 of its customers might have had their e-mails and passwords stolen. What was even more troubling was that Time Warner Cable was unable to explain how the company was hacked. Whatever way the company spun it, it remained a major embarrassment and was another validation to allocate whatever a CIO needs to make an enterprise and its consumers secure from cybercriminals. An expert says that the CIO could be the only barrier between the enterprise and powerful hackers. CEOs and CIOs alike are learning the hard way that their security measures might not be as robust as they think they are. Ask yourself: What is the value of all your company's sensitive information? Is it R&D? Is it analyses of the markets and its major competitors? Think of the consequences if all this data were stolen by hackers and sold to the highest black-market bidder. Analysts rightly hold that CEOs should stop viewing risk management as merely an IT problem. When their CIOs suggest novel security measures that overshoot budget, the CEO should cut funding elsewhere and redirect it to security. So what exactly should the CIO be focusing on at the moment? First, be sure to get the basics in place. By that I mean beyond ensuring that systems are running and all hygiene requirements are met. Have strategic conversations aimed at setting up an enterprise for the future. An enterprise needs experts with the right skills who can ensure that the team has a good appreciation of the mix of business and technology. In addition, strategic conversations drive a clear meritocratic enterprise. The best people for the job will rise to the top in no time. Secondly, collaborate, collaborate, and collaborate. It is imperative that CEOs and CFOs treat the CIO as a full-fledged creator and implementer of the enterprise-wide strategy. And for CMOs, the imperative is even more vital – they should be working in tandem with CIOs because marketing is a function that lives and dies by the hand of IT. A collaborative effort of CMO

and CIO will propel enterprises forward in ways that boards of directors never even dreamed of a decade ago. For most of the 100 years that General Motors has been making automobiles, its marketing efforts tended to showcase technology in the context of overall options available in new models. Information technology tended to be relegated to options such as OnStar, its in-vehicle security, turn-by-turn navigation, and remote diagnostics features. And then there was the infamous EV1 in the 1990s, a terrific electric-powered car which ultimately flopped because the CMO and CIO were not in the closest of corporate relationships. On the other hand, in mid-January 2016, at the annual Consumer Electronics Show, the chairman and CEO of GM, Mary Barra, unveiled a prototype of an electric car that will come with "an unparalleled level of connectivity". The image of GM's CEO on stage touting web connectivity at the Consumer Electronics Show was a watershed moment in the rise of the CIO's influence. Here was Barra, telling the technology-savvy crowd that companies such as Apple and Google lack experience in manufacturing cars and that they don't have the extensive network of dealerships and service centers that GM does. There's no doubt then, that General Motors has fully integrated the CIO into its strategy. And it shows. All of these examples remind us to be constantly mulling over actions with innovation in mind. Enterprise should adopt two speeds so that big bang innovations can occur, and so can 'slow simmers' that often result in more innovative and enduring results. Becoming a transformative CIO is not about being perfect. It is about achieving business outcomes. To be successful with innovation in mind, one has to be what I refer to as `DATE' — Different, Agile, Tolerant, and Enthusiastic. Being different allows the development of IT along two timelines – two-speed IT. Being agile means you are willing to move fast after aligning to your enterprise's many goals. Being tolerant means that you allow people to fail, if failure is a natural part of their quest to become as innovative as possible. Then, there is the ability to remain enthusiastic throughout this challenging process. The role of the CIO will only continue to expand as technology will become integral to every function in an enterprise. The CIO must understand business realities and define his/her success parameters. It's even more important that other corporate leaders understand the huge degree by which the role of the CIO has transmuted. Today, the CIO might just be your enterprise's most underutilized asset. =====================

Monetization in 5G

----- Arcticle source ----- https://www.infosys.com/insights/digital-future/monetization-in-5g.html ----- Insights Digital Future Emerging technologies are disrupting the communications industry by enabling new business models and bringing new customer experiences. The digital ecosystem encourages cross industry collaboration and facilitates bundled digital product offerings in a hyper-connected world accelerating the digital journey of telecom companies. Networks are evolving with the introduction of programmable networks with Software Defined Network (SDN) / Network Functions Virtualization (NFV), gigabit connectivity and low latency mobile networks with 5G. Communication companies are bringing new value in the services they provide, by selecting the right capacity with 5G network

slicing and leveraging edge computing for optimal usage of resources. With the adoption of machine learning, artificial intelligence, closed loop automation, and advanced analytics to handle next generation operations, the telecom sector is poised for a great digital transformation. The Promise of 5G 5G promises gigabit data rates, low latency, reliability and availability. This opens up enormous opportunities for digital telecom companies and eco system partners to collaborate across industries. It provides excellent experience for customers be it indoors or on the move, with no limitation. New and immersive experiences are becoming a reality with Augmented Reality (AR) / Virtual Reality (VR) technologies and 8K video streaming. Customers are enjoying these experiences both at home and outside, from the conveniences of a digitally connected smart home to a 360degree fan experience in a connected stadium. Enterprises are exploring new services like remote maintenance guidance, smart offices, drones for varied services like surveillance and new business models that support B2B and B2B2X. All these new services are driving digital bundles of new offerings. 5G Possibilities and Use Cases 5G brings in the network slicing concept based on the following three services: Select use cases that brings in varied monetization opportunities and new experiences: New Digital Bundles and the 5G Network Slicing Market Place Apart from connectivity, digital telecom companies can explore new bundles in entertainment such as multi party video conferencing, immersive experiences or in Vehicular to X (V2X) offerings like autonomous/assisted drive or vehicle maintenance. Their existing Product Lifecycle Management (PLM) and Configure, Price and Quote (CPQ) solutions can be upgraded to handle these scenarios. 5G network slicing can be offered to varied players like Mobile Virtual Network Operators (MVNOs), Mobile Network Operators (MNOs), infra partners, Over The Top(OTT), vertical industries and equipment owners. This requires slice lease management which can be addressed with blockchain and smart contracts. V2X Possibilities: Bundling network slices for varied scenarios Vehicular communications bring in variety of services that leverages eMBB, URLLC and mIOT network slices. These include: As more devices gets added to the network, there is a need for edge / IoT security. This is needed in cross industry solutions with connected IoT Devices. Other examples are of wearable devices for health care and entertainment, industrial automation with varied sensors, autonomous driving and other V2X scenarios, safety and security solutions, smart meters and renewable energy solutions. We are heading into a brave new world of communication where technology has flattened boundaries with new collaboration models and only those who innovate will emerge as the winners. ======================

Unlimit - Why this Word May Hold the Answer to Perplexing Digital Questions

----- Arcticle source ----- https://www.infosys.com/insights/digital-future/perplexing-digital-questions.html ----- Insights Digital Future Following a whirlwind phase of annual and quarterly results, clients meetings, and

setting up new operations, I cannot wait to be at Infosys Confluence, our thought leadership summit for clients, prospects, and market influencers. Like every year, this gathering pushes the pause button on my hectic schedule - offering a Zen-like stillness, if you will, to ideate, introspect and envision with some of the best minds across industries. This time the theme, 'Unlimit', will add a new dimension to this pause. Exchanging thoughts on unlimiting our innate human potential, empowered by technology; unlimiting traditional boundaries of industries; unlimiting from that past that is baggage. Pondering on the theme, I realize how 'Unlimit' is actually the core force driving successful digital-native organizations today. Here's an example. A Swedish startup, Mapillary, built their database of 130 million images through crowdsourcing. Mapillary Vistas Dataset calls itself "the largest and most diverse database for object recognition on street-level imagery" and offers its data to organizations that need to train their AI systems. Its creators want to represent the whole world (not only streets) with photos sourced through crowdsourcing. While today's startups are digital natives, many large and older enterprises are still grappling with vastly different and changing technologies, consumer preferences, regulations and intense competition from unlikely areas. In my view, digital adoption for an enterprise involves two fundamental tracks - business and technology. The latter of course is about leveraging a wide array of technologies to full potential - from mobile, cloud, SaaS, open source platforms, to big data analytics, social media platforms, and now AI. The business aspect of digital adoption is about infusing the digital philosophy into workings of an existing business and changing if required - thereby, unlimiting itself from trappings of the past. Although very crucial for an organization's transformation, it is often not given due focus, or is expected to happen on its own. Here are a few pointers that I believe can help larger and older enterprises to truly integrate digital into their business. I'm looking forward to delving deeper, at Infosys Confluence, into how traditional organizations can leapfrog into this digital age by reworking their business strategies. I hope to come back to you with my thoughts, learning, and aha-moments after the event. =====================

Staying Relevant to Survive

----- Arcticle source ----- https://www.infosys.com/insights/digital-future/research-unraveled.html ----- Insights Digital Future Recently Infosys conducted a survey and the insights gained were vital to understand what keeps top minds ticking across various industry verticals. The study concluded that technology is the biggest concern for respondents across industry groups for its ability to shore up as well as shake up their business, and for its potential to solve their biggest challenges. So, it is only natural that technology should drive their priorities for 2016. With an eagle eye focused on the future, we would like to highlight certain key points in order to present what the landscape looks like, as well as what you can expect in the future. It is important to take heed of crucial factors that will drive product differentiation for your business when it matters the most. =====================

The Heights Enterprises Can Scale with 'Renew-New'

----- Arcticle source ----- https://www.infosys.com/insights/digital-future/scale-renew-new.html ----- Insights Digital Future Pink Plane - Blue Plane Enterprises today are constantly dealing with challenges and opportunities spawned by the digital revolution. We, at Infosys, believe that succeeding in this new world order calls for a dual mission of Renew-New. Renew existing technologies, systems, processes, and mindsets – represented by the pink plane of human thought, referred to by author Arthur Koestler – so enterprises are ready to embrace a future on which they do not have a firm grip. Simultaneously, uncover completely new areas of technology, business, and thinking – represented by the blue plane of human thought. Renew-New must always go hand in hand. Sir Arthur C. Clarke observed that, "Any sufficiently advanced technology is equivalent to magic." Technophilic overstatement? Perhaps. But as the articles in this issue evince, the pervasive hold of technology on present-day industry, commerce, and indeed on human life, is undeniable. So much so, that technology can provide a compelling competitive advantage to businesses that use it wisely. Enterprises have thrived or become obsolete based on their ability and agility to respond to shifts in technology. There is an essential duality to enterprises evolving in and along with technology. The first is in relation to making changes to the existing construct of systems, processes, and infrastructures, to make them do a lot more and a lot better than they did before. The second is related to embracing absolutely new constructs to do things that the enterprise has never done before. In other words, looking back to review what can be improved, then making these improvements, while simultaneously looking ahead to bring new solutions to emerging challenges. This is more than just another strategic move; it's a life mission – Mission Renew-New. Under mission renew, the enabling role of technology is elevated way above incremental improvement. The idea is to use clever innovation to create huge performance improvements in existing systems and processes that make a transformational impact on the enterprise. This is not a step-change, rather, a whole quantum leap. A notable example of this comes from a global pharmaceutical giant which renewed its distribution management system, not for some minor gain in supply chain efficiency, but to actually mitigate the threat of counterfeit medication and its tragic effects. A global serialization track-and-trace system built on their enterprise cloud provides visibility into products, supports distribution management, and ensures compliance with product security requirements. The app enables distribution partners to check the validity of medicines using an Android or iOS smartphone. In addition, the company leverages insights from big data to help identify spurious drugs. Or consider how a Japanese automobile leader digitally transformed dealer communication by replacing its legacy dealer system with a portal that streamlined business processes to increase productivity by a whopping near-40%. The multi-browser, multi-currency, multilingual platform is accessed by more than 1,200 dealers and processes over 400,000 transactions every day. Secure connectivity and 24x7 access help dealers maximize sales and improve customer satisfaction. The scale of renewal is so big that it will deliver 70% ROI over the next five

years. Mission new, on the other hand, is a quest for new solutions to new problems, a veritable journey of reimagination. It is a call to the enterprise to immerse itself into new technologies, business models, and paradigms to discover or give rise to unprecedented sources of value. It is what a multinational office automation company did by employing a machine learning model to predict propensity-to-buy across customer segments and sales territories in the United States. The model costs significantly less than conventional statistical analysis tools and processes more than two million records in six seconds with more than 80% accuracy. Visualization of output data helps sales teams prioritize action and improve service attachment rates through effective cross-sell services. Another standout example of mission new implementation comes from the world of insurance. One of the largest personal lines property and casualty insurers in the U.S. shook off the industry's tech-laggard tag with a decisive move into advanced analytics that is enabling it to create new risk / pricing models and new customer value from big data. The company is trying to build a totally new data science organization that is not only culturally different from one steeped in traditional analytics, but also leverages all new paradigms of data to make better products and enterprise decisions. One goal is to combine computer science and statistics to move decision-making to the front office, where machine learning automates and assists trivial and critical decisions, respectively. Another is to develop a suite of new data products based on the Internet of Things (connected homes, autonomous cars, etc.) to mitigate risk by notifying customers of an impending event so they can take timely, preventive action, and to also measure and price risk at a highly granular level. But what use is a mission without milestones? More importantly, is Renew-New one singular mission that necessarily fits all enterprises? These are some questions that enterprises yet to find their Renew-New journeys are bound to ask. The relevance of this approach is that it is as broad as it is focused. Each enterprise can chart its own course depending on its current context and targeted 'moving' end-state – 'moving' because renewing the old while doing the new needs to be a constant, unending pursuit of the enterprise. That said, the goals of every enterprise today are the same – to deliver experiences that will survive the acid test of next-generation expectations; to engineer solutions that were only found within the realms of imagination until technology could bring them into the realm of possibility; and to produce significant, unprecedented economic value for all those whose lives they touch. So really, experiences, engineering, and economics are the milestones, as much as they are the mission.
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Smart Contracts: Introducing A Transparent Way To Do Business

----- Arcticle source ----- https://www.infosys.com/insights/digital-future/smart-contracts.html ----- Insights DIGITAL FUTURE Enterprises, irrespective of size or industry, are supported by written contracts. Unfortunately, these are often cumbersome and a source of business and legal conflict. A solution can be found in replacing traditional contracts with

smart ones. A smart contract is an agreement, in the form of a computer program that is executed automatically once certain pre-programmed conditions are satisfied. On blockchain, the goal of a smart contract is to simplify business and trade between both anonymous and identified parties, sometimes without the need for a middleman. A smart contract scales down on formality and costs associated with traditional methods, without compromising on authenticity and credibility. Some advantages of smart contracts are: Security – As the distributed ledger is impregnable and immune to alterations Disintermediation – Enables parties to enter into agreements with reduced dependence on middlemen Near real-time execution – As it takes place almost simultaneously for all parties, across participating computers, once the necessary criteria are satisfied Transparency – Creates an environment of trust as the logic and information in the contract is visible to all participants in the blockchain network Implementing smart contracts is not without its share of challenges, some of these if unaddressed can hinder its immediate adoption: Confidentiality – Though enterprises desire transparency, they hesitate to put their contractual information, which may contain competitive strategies, on the blockchain. While a blockchain platform like Hyperledger is permission-driven and enables parties to engage in a private smart contract (visible only to people party to the contract), Ethereum, a blockchain platform, does not have an option for private smart contracts. Enterprises will, therefore, have to select their blockchain platform based on need. Accuracy – Since a smart contract is a computer program, each term and condition of the contract needs to be coded. There is possibility of misinterpretation and omission by the coder, which may lead to loopholes in the contract. I believe the more we use smart contracts, the more we will encounter these loopholes and code against them. Unreliable Inputs – These could lead to false contracts or non-execution of contracts. In the case of a traditional contract, the parties can proceed to a judicial court for redressal. Unfortunately this is not a possibility with smart contracts where legal validity is still being debated upon. Bugs and errors in the code – These could lead to disputes and procedural difficulties related to identifying errors and the parties responsible for those. They could also cause unforeseen repercussions. This is exactly what happened in June 2016, when a hacker exploited a vulnerability in the code of the Decentralized Autonomous Organization (DAO), which is a piece of smart contract built on Ethereum, and made away with 50 million Ether, a bitcoin-like digital currency. Rogue Contracts – Taking advantage of self-execution and anonymity of smart contracts, illegal activities could also be conducted by smugglers, terrorists, hackers and others. Smart contracts have the potential to introduce radical change in the way international business and trade are executed by speeding up transactions, reducing paperwork, and bringing about cost-efficiency. Industries like art, music, real estate, finance, manufacturing, retail, supply chain, and telecom could benefit significantly from smart contracts. The adoption of smart contracts would be hastened if the platforms which host them accept payments in all currencies instead of just cryptocurrencies, and brought them under the purview of the current judicial system. Two states in the US that has moved in this direction are Arizona, and Nevada. Both enacted legislations this year to legalize smart contracts. Until smart contracts become legally recognized across states and countries, they will be practical for short, individual agreements. But for lengthy, large deals,

enterprises will have to turn to flexible traditional contracts. In some scenarios, we would have to make do with hybrid contracts, which allow for faster, more efficient, and more secure execution of agreements, while also providing a channel for judicial audit and scrutiny. Infosys Blockchain addresses blockchain and adjacent technologies including shared ledger, distributed ledger and smart contracts. Contact us to know more about our services. Read more about the Infosys offering for blockchain >> =====================

Train your QA Engineers in RPA for Better Business

----- Arcticle source ----- https://www.infosys.com/insights/digital-future/train-your-qa-engineers.html ----- Insights Digital Future This blog has been written with inputs from Swati Sucharita, Senior Project Manager Robotic process automation (RPA) is a fascinating technology that can turn heads in the automation era. RPA mimics the actions of business process users and automates simple to complex rule based processes. The automated processes can then be run using software robots (bots). RPA Goes Beyond Structured Data and Repetitive Tasks Enterprises that deploy RPA using traditional approaches to automation are limited to tasks that use structured data. However, tasks that have non-repetitive processes and use unstructured data would require cognitive abilities to achieve automation. With advances in Natural Language Processing (NLP) and machine learning, RPA tools are now able to simulate thought processes and adapt to evolving business requirements by recognizing, capturing and interpreting user actions through predictive analytics. Most RPA use cases are implemented in customer service processing, data migration & management, IT infrastructure support and back office administration related tasks in domains such healthcare, insurance, and manufacturing. One of the use cases for QA in insurance is claims processing. In most cases, processing insurance claims is done manually which is time consuming process and error prone. By turning to RPA these tasks require lesser resources, are able to eliminate errors and thereby reducing delays in processing claims. An important area for the adoption of RPA is QA Automation testing where there is tremendous scope to improve the various types of testing such as functional, regression and performance testing. It is evident that in the near future software testing will be more tool-oriented and a majority of automated testing can be done using cognitive RPA not just for repetitive tasks but also for complex processes by training the software to learn the processes over time and seamlessly adapting to the changing business rules. Cognitive RPA has the potential to dominate significant market share in automation testing. Some of the QA tasks that can be easily automated using RPA are login credential verification, data & UI validation, automated test data creation, test management process automation and automated issue/ bug tracking Why you should consider RPA in automation testing RPA, a key differentiator in QA Testing, Data Security & Data Management Due to its non-evasive nature, performance, security, integration, data migration and data capturing capabilities, RPA is gaining a lot of prominence across

different industries. In the area of security testing, RPA offers the capability to record every manual and automated action into audit logs. RPA can work with a wide variety of data formats, interfaces & systems, and can be customized to client specifications. Data inconsistencies can be caught in real-time as the RPA tool operates on existing GUIs. Further, test data can be generated more easily using RPA thus improving the overall quality of test automation. Screen scraping is another extremely useful ability for data extraction in scenarios where the application UI is accessed over virtual desktops. RPA also uses OCR which allows bots to distinguish characters under varying display conditions. Most companies have already implemented RPA in multiple sectors in order to transform customer experience through driving productivity by automating transactional tasks and increasing profitability. RPA adoption needs to go beyond repetitive tasks to include more complex processes. However, adopting RPA might initially seem like an uphill task, but with proper planning, documentation, implementation, and testing, one can fully leverage its potential to be a game changer. A well planned RPA adoption can beat implementation challenges by: In conclusion, RPA in QA is poised to be the next big transformation to impact the software industry since bots can be configured in a matter of weeks to run automated testing. Apart from cost and productivity benefits, it also reduces the efforts on manual training by making intelligent use of resources and improving compliance thereby allowing humans to focus more on strategy, creativity and building connectivity. =====================

Unlock The Hidden Monetization Opportunity In Online Gaming

----- Arcticle source ----- https://www.infosys.com/insights/digital-future/unlock-the-hidden-monetization-opportunity-in-online-gaming.html ----- Insights Digital Future In my last blog post, I outlined how technology can help sports related stakeholders analyze data and delve deeply into what, where, and whom to engage as the target audience. Using proprietary tools, sports event organizers can create a single e-commerce platform to target ads and personalize marketing on match day. An analysis of virtual attendance demographics means that fans get localized delivery of content across the world. In this blog post, I'm going to discuss how technology can monetize sports making nearly every game an event to remember. Virtual attendance is an enormous development, but it is just the tip of the iceberg. Virtual gaming is now one of the most watched 'sport' in the world with events globally broadcast online and drawing millions of viewers. The 2015 League of Legends Finals, which took place at different venues across Europe, boasted a purse of some $2 million. The five-week long finals drew a total of 36 million viewers with the actual final at the Benz Arena in Berlin, drawing a peak of 14 million. The 17,000-seat capacity venue was sold out in record time. Compare these numbers with the 2014 sell-out final in Seoul, which drew more than 60,000 fans. Even real sports players are getting in on the act with the Brooklyn Nets' basketball player Jeremy Lin sponsoring his own 'e-gamer' team. How do technology companies fit into the virtual

gaming world? In the virtual gaming world, we can now do what we have accomplished with real sports: sense, analyze, engage, and monetize. We can analyze real-time and historic player statistics and data, a player's in-game performance levels in certain situations, a player's and team's history and, of course, the fans - their digital and physical engagement and locate trends related to them during the event. With this depth of data, we can deliver rich and meaningful real-time insights to fans, gamers, sponsors, and (where allowed) betting agencies, adding value and knowledge to all stakeholders. With more than 51.8 million players in America alone, the online fantasy sports industry expected to generate 2.6 billion in entry fees in 2015 . The leading players in America Fan Duel and Draft Kings cover many sports, but most traffic comes through the NBA, MLB and NFL games. In Europe, the Premier League's official game draws 3.5 million players with millions more playing on other unofficial platforms. With such huge numbers to engage, and vast amounts of data and history from each sport, technology can help analyze and provide rich insights and trends to the fantasy sites and sponsors. Doing so would increase the appeal for the sport and draw more fans to the platform, it will also increase revenue for the platform and 'eye balls,' if you will, for the sponsors and brands. Number crunching the monies To give you a sense of just how transformational technology in sports can be, let's go from online gaming into the stadium for a bit. This illustration is of a sixth-ranked Premier League team, which focused on monetizing in-stadium game highlights and replays, through virtual reality. Here is the math: To help sports organizers uncover newer revenue streams, Infosys uses a combination of technologies to provide services inside and outside the stadium, all on a single platform; Skava for compelling digital experience, IIP (Infosys Information Platform) for rich insights on fan behavior and game data, and Ooyala, a cloud-based video platform for smart publishing, analysis and advertising. This offering is a powerful demonstration of how fan and player experiences, and monetization models are being transformed. A case in point being our engagement with the Association of Tennis Professionals World Tour as their official strategic technology and data partner. Locating newer monetization opportunities The above example is that of an established sport with a global audience and fan base. But in the near future, where are the niche opportunities for monetization likely to be? I foresee them in three areas: betting, online gaming, and fantasy sports. Betting is experiencing a massive growth in innovation, excitement, and is drawing more crowds than ever before. These are regular people, not stereotypical gamblers but younger and more diverse audiences who have been brought up gaming online and have now matured into online gambling. With players and teams alike we see a massive opportunity for data mining around past and current performance, form, aversion to weather, rivals, stadium conditions, home or away, and being able to provide a richer insight into future performance in a real-time environment. Imagine your team is playing, it is half-time, it has begun to rain, and one of your stars has used up all his penalties. We could analyze past data along these parameters and access insights into how the team has performed in such an environment before. This can provide bookies with information to adjust their odds with greater precision. Discerning fans could have a better understanding of how the team might perform in such conditions by leveraging real-time data and thus experience a more exciting and immersive event. In a nutshell, the aim is to entertain and engage fans,

and increase revenue and insights for the club and sponsors without distracting the fans with unwanted content. We can achieve monetization by providing genuine value in the right context. The transformation of the sports ecosystem is real and is happening now, and as with any game, the stakeholders with the smartest moves are the ones who will win. Learn how Infosys helped ATP transform the fan experience >>
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Why The Coffee Machine, When You Can Be At The Café Changing The Service Conversation With Business?

----- Arcticle source ----- https://www.infosys.com/insights/digital-future/why-the-coffee-machine.html ----- Insights Digital Future When technology stepped out of the IT organization into the enterprise's business, and indeed into the day-to-day life of its many functions, the role of the service management director changed irrevocably. No longer was it enough to keep systems humming; business expected technology to help it innovate faster, better, bigger so it could stay relevant to customers and ahead of competitors. And it wasn't going to wait in line at the service desk for every little IT fix. Not when it had a considerable IT budget of its own that it could use to find a quicker, better solution elsewhere. Clearly, the past few years have been some of the most challenging – and yet times of great opportunity for service management leaders. The opportunity to better understand who its customers really are — not just the end users but the ultimate customers of the business. The opportunity to convert the tons of data cordoned off in organizational silos to valuable insights. And to nurture a digital-first mindset that compels them to stop asking "Who can approve a change?" and instead think about "What makes a change necessary?" Yet, instead of focusing energies on delivering great service experience for great business results, several service management heads have still been caught up micromanaging a large IT service force and a larger legacy systems muddle. Fortunately, relief has begun to take shape in the form of solutions that promise a cloud-based, plug and play way to automate the service desk. To be able to predict and prevent issues, and for issues that inevitably occur, to track them through resolution on an AI-enabled, self-service portal. Imagine being able to isolate the details of the initial affected customer and comparing those against your larger customer base, to arrive at the customer segment to proactively fix the issue for. Or to be able to identify service issue trends early with enough time left to solve them for current customers, while addressing the root cause to prevent future customers from experiencing the same issue. And yet, seasoned managers worry about a year or longer of service disruptions while the wonder solution is being deployed. Also, about the fragmented tools and legacy system. And the sub-optimal processes and governance game plan that mere automation won't fix. If you've been there, done that, then you know that in the hands of an

experienced implementation partner with the right accelerators and frameworks, the solution can be made ready for use in a matter of weeks. Consolidation and rationalization - of the investments already made in legacy tools and processes - also achieved. And yet the ask is for something more. More than just conveniences built over this automated core. Undoubtedly, service catalogues, persona-based dashboards, and the knowledge repository when made accessible by simply commanding a chatbot are invaluable productivity enhancers. But, the real challenge is to bring all of this – first inside the IT organization, and then to also take it all out – outside of the IT department - to the key functions of business. To HR service management, to project portfolio management, to expert appointment management and to security operations management. This means a new joinee in a firm self-serving herself with her welcome kit with just a click. Getting that appointment with the company's counselor with just a click. Being mobile-alerted to a potential security hazard in real time. And while at it, knowing it's all customized for the specifics of a business – restaurant, store, manufacturing, travel and more. Now that's the real ask. The real aspiration. To finally be able to stop making those endless trips to the coffee machine to get that caffeine pick-up you need to manage the next service outage threat, the next hunt for experts to staff the crack team, the next set of demands from the CEO's office, and to simply head to the café to chat with business about the great ways you've uncovered to manage the way people experience service for IT and beyond. I'd like to think it's possible. In fact, I know it is. Learn more about our offering on managed services >> =====================

Unifying the World through Technology

----- Arcticle source ----- https://www.infosys.com/insights/digital-future/world-through-technology.html ----- Insights Digital Future Socio-economic and political rifts like the USA threatening to renegotiate NAFTA or UK leaving the European Union, often divide societies by fostering indecision, inaction and intolerance. This is further substantiated across geographies, where disparity in terms of employment, income, rights, opportunities and access to health care is prominent. People have moved from a community focused way of life to an identity focused one, as a result of which social sustainability - society's internal cohesion and ability to hold together over time - is in jeopardy, resulting in the formation of a fractured world. The World Economic Forum (WEF) is committed to improving the state of the world by addressing major problems affecting nations. In the recent WEF 2018 event at Davos, the theme was "Creating a Shared Future in a Fractured World", which focused on how technology and a shared economy help act as unifiers in a fractured society. WEF claims that the major factors that drive the formation of such fractured societies are globalization and the scattered use of technology, which have resulted in extreme competition and irregular returns to the labor force, exacerbating inequality. There are numerous challenges that organizations face as a result of this fractured society, a few of which are Overcoming challenges using technology

Appropriate utilization of technology, adoption of platforms, and changes in policies can overcome these challenges, helping to reduce the ill effects of a fractured society. Blockchain based identity solutions for example, enable users to control usage of their data, provide access on need to know basis and regain trust in a fractured society, overcoming digital inequality. Knowledge platforms facilitate maintenance of academic records and content, and enabled with conversational user interfaces (CUI) provide people with a natural, seamless way to access resources for continuous learning and relevance in the market, limiting the disparity of skilled laborers. Technologies such as cloud hosting, containerization and AR/VR also help through improved communication with stakeholders and ubiquitous access and deployment of software. Access to collaborative platforms, which effectively improves the processes of sharing, supporting and funding ideas, aid companies in innovation. The limitations on the use of data and cross border flows can also be curtailed through developments and adoption of technologies such as adaptive cybersecurity, that increase security, privacy and control over data. This will contribute to changes in business models so as to account for the increase in data security, and in regulations that govern the use and sharing of data. Infosys is committed to investing, incubating and adopting technologies and solutions such as Blockchain, chatbots, data masking & assurance, cybersecurity, cloud based applications, AR/VR and adaptive systems, to name a few. This, apart from enhancing innovation and solution effectiveness for clients, also helps in reskilling and improving the talent pool, thereby reducing the fractured world divide. In today's fractured world, a shift towards platform based solutions has helped revolutionize and disrupt various sectors, of which a few are Organizations across the world are expediting their adoption of platform based solutions and new technologies to streamline their operations, overcome challenges and cater to millennials while they unify, equalize and empower the existing fractured society for a brighter and shared future. ======================

Modernize the Core Before You Make Your Next Digital Move

----- Arcticle source ----- https://www.infosys.com/insights/digital-journey/ accelerate.html ----- Insights Accelerate Driving Automation Value Delivery at Scale Digital Transformation: Start at the Core, End with Customer Delight The Power of Cloud at the Core Digital Transformation in Financial Services, leveraging Agile Accelerate In today's digital world, enterprises must be willing to rapidly transform themselves to meet customer expectations or risk having their customers wooed away by younger, nimbler, digital-born rivals. For most established companies, the toughest struggle is with their monolithic legacy systems that can't pivot fast enough to support their aspirations. However, the fear of disrupting these systems, which serve as the foundation for several business-critical functions, makes it hard for enterprises to consider altering or revamping them, trapping enterprises in a vicious cycle. It is possible to break this cycle by undertaking the journey to organizational modernization and enterprise

agility. Executed through a combination of core renewals that create efficiency-led savings, legacy landscape renewal needs to be based on carefully chosen business priorities. Moving to the cloud, which still holds enormous untapped potential for enterprises, can be a valuable part of this journey of renewal and regrowth. This is an ideal time for most enterprises to start their own journey to the cloud, boosted by proven technologies and solutions that mitigate the perceived risks of cloud transformation. Modernization should not be limited to systems, it should extend to people, processes, and the corporate leadership's thought process. It is only by making these necessary agile shifts through changing times – continuously digitizing the enterprise core and amplifying customer experience- that enterprises can remain relevant, survive, and indeed, thrive. Related Articles Over the years, there have been numerous discussions around AI and automation, and their potential impact on the future of business. This has now reached a crescendo with organizations expecting to drive zero latency in business process execution by leveraging the latest automation and AI technologies. Read more Only one of the top five companies on the 2011 Financial Times Global 500 list, namely Apple, makes it to the current top five, all of which are high technology companies with huge platform businesses. Less than ten years from now, a company on the S&P 500 will most likely live only for 14 years. Read more For incumbent organizations, the biggest threat no longer stems from one of their kind, but rather from young and innovative born-digital players. To avoid being disrupted, these enterprises need to match the new competition at every step by finding and harnessing new opportunities, delivering great experiences, bringing cost efficiency to products and services through a variety of channels, and while doing all of this, also reimagine their business using new, digital models. Read more The financial services industry is undergoing significant disruption driven by consumer demand for new and innovative products and services, with rich user experience, shorter timelines to deliver while continuing to reduce cost. Enterprise agility is emerging as a key imperative for such digital transformation. Smart adoption of agile is now critical for banks and capital market firms globally. This article highlights how successful firms are leveraging agile for such transformation in a rapidly evolving industry landscape. Read more =====================

Secure Your Business from the Next Cyber Attack

----- Arcticle source ----- https://www.infosys.com/insights/digital-journey/ assure.html ----- Insights Assure The Digital Age Requires a Smart, Integrated Approach to Security New Cyber Security for the New Digital Enterprise Assure Enterprises today, amid worrying about staying ahead of the competition and identifying the next success formula, are also constantly concerned about preventing security incidents in an expanding threat landscape. The challenge of cyber security has long since moved beyond monitoring infrastructure, networks, firewalls, and IT assets to protection of the entire value chain – systems, applications, user software, developer software, and data. Digital transformation is also contributing to the risks

enterprises face. Using APIs to expose legacy landscapes to new platform-based components inadvertently intensifies cyber security risks. Hackers also continue to innovate, creating new malice every day. Enterprises, while aware of the risks, usually try to bolt on point solutions, rather than adopting a more comprehensive approach. The result is a patchwork of solutions that not only don't work well together, but are inadequate to protect against evolving threats with thousands of entry points, including those created by mobile phones and Internet of Things-enabled (IoT) devices. With enterprises still taking an offensive, rather than defensive stance, for protecting their assets, the need of the hour is flexible and adaptive security solutions, delivered in an integrated package. Delivered on an 'as-a-service' model, these will remove the huge operational and cost overheads associated with a patchwork solution while also allowing to plan for anticipatory protection. Related Articles With the massive adoption of digital transformation and digital technologies, the focus on cyber security has grown considerably. There is a heightened perception of threat in the minds of enterprises and boards of companies, as cyberattacks have become much more focused and advanced. Vulnerabilities could originate from several sources including unauthorized access, malware, legacy applications, poor governance or even natural disasters. The growing popularity of IoT and automation, as well as the cloud-first paradigm and the deluge of smart phones, have forced organizations to re-assess their cyber security strategies. Read more Most organizations are managing security reactively, by typically adding incremental point solutions that neither work together nor offer adequate protection. Security leaders must transition from fragmented, reactive security to a managed security services model guided by a customized roadmap. Read more

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Likes, Shares, and Friends Will Shape Your Customer's Next Experience

----- Arcticle source ----- https://www.infosys.com/insights/digital-journey/experience.html ----- Insights Experience Digital Transformation Before Digital Experience Experience Great customer experiences are hard to provide. You need to know your customer well, and understand their changing expectations and preferences to be able to tailor your services and products that not just meet their primary need but leave them with an experience that they appreciate and acts as a catalyst for repeat business. With the accelerated progression of digital technology and its rapid uptake by consumers, customer experience today encompasses a lot – meeting the rapidly evolving customer expectations, being channel-agnostic in service delivery and availability, delivering personalized experiences at scale, and doing all of this at the speed of market. Digital transformation plays a crucial role in performing each of these. Customer centricity brings more satisfied buyers, increased loyalty, vocal advocacy, and lower cost of service. Digital transformation enables a business to go beyond merely acquiring the

latest technologies or building shiny front-end applications to reimagining the business, including its systems, people, and processes and create a core that is designed to deliver experiences that would bring customer delight. Transformation cannot fulfil its true potential if it is restricted only to the technology adoption aspect, it also has to reflect in the leadership's willingness to lead the charge and transform the company from ground up. Related Articles While many companies are increasingly obsessing over the quality of their customer experience, most have quite a way to go before they can achieve truly great experiences and engagement. Read more ========================

Digital Transformation Before Digital Experience

----- Arcticle source ----- https://www.infosys.com/insights/digital-journey/experience/digital-experience.html ----- Insights EXPERIENCE While many companies are increasingly obsessing over the quality of their customer experience, most have quite a way to go before they can achieve truly great experiences and engagement. A recent report on digital transformation concluded that only 3 percent of companies have achieved transformation across the enterprise. 92 percent of these companies, versus just 22 percent of the rest, had mature digital strategies and processes in place for improving customer experience. Significantly, 70 percent of these companies credit digital transformation with increased customer satisfaction. This is just one of many reports that confirm what we already know; enterprises must embrace complete, end-to-end digital transformation in order to deliver great customer experiences. What does that entail? By now, most enterprises are sufficiently engaged in digital to know that transformation is not merely about acquiring and implementing the latest technologies, and experience doesn't happen via shiny front-end applications. The path involves nothing less than a reimagining of business, including its systems, people and processes. The good news is an increasing number of companies are fast-tracking their digital transformation to drive more customer-centricity, yielding more satisfied buyers, increased loyalty, vocal advocacy, and lower cost of service. In our role as digital transformation partner, we are helping many organizations realize their goals. Case in point: We helped a technology conglomerate modernize, standardize and automate 20 key business processes, digitizing more than a million caseloads. Prior to our involvement, their agents were navigating a laborious sequence of 122 steps, crisscrossing several applications, functions and procedures to merely figure out if they could even expedite an order. By implementing a combination of analytics, artificial intelligence, and automation solutions to intelligently route requests to the agent best equipped to resolve the issue, as well as automating processes delivered though an integrated customer engagement platform, the same query that once took 20 hours to process can be resolved in less than 5 minutes. As a result, more than 8 million hours of customer wait time has been eliminated, delivering a massively improved customer experience. Another example is how we are future-proofing a large global telecom company. We are modernizing the core to

drive operational agility, data-rich systems, new ways of working, and flexible, omnichannel customer experience across a five-year transformation roadmap. This involves the telecom's full stack, from the foundation BSS / OSS layers in partnership with Netcracker, through to the CSS customer interaction layers, created by using Adobe, UXP and PegaSystems as both an omnichannel enabler and decision making layer. All this will ensure end-to-end digital transformation driven by real-time, contextual customer data to deliver differentiated next best actions and next best offers. To enable such transformations, we are constantly engaged in building the necessary skills within our own organization. For example, we have nurtured a high-performance team of digital specialists who work with clients to realize their goal of building relevant, customer-friendly digital solutions in an ever-evolving digital marketplace that is becoming increasingly uncertain, asymmetric and complex. We are also helping our clients leverage technology to connect their people to knowledge, processes, and each other, and thereby transform the workplace experience. Investing in acquiring specialized skills that complement our own expertise is also key. Examples include our acquisition of London-based Brilliant Basics, a product design and customer experience firm known for its world-class design thinking-led approach and experience in executing programs around the world, and WONGDOODY, an award-winning, US-based full-service creative and consumer insights agency. Over the past year, our team has reimagined customer experience across channels, including the web, apps, ATM, kiosk, IVR, and branches, for several global banks. Now, many of these capabilities are being integrated into the Finacle suite of banking solutions to offer even better digital experiences to users. We are also expanding our network of digital studios, from near shore capabilities in Bangalore and Pune to our new Design & Innovation Hub in Providence, RI. These digital facilities have been set up with the goal of fulfilling the needs of global clients for end-to-end digital transformation solutions that will enable them to deliver the kind of experiences their customers demand. Going forward, we will be adding more initiatives to bridge the gap for design and human- centric skills to build impactful technology solutions. Our objective is to transform our clients' organizations from end to end, by reimagining service design and experience on the outside, while renewing legacy technologies, processes, systems, and ways of working on the inside. The Infosys digital framework drives outcomes for the way customers experience digital solutions, helping leverage insights from data, innovate vertical platforms and digital-first engineering, accelerate core digitalization, and establish digital trust. The result helps our clients meet rising customer expectations, deliver personalized experiences at scale, and do it all at the speed of market.
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Your Old Machinery Will Be Your Next New IoT Device

----- Arcticle source ----- https://www.infosys.com/insights/digital-journey/ innovate.html ----- Insights Innovate Innovate The loosening of geographical and trade barriers has increased competition in every business manifold,

forcing enterprises to crunch cost and production time to remain relevant. Digitizing the entire product lifecycle- from design and manufacture to maintenance and service - can help in this endeavor. While designing new products or product lines, enterprises also need to keep refurbishing and renewing their long-lived assets by infusing them with new digital technologies to enable them to cater to new expectations. Technologies like the Internet of Things (IoT) fit this bill perfectly. Enterprises can leverage IoT capabilities to remotely monitor products and assets, prevent breakdowns and analyze data to optimize performance. Having such an in-depth view into each product or asset's operation not just help improve efficiencies but also ensure security along with meeting compliance requirements. IoT can also be used to explore new business models, as it makes previously impossible partnerships and propositions possible. The opportunity for every enterprise lies in leveraging the new possibilities created by these emerging technologies to amplify existing products and make them ready for the digital future. ======================

AI-led Insights Will Show Your Customers What to Buy Next

----- Arcticle source ----- https://www.infosys.com/insights/digital-journey/insight.html ----- Insights Insight AI in the Data-Driven Enterprise Insight Data is the lifeblood of the enterprise that aspires to be digital. It is what helps an enterprise analyze its past, take stock of its present, and prepare for future needs, evolving and changing to meet the dynamic needs of customers. Data insights help the enterprise decide their course of action to improve performance, increase efficiencies, and respond to challenges in a timely and effective manner. Today, these mean automating the supply chain, driving continuous innovation, and creating micro-moments-based customer experience. Hence, data builds the enterprise, and insights build transformational value. Build your organization's data fabric by modernizing the enterprise core, establishing intelligent and cognitive systems, and employing AI technologies that inform and drive decisions, help discover new problems, and build innovative solutions. But just gleaning insights is not the end game. While data can be amplified to be the driver of all enterprise decisions, it will not be data that differentiates winning enterprises from also-rans. It will be people, augmented by this data, who will solve previously unsolvable problems and explore unexplored ways to delight the customer. Related Articles The character of the digital enterprise is distinctly different from one that is not. Where the traditional organization employs technology mainly within its operational core, the digital one takes it to its outer frontiers with the primary aim of creating consumer delight. Read more ======================

Bit by Bit: How AR and VR are Entering the Real World

Insights Disruptions Most of us understand augmented reality and virtual reality in the context of entertainment; not many of us can fathom the sheer impact these can have in our daily lives — until now. Consumer and business interests in the possibilities presented by augmented reality (AR) and virtual reality (VR) have boomed over the past few months. The reason is simple: technology has advanced enough to take exotic, expensive, and niche products, and turn them into everyday experiences. People are delighted by what might unfold from such advances. However, this change isn't happening all at once. Rather, it's a piecemeal process driven by a few notable, disparate developments that, put together, create practical interactions within the AR and the VR environments. Historically, AR and VR have been held back by poor hardware and software, and the high cost of both. Hardware was often either too large or too expensive for mass adoption; software wasn't able to process and interpret data reliably; and the supply chain and applications necessary to produce components for AR and VR cost-effectively for a mass market were just not available. Yet, there hasn't been a better time for both of these reality-bending industries. VR has captured the imagination of video game enthusiasts, thanks to the HTC Vive and Oculus Rift. Filmmakers too have shown interest in the field with some success; for instance, the virtual reality short film, 'Henry,' recently won an Emmy award. Further, interest in AR gaming and applications has exploded after Nintendo and Niantic's surprise hit, Pokémon Go, and after Microsoft introduced its AR headset, the Microsoft HoloLens, to much fanfare. So how did we get to this exciting precipice? The same way we did with technologies before — combining the slow, steady building up of capabilities in increasingly smaller hardware, with the rising robustness of software. Another contributing factor for the imminent success of AR and VR is the concurrence of another technological innovation, the smartphone. As soon-to-be industries, AR and VR both owe a lot to the smartphone. The rapid miniaturization of processors and sensors, along with the establishment of standards already account for most of what AR and VR require to succeed. They have the supply chains, the user base, the software expertise, and proven use cases for the technology at home as well as at work. All that remains is to put the pieces together in the hands of both consumers and enterprises. This movement is already taking shape because of the latest development in smartphone technology: dual cameras. The dual camera setup is almost a necessity for AR because it enables depth measurement, which is crucial for an optimum AR experience. So, the fact that Apple's flagship phone, the iPhone 7 Plus, features dual cameras is remarkable (in fact, this is also how Apple achieves the prized 'bokeh' effect it is marketing in its new phones). Additionally, Apple's smart use of artificial intelligence also helps to address known shortcomings. We don't know yet if Apple intends to use the iPhone 7 Plus' dual cameras for AR. But, regardless of the Cupertino giant's intentions, one thing remains true — dual cameras are here to stay for the foreseeable future because Apple has long set the standard for what's expected of a modern smartphone (even though they

weren't the first to experiment with dual cameras on a smartphone). As for AR and VR, the more standardized this feature becomes across smartphones, the more capable the AR and VR software ecosystem will become. Software for AR and VR is tricky today because the standards for both technologies aren't fully developed. There are, however, efforts to correct these shortcomings. One project, the Open Source Virtual Reality (OSVR) project, is seeking to standardize VR experiences through open source software and hardware. Additionally, the Immersive Technology Alliance is also seeking to cement open source (software) and open standards (for both hardware and software) for AR, VR, and other immersive technology fields. Because of the confluence of these factors (rapid miniaturization and rapid standardization), the cost of producing and buying AR- and VR-ready headsets should fall from their current heights (US$3,000 for Microsoft's HoloLens developer kit) to a reasonable price point that will appeal to both enterprises and consumers. In fact, as mentioned before, we may not even see a direct flash point of AR and VR devices on the market, but a gradual build up to AR and VR capabilities through smartphones and similar mobile devices. The wide adoption of AR and VR, and of their respective software ecosystems, has massive implications for not just the tech sector, but nearly every other industry. Manufacturing, travel, education, and medical industries are some obvious examples. In fact, these industries are already pursuing and experimenting with AR and VR technologies. What's even more fascinating are the varied, potential applications of AR and VR outside of common workplace environments. Do-it-yourself (DIY) homeowners and hobbyists could leverage AR to make home repairs or build products at home. Farmers could use the data collected from drones to get a birds-eye view of their crop's health in VR and pinpoint areas of concern. The fact that consumers and the general public may no longer have to rely on specialists for repairs could spur a boom in AR and VR guides, software development, and entertainment. The possibilities are truly endless. AR and VR are capturing people's attention today because they have the potential to transform how we work and play tomorrow. Thankfully for us, the gradual progress of technology is turning this dream into a reality. We've still some way to go to make AR and VR an everyday reality, but each morning brings us a bit closer.
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The Changing Role of Technology Service Providers

----- Arcticle source ----- https://www.infosys.com/insights/disruptions/changing-role-of-technology.html ----- Insights Disruptions Technology is changing faster than what organizations can cope with. It is critical to not just adopt new technology but to contextualize it to the problems of the business and ensure its successful implementation on the ground. Technology service providers are moving beyond vendor-customer relationship to play the role of a strategic partner in helping organizations get the best out of disruptive technologies. Businesses are stressed and technology in isolation can't help them Disruptive technologies and business

models are proving to be game changers in every industry. Driven by the pervasiveness of technology, global connectivity, and ever-increasing competitive pressures, these disruptions are forcing organizations to be future-ready, efficient, and innovative. Organizations have to re-skill, re-tool, and even re-imagine their businesses to survive because today it's no more a question about their future in the business; but the future of the business itself! Organizations need help in devising a strategy to make their business future-proof. But strategy alone is not enough. It must be realized on the ground. Today - more often than not - this happens with the help of emerging technologies. However, the number of such new technologies is large and the speed at which they change is even greater. Clients, with their already stretched internal IT departments, are lagging behind in mastering and harnessing these technologies. They are looking at their technology partners to provide 'Incubation as a Service' so that they can navigate these disruptions through innovation without risk. Businesses seek de-risking of innovation The emphasis has to not only be on building technological capabilities but also on contextualizing them in order to solve business problems or exploit new opportunities. Service providers must partner with clients to not only create strategy but also ensure its successful execution on the ground. This calls for establishing a long term, strategic partnership between client organizations and service providers in place of the legacy vendor-customer relationship. Most differentiated, high reward innovations are those with a high degree of uncertainty in both business (e.g. new, unproven operating spaces, business models, pricing models, etc.) and technology (e.g. use of emerging technologies). This means that the high-reward offerings are by definition, also the high risk ones. Organizations expect their technology partners to help them de-risk innovations that are led by emerging technology. Technology service providers are coming up with different approaches to meet these expectations. For example, the Infosys Incubation as a Service program is designed to help clients leverage techniques such as Design Thinking, along with the strong emerging technology skills within Infosys. This significantly extends the comfort zone of our client organizations into the high reward zone giving them an edge over their competitors who continue to remain in the high-risk zone. How Should Technology Providers Respond to this Expectation? Technology providers need to pay heed to Management Guru, Peter Drucker's advice that the bright idea-based innovation is the riskiest with the least success rate and that 'Innovation is about exploiting change as an opportunity… and is a systematic discipline that can be learned and practiced'. Such an approach is transformative for both the clients and their service providers. Technology service providers must go through key shifts to meet client expectations. Historically, most IT service providers have played a reactive role, responding to problems that are already identified (often, even the solutions are known beforehand). The focus used to be on building that pre-identified solution in time and within budget. However, the new reality expects IT vendors to play a leading role in identifying the right problems to be solved, and devising and implementing innovative, emerging technology-led solutions. Likewise, reliance on in-house R&D teams alone must also give way to more distributed innovation at every level. Another radical shift that is underway is that in-house ideation is being replaced by "listening" (to the end users). The historical practice of leadership-driven innovation must give way to an end-user centric design process. Design Thinking emphasizes

the central role the end user holds in that methodology. This approach helps to systematically eliminate wrong assumptions about problem statements and solution designs that can prove costly. Lastly, it is evident that the underlying patterns in which emerging technologies are applied are portable across domains. The organizations expect the technology providers to identify and harness these patterns for their benefit. Technology providers need to create for themselves a holistic innovation partner role that encompasses the following dimensions: Digital Strategy - Helping the client make sense of factors such as a wide range of new technologies, new business models, digital consumers, global competition and a highly competitive marketplace, is a key requirement of that role. Organizations are increasingly looking at technology partners to help them make their digital strategy future-ready. Identification of initiatives, Ideation and Contextualization – Any innovation intended to realize this strategy on the ground must be based on a systematic identification, ideation and contextualization process. Innovation lies less in the technology itself and more in how the technology is applied to solve a business problem. The technology providers must therefore expand their horizons and be ready to help their clients devise innovative ways in which the technology can be applied. Rapid Prototyping - The speed at which the market is evolving today compels organizations to be rapid and agile in their response. The ability to quickly create new products and offerings, to fail fast, and to adopt an iterative approach to design are the central expectations organizations have from their technology service providers. Co-Creation – Technology providers must be ready (with the right talent, infrastructure, logistics and organizational culture) to engage clients in such a way that they can co-create solutions with them. Partner eco-system – It is imperative that both the organizations and the service providers not rely only on themselves to meet these challenges but also build an ecosystem of partners to maximize the success potential of any innovation. Culture of Innovation – Lastly, it is essential to nurture a culture of innovation within the ranks of the technology service providers – where people engaging with the clients, at every level, can identify problems and opportunities and come up with innovative responses. Mechanisms, such as hackathons, ideation contests, idea management platforms, rewards programs, as well as training, can be adopted for this purpose. Key Lessons for the Technology Provider Technology providers can benefit by keeping the following important lessons in mind when engaging with clients: Conclusion It is imperative that technology service providers understand the ever-changing client expectations and ready themselves to respond to the same. This process requires some fundamental shifts in the way technology providers have historically operated. Some of these changes are difficult to achieve and require strong organizational determination. Providers must adopt a systematic approach to help clients de-risk innovations, potentially high-reward solutions in a sandboxed, fail-fast, rapid environment, while leveraging Design Thinking and harnessing emerging technologies.
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Addressing the Challenge of Digital Abundance with Creativity

----- Arcticle source ----- https://www.infosys.com/insights/disruptions/digital-abundance-creativity.html ----- Insights Disruptions There was a time, when we looked at the minutes ticking every time we were on the phone and worried about the running meter. When we got to eat Swiss chocolates only when a friend brought them back from a holiday. When we had a camera in our mobile phones but just not enough space to store all the pictures we clicked. Today, we have video conversations across continents and don't worry about the cost. Foreign chocolates get delivered home at the click of a button. We are struggling with excess media in our phones because we have too much storage. As the American writer, Adam Gopnik said, "What drives innovation is abundance and ease, not the pressure of scarcity." With digital technologies, the world has moved from constraints to abundance. From the art of problem solving to the art of possibilities. From creating supplies to meet an existing demand to creating a new demand in itself. In the last 30 to 40 years, industries worked around scarcity of resources and information. Companies spent time and money optimizing the most limiting factors that came in the way of optimizing profits. For example, automobile companies have invested in research for years to increase the fuel efficiency of their vehicles, keeping in mind the increasing price of oil and government mandates on reducing emissions. Innovation and creativity were driven by customer needs that were unfulfilled due to scarcity of resources. Digital technology has radically changed the scenario by empowering society with capabilities that created an abundance of several resources, thereby lowering costs and creating opportunities for new business models and unimagined revenue streams. This has resulted in people shifting focus from scarce physical resources to harnessing digital services, limited only by a lack of creativity and imagination. Responding to the New Age of Abundance Entrepreneurs and business leaders have to rethink their growth strategy to be relevant and future ready. The mindset has to shift from problem solving to finding new ways of doing things with the abundance of technology resources that have expansive capabilities. Leaders needs to recognize the opportunity that digital offers to find new ways of doing business that contributes to building better societies. The economic values of several things are dropping with great speed due to technology innovation, like the cost of distance, skill sets, communication, learning etc., forcing enterprises to consider new economic models. Digital technologies are blurring the lines between the physical, virtual, and even biological, thus creating an abundance of data, information, and interactions. How can the organizations change their culture to adapt to an economy of abundance? Foremost, organizations need to inculcate the habit of unconstrained thinking where solutions are formulated without thinking of existing limitations. This would encourage the articulation of holistic solutions that have long lasting and future-relevant benefits rather than solving only the immediate problem at hand. Digital brings democratization of data and resources and decentralization of decision making, which encourages creativity at the ground level. At Infosys, we have invested in an initiative called 'Zero Distance' that focuses on a ground-up, grassroots approach to ensure that

every employee in the organization is at "Zero Distance" – to the end user or the client, to the underlying technology and therefore to the creation of value. Whether working side by side with the customer's customer or thousands of miles away, each of us close the psychological distance and become personally invested and empowered to find the right problems and even better solutions. Once the ground is set for creativity, organizations can focus on the following dimensions: Innovation in a new light: In business, innovation plays a key role in finding growth and new revenue streams, and creating new markets. Most of the new age firms like Snapchat, Uber, and AirBnB are thriving today by creating a market for themselves with a new business model based on peer-to-peer trust, dis-intermediation of production and consumption, and a service with a never before realized value proposition. Take lessons from unrelated problems: Often, by looking at unrelated industries or challenges from other areas of life - nature, books, or children - we learn new ways of visualizing situations and finding unconventional approaches to addressing problems in the context of a business objective. For instance, sports can teach us how to strategize better in terms of skill utilization, team building, and training. Improvise Continuously: Business leaders must understand that none of their strategies or models are permanent. They need to evolve over time, challenging their own limitations and comfort zones to grow their perspectives beyond the existing. Ask questions like – Is there a new way to deliver your product or service? Is there a new way to sell? Bring in a culture of critical thinking to spark more conversations around improving or disproving ideas, which lead to generation of more ideas. Celebrate the heroes who create new ideas. A good story exemplifying this is the success of Honda's small lightweight bike, the 50cc Super Cub in the American market in the 1950s. Contrary to the belief that Americans preferred or needed large bikes, which was the existing trend, Honda introduced these small bikes that drew the attention of people who weren't really looking at ganging up with friends riding bikes wearing leather jackets, but were happy to find a cheap, lightweight mode of transportation that was convenient for short trips. Organizations are empowering their employees with further learning on technology and adopting rapid changes so that they are better equipped for creative thinking to leverage the abundance mindset and develop new capabilities. They are and should be investing in intelligent systems that are connected with humans to explore new possibilities of human plus machine combinations as it is no more about "humans learning technology" but also about "technology learning about humans." While everybody is talking about digital disruption and why enterprises need a digital transformation strategy, it is equally important for digitally mature organizations to prepare themselves to succeed in the new world of abundance with a new mindset to define new possibilities, enabling them to create new future-relevant offerings for clients, enterprises, people and society at large for better and equitable living. As Alvin Toffler said, "The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn."
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'Learning' to Succeed in a Dynamic World

Insights Disruptions Reskilling and upskilling have become part of every corporate learning and employee development program. Companies are investing in new learning technologies to ensure their employees remain relevant in the new digital era. Online learning platforms too are contributing to this corporate learning movement and have revolutionized the way learning is being consumed - on demand, on the go, and in a piecemeal manner. We present to you an interview with Thirumala Arohi, VP of Education, Training and Assessment at Infosys, Raghav Gupta, Director of India & APAC at Coursera, and Ishan Gupta, Managing Director at Udacity on the future trends in learning. Large corporates are building a new generation of learning and development infrastructure to support the training and reskilling needs of their employees in a digitally disruptive world. How is Infosys responding to this phenomenon? How are online learning platforms complementing these learning initiatives? THIRUMALA AROHI - INFOSYS: Infosys has always been at the forefront of creating a culture of lifelong learning. We are further transforming workplace learning through our digital platforms. Our employee training and competency development programs employ an interesting blend of classroom, virtual, macro and micro learning. Our digital platforms offer learning that is available seamlessly to the learner anytime, anywhere and on any device. We make learning relevant by providing curated content that is contextual and dynamic. We make it fun through social learning and gamification. We offer round the clock expert guidance. Above all, we make it matter through telemetry and statistics, to help learners track their progress and reach their daily learning goals. We developed our next-gen learning platform imbibing these learning principles and launched it for our employees in April 2018. Using these digital platforms, we are able to train approximately 14,000 employees at the Global Education Center (GEC) at Mysore and offer 1,500 courses in continuous education that include more than 75 courses in emerging technologies and about 250 self-learning programs that are available on demand. RAGHAV GUPTA - COURSERA: We are a platform that connects the world's best educators and employers to bring life-transforming learning and credentials to people around the world. There are various components to how we deliver on that goal - a learner is looking for top quality content, delivered through the best learning experience, aimed at developing specific competencies that culminate in credentials that employers recognize - if all is addressed well, it produces better career outcomes. We are focused on engaging across all these aspects of the learner value chain. Our enterprise channel is on a rapid growth curve, growing at the rate of 300% YoY. In less than two years since the launch of Coursera for Business, we have acquired more than 1,000 customers worldwide, including more than 60 in the Fortune 500. We see this channel as integral to our mission, helping employers around the world manage their workforce transformation goals. We are increasingly seeing companies becoming educators themselves. With industry-relevant skills being crucial, Coursera works with companies like

Google, Intel, IBM, and PWC to create career-aligned content that teaches relevant in-demand technologies and business skills. Our platform helps these companies develop a talent and developer ecosystem that is crucial to their business. ISHAN GUPTA - UDACITY: Udacity offers practical, hands-on experience through its courses to ensure its graduates are industry ready. Led by Sebastian Thrun - popularly known as the "Father of Self Driving Car Technology", we engage with technology innovators like Google, AT&T, Amazon, etc. to ensure that our curriculum is relevant. We cater to every kind of learner through online and immersive learning experiences. We are also at the forefront of providing courses around the technologies of tomorrow like machine learning, artificial intelligence, computer vision, and self-driving or flying cars. We play a key role in upskilling corporate employees. Recognizing the unique requirements of large organizations like Infosys, Udacity offers courses in a hybrid learning model, of which the Infosys Connect Program for upskilling employees in self-driving car technology, is one example. Udacity offers scholarships in partnership with corporates, such as the Udacity-Google and Udacity-Bertelsmann scholarships, to enable students from different social and financial backgrounds to make careers in the field of technology. What are the game changers in terms of strategy and approach that organizations/online learning platforms should adopt to deliver learning using new technologies like AR, VR and adaptive systems that effectively meet the ever evolving need of learners? THIRUMALA AROHI - INFOSYS: At Infosys we have adopted interesting methods to pique the learner's curiosity and offer immersive learning experiences leveraging advancements in digital technology. Examples include: RAGHAV GUPTA- COURSERA: Our learning strategy includes: ISHAN GUPTA - UDACITY: We are driven not by academic interest but the passion to provide learning that offers an economic opportunity and meets the industry demand for employee skills. We offer short term online courses in a "learn by doing" model and make effective use of technology in creating hands-on experiences. We are highly focused on creating data science-driven adaptive systems to promote student engagement. Some of the initiatives that we believe will revolutionize the way people learn are: What are the key themes around which reskilling is required for employees to keep pace with digital disruption? What do you think are the future skills that different industries will demand as they go forward in their digital transformations? THIRUMALA AROHI - INFOSYS: Emerging technologies, evolving business needs and changing talent demographics are some of the forces disrupting and changing the talent needs of our industry today. Understanding this scenario, Infosys has segmented its skills portfolio into three horizons and has invested in 10 strategic themes to cover 27 business areas like AI, 3D printing, robotics, Blockchain and cybersecurity automation The modern enterprise landscape is complex with several development APIs, Integrated Development Environments (IDEs) and framework layers encompassed in one application which has to be delivered in an agile mode. This requires a developer to be familiar with various technologies. We, at Infosys have recognized this trend and created Technology Stacks offerings, which are a study of a combination of several technologies and are available on our digital platforms in a blended learning mode. Today's global work environment includes people from different cultures. To address the diversity, we rolled out an immersive training and development program enabling our employees with multilingual

skills and cultural sensitivity to appreciate diverse perspectives and collaborate with clients through culture based interventions. We also launched a targeted program to enhance employee creativity and are one of the largest corporate adopters of a renewed Design Thinking training program that has reached more than 160,000 employees. RAGHAV GUPTA - COURSERA: Over the past years, we have witnessed an uptake of high quality, flexible, career-relevant online courses. Maximum growth was seen in technology courses, which constituted 70% of the 10 most popular courses. Coursera for Business, an enterprise platform for workforce development and corporate training, has seen a high demand for courses in machine learning, deep learning, and data science. The enterprise platform has noted an increase in enrollments for courses like leadership, Design Thinking and operations strategy and execution that help enterprises develop a future-ready workforce. Popular business oriented courses featured a mix of courses on financial markets, Design Thinking for innovation, and marketing in the digital world along with successful negotiation and introduction to public speaking. We believe that along with tech and business skills, soft skills have increasingly become valuable, and courses like speaking and presenting, critical thinking, leadership, team management, Design Thinking, and writing will see greater traction. ISHAN GUPTA - UDACITY: Demand for skill would depend on the function performed by an employee and the company he or she works for. As digital transformation is largely being driven by the prospect of integrating technology like AI and automation into existing business processes and verticals, being adept at machine learning and deep learning algorithms are likely to hold one in good stead. One can help one's organization adopt these technologies into the functions they perform. There is already an increasing demand for machine learning specialists, programmers, and technicians. According to Indeed.com, there has been a five-fold increase in AI-related jobs in the recent past. As the penetration of these technologies into the market increases, there will be a demand for experience and skills in deploying these technologies. Big data and IoT solutions are perhaps the most popular new technologies today, though cutting-edge applications such as Blockchain, self-driving cars, flying drones, robots, and so forth are expected to follow in the near future. ======================

An Economist's View of the Digital World

----- Arcticle source ----- https://www.infosys.com/insights/disruptions/ economist-digital-world.html ----- Insights Disruptions Dr. Martin Prause, an economist and academician from WHU – Otto Beisheim School of Management, Germany, answers questions on how digital technologies will change the way we learn, interact, and work in the context of their impact on society and the economy at large. 'Sociability' of Robots Infosys: The future workplace will consist of humans and Artificial Intelligence (AI) agents/robots. Do you think 'sociable' robots, instilled with human behavioral characteristics influenced by cognitive biases, would allow for better human-robot interaction or will that defeat the very purpose of

building AI agents – not have these human predispositions? Dr Martin: The answer depends on the context one is interested in, whether one favours the perspective of mimicking human thinking or creating a new way of reasoning, having physical appearance or none at all. The emergence of intelligent systems that imbibe human behaviour and serve as human substitutes, is as prominent as building fully rational intelligent agents. Take the famous example of Google's Assistant making a call to a hairdresser using mumbling sounds to act more natural. Going one step further, Berkeley Dietvorst et al. (2016) highlights that people are likely to accept decisions from slightly imperfect algorithms if they feel they are in charge. Instead of providing a single optimal solution, intelligent systems should give a range of approximate optimal solutions to choose from, which would lead to better human-robot interaction. I doubt that instilling cognitive biases will lead to "sociable robots". A famous example of cognitive bias is group think, an error that occurs in teams when the desire for harmony outweighs rational decision making. Why should algorithms deliberately replicate these flaws to be perceived as more human or natural? In my opinion, other techniques, as illustrated by Google and Dietvorst, are more promising to advance the sociability of intelligent systems. Maximizing the Value of Digital Infosys: What are the questions that business leaders and government bodies should consider to maximize the value of digital initiatives for the economy and society at large? Dr Martin: Ethical questions are the most important. If people are not aligned with the advancements in technology, especially digital initiatives, their economic diffusion will be hindered. How are decisions in AI-driven systems made, based on what information, how is personal data processed, stored, secured, and who owns the data? These questions are especially important in the light of the European General Data Protection Regulation. Secondly, educational questions concerning the right use of digital media should be addressed in order to gain more assertiveness over technology rather than just being passive consumers. Then there are lots of technological questions regarding standards, accessibility, and costs. Computer Integrated Manufacturing, an early application of intelligent autonomous systems in the early 90s, failed due to lack of understanding and skilled labor, resistance to change, and organizational incompatibility. (McGaughey und Snyder 1994, p. 249). Defining Digital Ethics Infosys: How do companies who have successfully adopted digital technologies reconsider their corporate ethics and code of conduct to include the emerging discipline of digital ethics? Do you think it is time for an international body of ethical standards for the digital environment? Dr Martin: Big technology companies, such as Amazon, Apple, Facebook, Google, IBM, and Microsoft are already addressing this problem with joint initiatives (www.partnershiponai.org) to share best practices on AI and consider the implications of AI on society. Similar ethical standards exist in other sciences, such as bio-medicine or social sciences. In Germany, for example, an ethics commission, the "Deutsche Ethikrat", explores the impact of Industry 4.0 on the workforce (Arbeitswelt 4.0) or the consequences of big data in a medical context. I think, an international body of ethical standards for the digital environment may fail for two reasons: specificity and culture. "Digital environment" is an imminent part of developed countries. This would imply setting international standards, for different societies. I would expect resistance because of cultural differences. Cultures view and approach digitalization very differently. For example, the

data privacy laws in the U.S., China, and Europe are completely different, leading to different business models. Thus, even if all viewpoints were to be fairly incorporated, such standards would require a level of abstraction, rendering them unenforceable. Invest in Skills to Stay Relevant Infosys: There are extremely divergent views about the impact of AI on humankind in general and on the workforce in particular. While organizations are focused on reskilling and upskilling, what else should industries do to ensure that their workforce remains relevant and gainfully employed? Dr Martin: If we are talking about AI, we should be more specific: Weak AI or Strong AI? If we talk about Weak AI, meaning special purpose tasks automated by machines, we are talking about an impact within the next ten years. If we are talking about Strong AI, meaning machines that possess creative capabilities to handle unfamiliar situations and accomplish tasks better and cheaper than humans could, the time horizon stretches from 10 to 45 years. Scholars at recent AI conferences said there was a 50% chance that strong AI would outperform humans in various aspects of work within the next 45 years. (Grace et al., 2017). The reality looks promising. AI is currently dominated by the recent advances in Machine Learning (ML). ML is an automated approach for pattern recognition and prediction, based on large training sets. Recent results in computer vision (self-driving cars), game playing (IBM - Chess, DeepMind – Game of Go, Facebook - Dota 2), Natural Language Processing (Personal Assistants) and knowledge comprehension (Alibaba – Oxford reading test) are at the forefront of scientific breakthroughs in weak AI. The next big step will be to combine ML with machine reasoning (Parkes and Wellman, 2015). As of now, ML and AI have not paid off. We observe a "production paradox", that is, the new advances in AI do not achieve productivity gains as expected (Holtel, 2016). Whether this is due to false hopes, mismeasurement, restructuring lags or concentrated distribution, or rent dissipation, as argued by Brynjolfsson et al. (2017), is being debated. Therefore, making a prediction is challenging. Investments in AI seem to be currently more strategic in nature rather than for creating short-term advantages. Following Brynjolfsson and Mitchell (2017) multiple economic factors will be affected by AI in general and ML in particular. Specifically, ML will replace human labor in repetitive tasks where statistics reveal patterns in data (Ng, 2016). While, they won't replace jobs easily that consist of multiple interrelated or unstructured tasks, non-innovative jobs, for instance in retail, in transportation, in finance and customer management are at stake (Stiglitz, 2014). To maintain a relevant workforce, organizations should invest in managerial and leadership skills to compete in the VUCA environment, which AI is an uncertain part of. Taking AI, as of now, as a strategic investment and building competencies in this direction could be a viable move. Creating New Learning Grounds Infosys: Could you elaborate on how business simulation and experiential learning can provide value to enterprises in creating the learning ground that enhance strategic thinking, improve learning and accelerate innovation in a digital environment? Dr Martin: Data is increasingly being created outside the firm boundaries from IoT devices to social networks and is typically unstructured, incomplete, and fast changing. These characteristics of data pose operational and managerial challenges to a firm. On the operational side, an enhanced approach is needed to deal with big data. On the managerial side, decision-making processes and management roles must be redefined. Decisions are data-driven which might

be difficult in some firm cultures, where structures of decision-making are well established. Domain experts change roles from providing answers to understanding the data and asking the right questions. Business analytic approaches, which split into descriptive, predictive, and prescriptive stages, tackle those challenges. While descriptive and predictive analytics make extensive use of data mining and machine learning techniques to turn data into knowledge, the prescriptive stage focuses more on simulations to ask the right questions concerning business value and competitive advantage. Simulations are a risk-free tool to engage executives in scenario planning, strategy testing and competition analysis. Robin Bell and Mark Loon (2015) highlight in their study that business simulations help executives in strategic thinking and to connect the dots across all business aspects. It fosters critical thinking by bridging the gap between theory and practice. It enables a data-driven firm culture, which is the basis to reap the benefits of digitalization. Business simulations ease the use of scenario analysis to ask out-of-the-box questions and consider different business perspectives to avoid cognitive biases in strategic decision-making.
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Enabling Digital Transformation through API and Microservices

----- Arcticle source ----- https://www.infosys.com/insights/disruptions/enabling-digital-transformation.html ----- Insights Disruptions Most enterprises today operate in an extremely competitive environment. The way to emerge victorious in this situation is to not only have superior offerings but to do things faster, better and cheaper than competitors. When we look at some of the most successful enterprises of our time, we find that there are a few distinct aspects that put them head and shoulders above the rest. The first is the smart use of data. Amazon, Netflix and Uber are great examples. The second big differentiator is in the way they design their processes to foster business growth. Agility is the third one. The ability to change continually based on what is happening in the market is invaluable. Traditionally, most organizations have tried to address the need for an elevated business process through monolithic application suites; such as an ERP system to improve business process or a CRM solution to facilitate better customer service. These implementations were obviously quite effort intensive and disruptive. And on top of that, any addition of new functionality was highly dependent on the vendor's upgrade schedule rather than the organization's own evolving business needs. To be successful, an organization, needs to make smart use of its data, adopt efficient business processes and bring agility into its function and for this it requires a digital transformation that touches the very core of the business. Microservices to the Rescue The emergence of microservices architecture and APIs has changed all that. Microservices turn the entire traditional approach to software delivery on its head. Instead of a single massive effort to build, integrate and test the entire software platform, a microservices approach allows the same functionalities to be delivered in the form of discrete lightweight services. These interact with the business through a set of well-

defined APIs. APIs in simple terms enable enterprises to increase the points of presence (PoP) of their products and services; as we increase PoPs there is an inherent need of an architecture that would scale and enable the incremental delivery of capability to these PoPs. Microservices is this architectural technique that enables web scale architecture and incremental delivery of capabilities. In either case, the microservices approach works very well because it enables smaller changes to be delivered incrementally; thereby speeding up delivery and avoiding major disruptions in service. As a result, Cloud or SAAS microservice providers can help organizations bring in new functionalities and features quickly and easily. Given that mobile and browser digital applications need to be extremely dynamic and require quick changes, microservices prove to be extremely valuable there too. One of our clients, a global telecom major, is a great example. The company needed to introduce a number of new innovative value-added digital services for a new youth brand that it was launching. Due to the long implementation time, the launch of a new brand ran through a 12-15-month cycle, which was unacceptable. With the Infosys Platform for APIs and microservices, the company was able to achieve a drastic 66 percent reduction in cycle time from idea to feature release to production. Also, with the growing emphasis on customer experience, we see enterprises putting in considerable resources to upgrade their digital User Interface (UI) layer. They do this by designing more intuitive interfaces and better process flows. In most cases, these changes are only at the superficial level and fail to percolate into the core. Comparatively, changing functionalities at the core level is a far more tedious and slow process. Microservices come in handy to address this challenge because with agile delivery and DevOps, they work well to bring more digital agility to the core functionality. Very clearly, as industries move towards cloud-based SAAS offerings and APIs, microservices architecture is very well aligned to this environment. The new approach is to build a sustainable functionality for core services for a Minimum Viable Product (MVP) and upgrade to newer functionalities and features as and when newer services become available, thereby making the whole approach super agile and responsive. Overcoming the Legacy Infrastructure Challenge Admittedly, several organizations balk at a complete digital transformation because they have made significant investments into complex legacy landscapes over the years. The legacy infrastructure, however, is a treasure chest that contains a large volume of business functionality and data. If these are unlocked, they can provide tremendous value to the business. They can empower the organization to substantially improve customer satisfaction through better offerings and a personalized experience. Microservices can enable organizations to use their rich Systems-of-Record and build new and modern applications that are agile, with minimal disruption to the legacy infrastructure. A simplified understanding of the underlying legacy system data and usage is important to achieve this. One good example comes from the financial services sector, which often grapples with inflexible, old systems. Our client, a large global bank, was relying on a core banking system that was dependent on packaged systems and a highly complex backend. The launch of any new product or feature meant that the entire backend had to be reintegrated with the customer-facing channel. The architecture required approximately 5000 point to point interfaces that ultimately connected backend systems to the customer. We replaced this complexity with just 440 APIs in a single core-banking integration layer. This

helped greatly reduce time to market for new product launches. To pave the way for a customer-focused digital transformation, the legacy landscape needs to be navigated by creating fire-lanes of APIs that help us interact with it. Through a secure pathway to access the data in the legacy systems, APIs allow insights, that were previously buried, to come up to the surface and be used to drive better decision-making based on the right data. Microservices enable insights to be uncovered from legacy data by building an entire 'app economy' on top of the traditional foundation. It enables these new insights to be delivered more quickly and accurately by decoupling the development of frontend and backend systems. Through this approach, microservices help bring the legacy infrastructure to life with an ease that is simply not possible through other means. To sum up, microservices and APIs are indeed the gateway for scalable and agile digital transformation in a truly non-intrusive manner, especially for organizations that have a rich legacy landscape. They modernize the landscape and transform the business to take advantage of the ever-changing market demand.

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Why Enterprise Service Management is No Longer Just About IT

----- Arcticle source ----- https://www.infosys.com/insights/disruptions/enterprise-service-management.html ----- Insights Disruptions Over the years, Enterprise Service Management (ESM) has been evolving steadily to cater to changing business demands. From being called IT Service Management (ITSM) in the early days, it now comprises flexible and user-friendly service management solutions that support both IT as well as non-IT use cases. As businesses become more digital, the reach of IT extends to almost every business function and process within the organization. Hence, an integrated approach to ESM, versus ITSM, becomes more important than ever. The traditional IT service catalog has evolved to focus not just on handling IT tickets, but on providing a holistic bouquet of services such as resource tracking, repair handling and more. Today, IT plays a bigger role than ever before in enabling employees to perform their day-to-day tasks. A user-centric view of service management with a focus on superior experience can tremendously boost employee morale and productivity. Industry trends have also led to the evolution of ESM. For example, with IT development processes such as DevOps gaining popularity, there is greater pressure on infrastructure and ESM teams to be more involved in supporting DevOps processes. As per the HfS Blueprint Report on ServiceNow Services 2018, organizations now seek robust out-of-the-box and bespoke solutions that are relevant to their operations. In response, providers such as Infosys, are starting to offer high-value, end-to-end solutions. A number of these solutions are highly verticalized and come with strong use-cases. Tom Reuner, Managing Partner at HfS Research, has highlighted the broader AI and automation capabilities of ESM Café, especially in areas beyond IT, across business functions such as HR and

Finance. "Infosys stands out by supporting clients with a vision that is refreshingly devoid of the ITSM jargon." AI is Gaining Prominence Given the growing eminence of AI and automation across the board, it can bring several advantages to ESM as well. Organizations are keen to explore the use of self-service portals, AI chatbots etc. to better serve their employees across departments. The ability of AI to automate mundane tasks and enable more efficient approaches to service management makes it a valuable tool. The challenge is to balance self-service and automation with high-touch collaborative interactions and expert support in an end-to-end flow. In our own ESM Café product, we have the option to leverage chatbots with the power of AI and automation that work in tandem with ServiceNow to address queries. Users of the solution benefit from a seamlessly integrated bot that empowers them to take advantage of self-service, helping reduce direct tickets to the service desk and significantly improving user satisfaction. AI-led automation can help increase adoption of self-service offerings thereby reducing support costs and improving customer satisfaction. Automation and AI can especially play a key role in managing backend processes and knowledge management. Extending to Other Business Functions & Geographies As the impact of IT moves beyond the IT team and pervades the organization, there is greater demand for consistency of experience. Employees seek a unified experience across IT and other business functions. Therefore, a single integrated enterprise service management platform that delivers an enhanced user experience, better control, transparency and maintenance is highly desired. Organizations that have large, global teams demand a global delivery model for services, and a consistent user experience. Vertical-Specific Solutions As IT services become more specialized than ever, there is a greater demand for ESM offerings that are tailored to meet the needs of specific industry verticals, versus ITSM. We are already seeing compelling out-of-the-box solutions and examples of extensive tailoring being employed to tackle challenges in higher education, retail, hospitality, and many more verticals. As part of ESM Café, we offer vertical-specific solutions like Restaurant-in-a-Box, Enterprise Software library for manufacturing domain, Meet the Expert, Travel Management and more. These are designed to address real-time challenges that organizations face. They enable companies to leverage plug-and-play solutions that address pain areas specific to industry verticals and automate them on the ServiceNow platform. Mobility and Ease of Use IT services are no longer confined to the back-office. Therefore, having a suite of accelerators and apps can help boost their value and deliver enhanced experiences for users on the go. Users can ideally create, update, track and approve tickets at any time and on any device or Operating System (OS). These apps can allow clients to access plug-and-play solutions to cater to changing business needs. Actionable Insights Comprehensive CXO/Service Management dashboards can play a key role in helping executives get actionable insights. These are extremely valuable since they give CXOs a real-time view of service health. Our ESM Café solution too offers self-service, license management, AI and orchestration dashboards based on industry standards and best practices. Digital Transformation As more businesses undergo digital transformation, technology needs to be well integrated with business goals so that IT moves beyond its role as a service provider and becomes a key player in business operations. Versum Materials is a great example. The company wanted digital transformation

that was cloud-only, SaaS first. As part of this, it needed a comprehensive management portal to manage all of its applications for all vendors. It used Infosys's ESM Café including the ServiceNow portal. This helped Versum transform Service Integration and Management. The company now meets 99.5 percent of Service Level Agreements (SLAs) on services handled by the portal. Businesses today demand a seamless technology experience for their employees. As more enterprises focus on integrating their services to deliver consistent experiences, we can expect to see further evolution of ESM. ========================

Five Principles to Lift the Digital Fog

----- Arcticle source ----- https://www.infosys.com/insights/disruptions/five-principles.html ----- Insights Disruptions The success of digitalization depends on how well an organization is prepared to leverage the opportunities it brings by making the necessary change in its culture and approach. Saurabh Gupta, from HFS Research, shares his insights on how to make digital work for an organization. We live in a world that is scary and exciting at the same time. The astounding pace of technological advancements combined with the data explosion and increasing consumerism has not only created opportunities for new sources of revenues and new business models but has also increased the threat of extinction. Our recent research across 400 enterprises suggests that nearly a third of the enterprises have seen their top 2 competitors change in just the last three years! The global world today is Volatile, Uncertain, Complex, and Ambiguous (VUCA) – exactly how the US Military described the extreme conditions in the Afghanistan and Iraq wars. And there is a battle alright in the business world - not just for driving future success but also for survival. Digital is both an opportunity and a threat, and your future will largely be determined by how you view it. The complacent enterprises will get flattened by their more digital-savvy competitors while organizations who realize this fact and work on it manically will have a much better chance of survival and success. Digital transformation is not about technology. In fact, nearly two-thirds of enterprises we surveyed last year view digital as creating better customer experiences, creating new revenue streams, and/or aligning business operations to customer needs. Nearly 100 C-suite executives we interviewed in another study recently said that legacy mindset and culture is the number one barrier to driving meaningful change. I've outlined below five principles that enterprises must adopt to lift the digital fog: Collapse the front, middle, and back office – there is only "One Office" that matters anymore. The Digital OneOffice™ (see Exhibit 1) is where the organization's people, intelligence, processes, and infrastructure come together as one integrated unit, with one set of unified business outcomes tied to exceeding customer expectations. It allows an enterprise to unify all stakeholders across the organization: the customers, partners, and employees. Exhibit 1. The Digital OneOffice™ Framework Leverage the power of AND not OR. We finally have credible change agents beyond labor arbitrage in the global services industry - design thinking, robotic

automation, artificial intelligence, smart analytics, blockchain, IoT. But they must work together to solve business problems. Unfortunately, most discussions today end up becoming either a capability discussion versus a business solution discussion or a comparative discussion versus integrative discussion. To create real and meaningful impact, these change agents need to converge. For instance, smart analytics are increasingly reliant on AI tools such as NLP to conduct search-driven analytics, neural networks to do data exploration, and learning algorithms to build predictive models. In fact, the Holy Grail of service delivery transformation is at the intersection of these change agents (See Exhibit 2) Exhibit 2. The Triple-A Trifecta of Automation, Smart Analytics, and Artificial Intelligence Develop and execute a strategy across three-horizons. When designing your transformation roadmap, it is essential to think through three horizons to be future-proof (See Exhibit 3). Adopt and industrialize horizon one change agents or risk getting left behind. Start playing and piloting with horizon two because before you know it, they'll transition to horizon one. And learn and investigate horizon three change agents to avoid the "oh no!, I wish I had…" moment a few years down the line. Exhibit 3. The Three-Horizon Services Strategy Shift the DIY (Do It Yourself) culture to DIT (Do It Together). Realize that in today's world nobody can be everything to everyone. Successful enterprises need to develop symbiotic relationships across the ecosystem to exploit market opportunities and accomplish their goals. And increasingly, they will interact with an ecosystem that is expanding to include start-ups, academia, technology providers, and platform players. Develop partnerships to bring complimentary skillsets as well as more and diverse data that fosters continuous evolution instead of one-time project-focused improvements Beg, borrow, (avoid stealing) creative talent. Discussions around Automation and AI almost always correspond with the discussions regarding the loss of jobs and shrinking opportunities for humans. But a more productive discussion is what Man AND Machine can do together instead of comparing Man Versus Machine. The left brain has been celebrated loudly over the past few decades. A degree in management of finance or science was the gateway to a rewarding career. However, in the near and emerging future, we will take a right turn. Future jobs will stress the creative and analytical faculties of the right brain. With robots doing the common, repetitive, and linear tasks, the focus will shift to decision sciences – data interpretation, making the right judgment, and planning better strategies. The impetus is on soft skills and right-brain thinking, which represents the larger shift – technology is now an enabler for people, helping them do what they do best. Solving the talent equation is a critical ingredient for future success. Innovation in today's context is to do a lot more with a lot less. Our research suggests that enterprises expect an average of nearly 22 percentcost reduction in the next three years, but they also want to expand revenues by around 21 percent in the same period. This is hard but not impossible. Technology investments alone will not drive outcomes. But earnest adoption of the five principles described might. Godspeed! =====================

How Sustainability is Leading to Disruption in Today's Supply Chain

Insights Disruptions Sustainability burst onto the scene ~10 years ago as the price of oil shot past $100 per barrel and the discussion on CO_2 concentrations in the atmosphere moved from science labs to the board rooms. The increased dialogue on the environmental impacts of business was a positive development. However, the core tenet of sustainability - optimizing usage of resources - has always been about minimizing costs and maximizing financial performance. Today, the explosion of data powered by the proliferation of smart sensors, or the Internet of Things, has rapidly raised the competitive bar. It is no longer enough for companies to add insulation to their factory walls and plant gardens on their roofs. To win, they must also embrace big data in a way that stitches together fragmented, custom e-commerce orders with reactive, optimized supply chains and factory production. This blog post explores the framework enterprises can adopt to be sustainable and deliver on Industry 4.0 targets. Identifying the benefits of going sustainable By some estimates, 40% ($36 trillion) of the world's revenue is generated by enterprises that consider 'energy cost and energy source' of strategic importance to their production lifecycles. Of this, 27% of the enterprises are in energy-intensive industries where energy costs account for over 5% of their production lifecycle. Given the scale of these numbers, improving energy usage by even a conservative 2% has the potential to reduce a whopping $30 - $50 billion from corporate cost structures. Additionally, energy prices are notoriously volatile, giving firms one more reason to reduce this line item and achieve greater margin predictability. Let's take an example. Imagine knowing the cost of making each unit of a product, say a light bulb or a car. Monitoring energy usage throughout the production lifecycle for a single unit provides data about raw material and energy costs. Surprisingly, very few firms have this knowledge. Yet with such knowledge, it is possible to make strategic decisions about what time of the day to manufacture the product (when energy consumption is at its cheapest) and when to buy additional energy to manufacture bulk orders of that product. Here, enterprises can use integrated weather forecasting tools to understand when to buy additional, cheaper, renewable energy on the energy exchange market, when the sun is shining, and; even modularise production to maximise the energy potential of a given production line. As a long-term objective, such knowledge can also drive strategic decisions around investment in own energy production, namely, through solar, wind or biomass. This is particularly relevant for highly energy-intensive industries such as mining. Where firms are today With the Industry 4.0 initiative well underway, Infosys Consulting decided to find out how firms in Germany were addressing the energy costs in production. Surprising, 85% of firms acknowledged the potential benefits of energy optimization. But only 15% had actionable strategic initiatives in place to realize these benefits. Fortunately, there is a solution here by way of The Infosys Consulting Value Realization Management (VRM™) Framework.

The Infosys Consulting Value Realization Management (VRM™) Framework This framework helps enterprises translate strategy on energy consumption into actions that can be measured and valued. To implement VRM™ enterprises first define change initiatives that align with corporate strategy. Then map them to operational processes that can trigger the desired change. These process changes are attached to KPIs that measure overall impact. Ultimately, these operational KPIs are translated into value drivers to quantify the contribution of these changes to financial performance. To give an example, let's consider the German organization Osram. In February 2017, Dr. Olaf Berlien, CEO of Osram, noted in his address at the annual general meeting that the company wanted to leverage innovation to open new lines of business in support of energy-efficient smart cities. This aspirational statement serves as the strategy component of the VRM™ framework. Translating this strategy into process changes required supply chain modularization and the installation of predictive analytics to measure equipment downtime. This introduced energy efficiency within both the production process and the end product − supply chain planning, production planning, and procurement. The corresponding operational KPIs to measure these process changes were: lead-time between first client contract and first order completion, asset downtime and planning accuracy (%) of production lifecycle. Translating these KPIs into value levers would quantify increased capacity utilization and operational cost reduction, which would impact the enterprise's financials through increased product margin and a reduction in both cost of sales, general and administrative expenses. It would also support the sustainability strategy that translates into a triple bottom line: reduced costs, increased margin, and decreased carbon footprint. By following this framework, companies can measure relative progress at each step of the journey and incrementally course-correct as needed. Where sustainable supply chains are headed At their core, many Industry 4.0 advances are being powered by the Internet of Things. Here physical systems contain connected sensors that share data. This dynamic, in which factory 'command centers' are tethered to the cloud, enable real-time monitoring as well as demand-driven configuration. Additionally, supply chains flexibly optimize themselves based on changes in demand or production capacity, and energy is delivered in an optimized manner. These concepts, which would have seemed the stuff of science fiction just a decade ago, have become standard table stakes in a world where virtual shopping for customized objects has become the norm. Under this paradigm, it is no longer enough for enterprises to produce thousands of the same product. Shoppers now expect personalization, which in some ways is a reversion to manufacturing's roots -- akin to a blacksmith crafting a plow blade for a farmer whose equipment he knows intimately - but at massive scale and in near real-time. To serve the demanding customer of tomorrow, enterprises must harness their data in ways that allow them to not only keep up with orders, but to optimize their use of resources and keep the costs of personalization in line with their margin expectations. Those that do, will not only help the environment through decreased energy usage, but will also please shareholders via expanding enterprise value - economically and sustainably. =====================

Integrated QA is the Need of the Hour

For almost two decades, Quality Assurance (QA) teams have played the role of gatekeeper in the world of software development ensuring that each solution works well and meets clients' requirements before it is finally delivered to them. It is an important tool to build client trust. In the traditional 'waterfall' model, most people acknowledge the role the QA team plays at the end of the software development cycle in validating all the code that has been written. With software development evolving into Agile and DevOps models that lay greater emphasis on timelines, it may sometimes be tempting to question the relevance of QA. Delivery cycles have gone from six months to six weeks, making development folks wonder about the value of an additional QA layer, given that it adds more time to the software development process. Can Developers Become Testers A prevalent line of thinking suggests that developers do the testing themselves, to reduce the number of hand offs and speed up the delivery process. Though it appears to be a compelling argument, in reality, the idea is severely flawed for several reasons. Even in days past, when developers presumably had adequate time to write good, flawless code, there were always bugs to be fixed. Given that timelines are so much tighter in a DevOps environment; will developers make fewer mistakes or have the time to take on the additional responsibility of testing? Secondly, the QA function needs a certain focus and temperament that is quite different from that of a developer. Developers will never have the depth of focus on testing that a QA team has, just like a QA person may not be the most proficient when it comes to writing code. Not just that, the team that writes the code are often too myopic in their view of the work to be able to spot errors with ease. The QA function encourages manic focus on end customer-centricity, with a hawk-eyed emphasis on quality. Companies need to acknowledge that there is an urgent need for the QA function to evolve beyond their end-to-end blinkered focus, and become more integral to the development process in order to be relevant. Integrated Quality Assurance is the Future Many industry analysts have also recognized the role of QA in DevOps and are already beginning to refer to it as DevTestOps. Independent QA teams that were characteristic of the waterfall era may not be suited to the fast-changing world of DevTestOps. Therefore, it is time to relook at the monolithic and centralized QA functions and change how they interact with development teams. 'Independent QA' needs to transform into 'Integrated QA' while addressing the specific nuances of processes, tools and people as relevant to the new world. Beyond End-to-End Testing Today, the Agile process is a widely used methodology in digital projects as it focuses on shorter sprint cycles, where value is realized in weeks as against months. Therefore, the new QA process should also focus on testing that is not limited to black box / end-to-end tests, but starts contributing value as soon as a code is developed. Static testing, build verification tests, and component level security/performance tests become imperative. Involvement of QA teams during sprint planning and stand up meetings through the life cycle is also key. The traditional UI-based validation tools

are now giving way to service virtualization, API testing and performance engineering-focused utilities. Helping build quality into the code and catching potential vulnerabilities early is changing the entire dynamics of the tools market. For a large telecom player based out of the United States, Infosys helped achieve twice-a-week deployments. A seamless zero touch Continuous Integration testing / Continuous Deployment framework was set up to support automatized script execution for functional and non-functional tests. 80% automated regression suite helped reduce cycle time by 25%. New Skills for the Testers of Tomorrow The test cases of tomorrow will be code snippets in Java, Perl, Python etc. and not the traditional English language test cases. This makes it challenging, especially since traditional QA has always emphasized domain, rather than technology skills. The testers of tomorrow will, however, need to be far more adept at technology than their peers from yesterday. For most organizations, this would mean a massive reskilling of the workforce and infusing new talent into the digital QA team. Infosys helped a leading fashion retailer improve agility throughout the enterprise by transforming its QA organization into a federated Agile team implementing DevOps. The team was reskilled in Agile/DevOps practices and QA processes were realigned to the Agile/DevOps methodology, enabling more frequent releases leading to 80% improvement in time to market with zero critical defects leaked to production. This new workforce is now called – SDETs, full stack QA, Integration Engineers etc. Irrespective of what we call them; they will need to be the new ninjas ready to work shoulder to shoulder with their development and operations counterparts. Also, they need to speak a common language of tools and technology. QA to Align More with Business Goals What will set the QA teams apart from the software developers will be their appreciation of the business domain. It will help them seamlessly translate user stories and priorities into a set of test objectives and scripts. This, when coupled with the right tooling, can significantly help the organization deliver on the clients' business objectives. Infosys helped a leading retailer looking to improve customer satisfaction and time to market, achieve eight releases per year with 100% schedule adherence and zero critical defects leaked to production, through continuous automation and analytics-based testing. It is important that we accept the new normal where the definition of quality as delivered by the QA teams is not limited to absence of defects, coverage etc. instead, it actually ensures that the business goals are achieved with greater agility and minimum risk. The whole debate of whether or not QA is required as a separate focus in the new world of DevOps is moot. The need for QA remains irrespective of the software development model. Instead, we need to focus our energies on a constructive dialogue of how we can reimagine QA such that it is relevant to the changing needs of business.
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Moving to Distributed Systems: Blockchain & the Standards Opportunity

Insights Disruptions With the growing popularity of blockchain technology, days of the static, offline ledger are numbered. In this article, we examine the enthusiasm towards its adoption and the importance of standards in ensuring its hassle-free, global implementation. Standards sit at the core of every aspect of a business, a technology, and a heavy industry. Without standardization, we would not be able to run trains across borders, as rail spacing and thickness would not be uniform. We would have much wider disparities in power voltages and mains plugs, severely impacting manufacturers of electronic goods. Without standardization, it would be impossible to reliably source components like nuts, bolts, and screws to assemble everything from a laptop to a suspension bridge. Standards bring order to chaos and nurture industry-wide development of systems and platforms, discouraging myriad individual directions, creating incompatible variations on the same theme. IT systems are no different. Standards have helped define everything from the web and email to programming languages as well as ensuring interoperability of systems and networks. It is hard to believe, today, that we would build applications and operating systems that differ from the current accepted practice. However, before clear industry standards emerged, it was a very different, incompatible world. Interoperability in recordkeeping and ledgering is a classic example of where standards serve to bring method to madness, especially where there is a need for a standards-driven approach to delivering the next-generation of electronic, interoperable recordkeeping platforms. At the center of digitized ledgering efforts is the distributed ledger technology (DLT) — the notion of a trusted, electronic ledger platform that can be shared by organizations as well as an entire sector. Right now, we are witnessing an explosion of innovation in this space, led by efforts based on the block chain. The technology could prove to have the capacity to deliver a whole new level of trust to a wide range of services, based on open standards. Open data has fundamentally changed public and enterprise relationships, with each other and with the government. The same approach can reform our financial markets, supply chains, consumer and business-to-business services, and publicly held registers. Delivering a trusted, hardened, and interoperable platform is essential — it does not work if groups go their own unique ways. Sectors need to settle on a single, standards-based approach. This is why blockchain is increasingly being seen as the solution. It overcomes key inefficiencies in the market, allowing organizations and bodies to scale a platform without requiring an equally significant increase in staff numbers. A blockchain distributed ledger is essentially an asset database that can be shared across a network of multiple sites, geographies, or institutions. Any changes can be replicated to all copies of a ledger quickly, ensuring that no participant is left working on outdated information. The security and accuracy of data within the ledger is maintained cryptographically through the use of 'keys' and 'signatures'.

These not only control who can edit the ledger, but also curtail retrospective tampering. Additionally, it removes the need for a centralized body to reconcile and adjudicate over transactions while building security. Each record is interlinked with the one before and after it, making retrospective tampering and hacking impossible to achieve without detection. Haruhiko Kuroda, governor of the Bank of Japan, made the point about the potential of a distributed ledger technology like blockchain when he recently said, "The development of financial services has been supported by ledgers as the basic infrastructure for information. The dramatic changes in how ledgers are kept may have the potential of significantly changing the structure of financial services." In short, shared protocols enable the collaborative creation of digital distributed ledgers with properties and capabilities that go far beyond traditional paper-based ledgers, removing the need for clearing, reconciliation and other translating middleware. When combined with standardised, computer- readable semantics for contracts, distributed ledgers also open up the possibility of automating the processing and execution of contracts – resulting in so-called 'smart contracts'. Any standards-driven approach to platform development takes time. Agreements about data interoperability, policy interoperability, and the effective implementation of international standards is time-consuming, requires negotiation, and involves many stakeholders. After all, we did not settle on standardized railroads or shipping containers overnight - it took many decades for such standards to emerge, and it was a process driven largely by the demand of international business. Similarly, with blockchain, businesses have a pivotal role to play in tackling issues of security, privacy, and the development of standards — all areas where industrial advantage will be gained by cooperation rather than competition. Furthermore, governments need to work with academia and the industry to ensure that standards are correctly enshrined in the legislation, and that these are deemed as an industry best practice, and elaborated upon through education. For example, UBS, Deutsche Bank, Santander, and the Bank of New York Mellon are teaming up to develop a new form of digital cash to clear and settle financial trades using blockchain technology. This is just one of the several initiatives that could ultimately breed the next industry-wide platform. Without standards, fragmentation and technology forking inhibit adoption, adding complexity and cost. Furthermore, many bodies and influential standards groups are already conforming, in support of blockchain-based technologies. For example, the Linux Foundation is backing Hyperledger, while the W3C, R3 group, and other bodies are actively collaborating with enterprise stakeholders to ensure that distributed ledgers built with different technologies will be able to interoperate on a basic level. For Infosys and other champions that are working with blockchain, the opportunities and flexibility offered by the technology are varied and motivating. As an underlying platform, blockchain lends itself to everything from land registries and tax payments, to bank account transactions and social security payments. For anything that needs accurate, legally robust recordkeeping that can withstand attempts to tamper with the flow of information, blockchain is a viable standards-based option. Moreover, the standardization required to maximize value from DLT would have a ripple effect of improving and standardizing some of the contracts and instruments around this workflow, such as supply chain documents, financial instruments, and other components of the process.

However, while most industry players agree that standardization will add value, we are some time away from knowing which of the various proposals will emerge as the true standard. The success of standards should not emerge from another 'VHS vs. Betamax' battle, where market forces settle the argument after years of confusion. The best standards are those that emerge from stakeholders sitting down together and agreeing on an approach that meets their collective needs. When laying down the pipework of the next generation of financial infrastructure, the stakes are too high to do it any other way. Read more about the Infosys offering on blockchain >> =======================

Adia: The Adecco Group and Infosys Make Platform Economy 'Work' for All

----- Arcticle source ----- https://www.infosys.com/insights/disruptions/platform-economy.html ----- Insights What did We do Differently? Disruptions Adecco Group, a leading global HR Solutions provider, and Infosys jointly transformed the staffing industry with their new business, Adia, by bringing together data, domain, technology, and speed using the platform economy to create an innovative new model in the world of staffing. The world of work is changing fast. Global megatrends are transforming the way we live and work. Geopolitical and economic uncertainty have made agility and flexibility the watchwords of our age. Having the right skills 'on-demand' is vital for businesses to survive. Populations are ageing in many parts of the world – North America, Europe and some Asian countries – and the workforce is shrinking, leading to talent shortages and turning the spotlight on migration from demographically young nations. Technology, fuelled by AI, Machine Learning, and Big Data, has automated some traditionally 'human' tasks, changing the nature of many jobs, while creating others. Digitization and new forms of social interaction are fuelling the rise of the platform economy, where fulfilment happens on-demand and physical location matters lesser and lesser. As each day passes, the platform economy gains traction in new areas, having already conquered the turf in transportation and hospitality. In the world of work, it is making its presence felt through more flexible employment models and lifestyle choices: an estimated 150 million people in North America and Europe have taken the leap into independent working in the growing gig economy. Just-in-Time Staffing comes to life with Adia Among trends of asset-light business models, micro-consumption and fulfilment on-demand, we are also witnessing the emergence of another – hiring staff "just in time", for as long as needed. Large organisations today employ as much as 40 percent of their staff through non-permanent and flexible work arrangements. At Adecco Group, we have been looking into ways to enable our global and local business customers to unlock value in the global talent pool and to harness the full possibilities of the platform and gig economy. In a talent scarce environment, our goal is to give businesses easy access to the resources they need, anytime and anywhere. As the global leader in HR solutions

looking to enter the platform economy, we had two options – join an existing ecosystem or build a marketplace of our own. We decided to do the latter, and worked on a co-creation model with our technology partner, Infosys. Infosys and the Adecco Group worked together to co-create a new digital experience for jobseekers with: In October 2016, we launched Adia, an online staffing marketplace for flexible workers. Adia transforms the way enterprises manage supply and demand for talent in the digital economy. It allows companies to hire flexible workers easily in areas such as hospitality, catering, and events, and it gives workers the opportunity to manage their career needs around their lifestyles, all at the touch of a button. The recruitment-on-demand platform is already breathing new life into businesses in Switzerland, UK, US, and Germany, with imminent plans to roll out into more markets in the years ahead. Adia caters to this need by making it easier and more efficient for companies in a number of industries to hire flexible staff for short-term placements, while offering a better experience for both employers and candidates. The platform employs a Machine Learning algorithm to match candidates to job openings based on their role, level of experience, location preference, availability, rating and historical reliability. Companies can hire staff through the platform 24/7, allocate shifts, add their existing team to their Adia account, issue contracts, approve time sheets, and initiate payment to workers easily. Candidates are instantly matched to opportunities upon registration, they receive personalised job offers based on their profile, skills, availability and location, and can commence work within a few hours of signing the contract on their mobile device. They can also submit their timesheets via the app and receive weekly payments. Adia, along with our other new platforms for recruiting freelancers and professionals, such as YOSS, perfectly illustrates the Adecco Group's digital innovation strategy. We believe innovating to fuel the platform economy through talent and technology will allow us to fulfil our mission to shape the future of work. Within that, our platforms will play an important role in the labour market ecosystem, as we innovate to deliver better services for job seekers and clients, and create new opportunities across all forms of work. More than a job portal – Equal opportunity to work The platform model has disrupted and revolutionised existing ways of business in every industry that it has penetrated, creating huge digital value for companies while giving consumers greater power through a differentiated user experience. In addition, platforms which facilitate a sharing economy have the potential to generate greater social value by democratising access, creating opportunity for all, and ushering in more fairness and transparency. In the context of flexible work, Adia is having a positive impact by making it much easier and faster for jobseekers to find relevant, vetted roles in their field. In minimising the need for human intermediation within the recruitment process, the platform overcomes limitations imposed by recruiters' working hours and workload capacity. The platform's marketplace makes for efficient and agile staffing, with candidates finding and beginning new jobs, on-demand. What's more, because Adia makes all payments online, payments are fast and efficient. Flexible workers are granted the same employment conditions as the Adecco Group associates, with Adia contributing to their social security benefits and fulfilling the administrative procedures. This way, employers always gain the flexibility they need and workers are granted the security they deserve. In short As the platform economy grows from strength to strength, it makes

sense for incumbent organisations to get involved and to show leadership. Many companies are plugging into existing ecosystems which belong to third parties (for example, McDonald's tying up with Uber to deliver orders to consumers' doorsteps), while some are creating new platforms in partnership with others (such as Philips HealthSuite, which has partnered up with Salesforce, Amazon AWS IoT, and Alibaba AliCloud). Adia is the perfect illustration of innovation within the Adecco Group and reflects our clear vision for the future of work. By creating Adia, we are able to take advantage of technological innovation to capture new revenue growth opportunities and cater to the shifting needs of clients and candidates in an ever-changing, uncertain world. Platforms such as Adia will help us make the future work for everyone. =======================

Unpacking the Possibilities Offered by Blockchain

----- Arcticle source ----- https://www.infosys.com/insights/disruptions/possibilities-offered-by-blockchain.html ----- Insights Disruptions As blockchain becomes increasingly popular, enterprises across industries are wondering whether this technology can benefit them, and how. Brijesh Balakrishnan, Associate Vice President, and Head of Delivery for High Tech Consumer Electronics and Blockchain, Infosys, takes time of his schedule to sit down with Alex, our host for this podcast and explains how blockchain has progressed over the last decade, points out some of the industries that have rapidly adopted this technology and why, and how enterprises need to approach this rapidly evolving technology. Listen to this podcast to learn how blockchain is likely to develop in the near future and the challenges it could encounter to its widespread applicability. Brijesh also deep dives into the Distributed Ledger Technology (DLT) choices available in the market and makes a guess on who will emerge a winner. He also comments on how Infosys has been engaging with blockchain and investing in it to develop high quality proof of concepts and accelerators for its clients. Alex: Hello and welcome to a new episode of Infosys Podcast. Today, we have Mr. Brijesh Balakrishnan, Associate Vice President, and Head of Delivery for High Tech Consumer Electronics and Blockchain at Infosys. As the head of the Blockchain practice at Infosys, he will be throwing light on the possibilities and advantages of blockchain technology along with some of the complexities of implementing it to drive business worldwide To get started Brijesh, could you quickly walk us through the evolutionary stages of blockchain, how it was received initially as a technology, and how Infosys has engaged with it? Brijesh: Thank you for having me here Alex. So blockchain has been through some key stages in its life over the last decade. It started with bitcoin in 2009 and till about 2012 it was all about the potential offered as a cryptocurrency. This phase was marked by skepticism from central bankers, while non-believers of traditional centralized banking systems quickly adopted this option. The period from 2013 until about 2016 saw huge interest and traction around alternatives to bitcoin and its interfaces with the real banking world. The world finally accepted that blockchain was here to stay and fiat currencies would have to make space to

coexist. Infosys started to actively observe this space and consider ways to create software offerings in blockchain, particularly for the financial sector. By 2016, the technology powering cryptos was picked up by virtually every industry with unprecedented zeal. This phase was marked by a huge number of proof of concepts, primarily, to gain early insights into what this technology was capable of. Infosys picked up the pace and executed double-digit PoC's across almost all major industries. We became a well-recognized and active player in the blockchain space, although we were operating across various pockets within Infosys. By the end of 2017, we had engaged with more than 150 customers, from initial dialogs to executing pilots. Since 2018, blockchain as a technology has begun maturing, and the advantages of this technology are being widely recognized. Industries are realizing that blockchain need not replace what they already have, but instead capitalize on this technology to derive more value from what they already possess. Blockchain technology, instead of replacing the core software, augments the core functions and extends the reach of enterprise software to other business stakeholders and partners. This 'network' effect powered by blockchain helps in forming collaborative business ecosystems. This line of thought is being acknowledged by nearly all industry verticals. Infosys has reorganized itself rather well for this phase, by creating a dedicated horizontal practice, as well as developing industry-specific blockchain competencies within each vertical, so that we can jointly identify and service suitable blockchain opportunities by utilizing existing connects of industry-focused verticals. Alex: We see that some industries have a higher adoption of blockchain, while others do not. Brijesh, which industries have been early adopters of this technology? And how did governments across the globe react to this? Brijesh: While the initial adoption of blockchain was observed in almost every industry, some have seen greater adoption than other, primarily I think, for the greater benefits it offers some industries compared to others. Financial services and Insurance industries have seen the maximum number of experimentations on blockchain and most of these have been in crucial areas, such as in payments, multi-party interactions in trade finance, and claims management. This reflects on our market traction over the last two years, wherein upwards of 60% client dialogues are in this space. The second industry that has seen high adoption is Energy and Utilities. They have leverage blockchain to create synergies between their existing technologies with the expanding alternative energy movement. However, wide-scale deployment is still an issue here primarily due to costly systems acquisition involved in situations that are truly relevant for blockchain, for instance, IoT integration of alternative energy devices with blockchain. Retail, logistics, and manufacturing industries have majorly focused on optimizing the supply chain, reducing complexity, and introducing transparency for not just enterprises but consumers as well. The challenge here has been to get all parties together amidst complex power equations – the powerful partner will not share their data beyond a point, in order to continue to retain power, while the less powerful partner will trust his systems more than others' systems – this impacts their speed to capitalize on blockchain networks. Interestingly, once the controversial crypto usage separated from the huge possibilities that blockchain as a technology had to offer, Governments too started to look at it favorably and there have been several governments that have recognized the value of blockchain and begun exploring options, including those of the US, France,

Korea, UAE, India, and others. Alex: We understand that blockchain has a tremendous potential for the speed with which it allows us to do business, the transparency it introduces into business processes, and the enhanced security it offers – thanks to its immutable records. And more and more industries are beginning to dive in and explore the possible benefits it could offer them. So Brijesh, if an enterprise needed to adopt blockchain, what would be the key questions they should address? And what actions should the CIO/CTO take in order to facilitate the implementation of this technology? Brijesh: To begin with, enterprises need to understand the risk of disruption and develop a disruption radar. They need to understand the areas where blockchain initiatives are currently most focused and making most rapid progress. For instance, blockchain-powered payment systems (like Ripple) are proving disruptive for central bank controlled payment systems (like ACH, Fedwire). Enterprises need to improve internal operations, this helps to look forward beyond the current radar and identify the next big thing. For instance, blockchain-powered rethinking of existing business processes typically leads to gradual dropping of certain sequential steps (and/or IT systems), thus improving speed of execution of business processes and simplified IT systems landscape, and generating cost savings. This has been experienced by a prominent department of the Government of India while working with us. Third is the purpose and suitability. Is the purpose of the business application clearly understood and is blockchain the right technology? For instance, we encourage our clients to spend enough time to identify the right use cases for Blockchain. Using our design thinking led approach, we ensure that they experiment with relevant and pragmatic use cases in their business context, to be able to see real value of blockchain. Our clients have often congratulated us for our transparent approach in this regard. Co-operation: Now, within an organization blockchain bolsters internal process optimization initiatives, but outside of an organization, blockchain facilitates trust-based networks. Therefore, it is important for external-facing blockchain initiatives to identify relevant external stakeholders early on and gain concurrence on common goals achievable on such networks. Resilience: How do businesses ensure the technology is resilient, scalable, secure, and recoverable? Blockchain adoption will be best achieved when business and technology/IT teams are aligned. The choice of right Distributed Ledger Technology (DLT) by the IT teams must care for technical parameters stated earlier as well as for its ability to address the business goals. Categorize adoption complexity: Understand the numbers of parties that need to cooperate and the ability to align their interests. Not every stakeholder in a blockchain-powered network would need the same level of access to data and business functions, so it's important to have a governance model, especially in private permissioned blockchain networks, to aid smooth functioning. Alex: That was a detailed answer Brijesh, which brings to mind, how easily applicable is blockchain technology? How can a customer get the best out of it and how do you see blockchain as a technology evolving from where it currently is? Brijesh: The applicability of blockchain has been ascertained across a variety of industries, domains, and business processes, there is certainly valid interest industry-wise globally. This is reflected in dedicated budgets created by governments such as Australia, UK, Dubai, as well as appearance of formal well-constructed RFP's as tenders, instead of informal proof-of-concept orders. Clearly, industry is seeing greater potential in this technology and

becoming more focused in their approach to determining applicability of blockchain. There are areas where this technology will continue to evolve in coming times, for instance – Blockchain-as-a-Service, Digital Identity, Interoperability between networks built on different Distributed Ledger Technologies, IoT-powered Blockchain networks. Alex: In a world where newer technologies replace the older ones every other day, what are the key challenges for the application of blockchain in the near future? Brijesh: Awareness and understanding – Blockchain must not be construed as a panacea to all current problems in IT or business contexts. It has a specific focus and applicability. Time spent in determining the applicability will create focused pockets of genuine improvement within organizations. Organization Alignment: As for our clients, they must ensure alignment between their business and technology teams. Culture: Blockchain represents a shift from traditional ways of doing things, so departmental alignment within organizations plays a key role in adoption. Cost and efficiency: Speed and effectiveness with which blockchain networks can execute peer-to-peer transactions come at a high aggregate cost. Solutions are evolving fast in order to optimize on such costs – Corda is working on this, so is Quorum, a variant of Ethereum. Regulation and governance: Bitcoin blockchain bypassed regulation to tackle inefficiencies in conventional intermediated payment networks. And hence it is still not accepted by several governments as a legal currency. However, taking the learnings from Bitcoin's inception and duly noting relevance of its underlying technology to a wider landscape, there is currently huge effort spent on part of governments and industry to co-develop Blockchain standards. This will also enhance Blockchain adoption in key areas like governance, financial services, utilities, and medical and insurance networks. Security and privacy: Blockchain security risks do exist, and they must be recognized and mitigated. Private Blockchain in comparison to public blockchain offer a degree of control over both participant behavior and the transaction verification process. In fact, the use of a blockchain-based system is a signal of the transparency and usability, which are bolstered by its inherent security based on hashing and immutability features. Alex: From what I understand, distributed ledgers use independent nodes to record, share and synchronize transactions. And blockchain itself is classified as a type of distributed ledger. Now that there is much discussion and debate on the Distributed Ledger Technology (DLT) choices we have in the market today, will there be a winner emerging in near future? Brijesh: Well, there are a number of DLTs that are available. Some are more suited compared to others, for certain industries, but there are no clear winners as yet. For instance, Corda is deemed better for the financial services industry, but it is primarily due to their focus on this industry. There have been successful financial networks on bitcoin as well. Even hyperledger is quite active in this space. Thus, our approach is to work with all major DLT's. We are not only enabling our teams across a variety of DLT's, but we have also established a DLT-agnostic technology layer that helps in building business apps regardless of the underlying DLT platform. This keeps the business interests of the customer intact, even when they consider 'cutting over' from X DLT platform to Y DLT platform in future. Further, we are also investing in interoperability of networks powered by different DLTs. For instance, a business node on a blockchain network based on Hyperledger should be able to exchange data with another node on a different blockchain network

powered by Corda. Alex: What are the ways in which Infosys addresses the DLT space and what are the different blockchain offerings available to the client? Brijesh: Infosys has heavily invested into R&D infrastructure for blockchain and has built about 40+ business accelerators that a customer can deploy in order to minimize the time invested in experimenting with blockchain, and quickly generate maximum insights relevant to their business. These accelerators help them learn from our experiences across a plethora of customers who have been through the journey with us. Infosys provides blockchain offerings across the spectrum starting with Blockchain research and education to design thinking sessions for use case identification and articulation, POC/pilot development, network creation, management and stakeholder onboarding to production deployment and support services. Infosys uses proprietary tools, frameworks, accelerators, and methodologies, which have been developed and refined by factoring learning from nearly 150 client conversations that we have been involved in over the last couple of years, to strategically advise and execute projects tailored to the clients' technology maturity. We have enabled more than 600 of Infoscions on blockchain technology across various DLT's, and an exciting number of people continue to express keen interest to contribute in this space. Alex: The world of blockchain technology is highly competitive. What are the future areas of investment to stay ahead of the game? Brijesh: We will continue to focus on creating and managing business networks. These networks will be developed on multiple open source Blockchain platforms. These networks will be modular in nature and clients/enterprises will be able to onboard themselves through an easy plug and play approach. In order to create and deliver these networks, Infosys will bring together best of breed start-up, alliance, consortium, and enterprise partners. Infosys will also develop and deliver network services around monitoring, analytics, and management of keys, security etc.). In order to drive blockchain adoption in enterprises, Infosys feels that the biggest impediment will be, onboarding and managing multiple stakeholders onto business networks with specific focus on security, privacy, governance, and regulations. By creating dynamic business networks on platform agnostic frameworks, enterprises will be able to participate in such networks and leverage the stakeholder ecosystem for specific use cases. Alex: Thank you so much for coming and joining us Brijesh and for engaging us in this incredibly interesting conversation. And thank you, everyone, for listening. You have been listening to Infosys podcasts. =====================

Innovation Acceleration: Pressures Points for Change

----- Arcticle source ----- https://www.infosys.com/insights/disruptions/pressures-points-change.html ----- Insights Disruptions For over a decade I have been editing the Global Innovation Index (GII) report (www.globalinnovationindex.org). The GII provides detailed metrics on innovation performance using more than 80 indicators for nearly 130 economies, which represent more than 92% of the world's population and 97% of global GDP. Extending beyond the traditional measures of innovation

such as measures of research and development, the index explores a broad horizontal vision of innovation that encompasses indicators of political environment, education, infrastructure, business, and market sophistication. Additionally, it illustrates the impact of innovation-centric policies and actions taken in various parts of the globe. The GII has evolved into a premier index on innovation performance and provides us with a unique perspective into global innovation trends. One of the important trends the GII has observed is the need for organizations and businesses to respond to the accelerating pace of innovation. These pressures are arising from fundamental changes along three key dimensions: the technology revolution, the expectations revolution and a social revolution. Technology Revolution We are living in the midst of an unprecedented technology revolution caused by exponential progress along three converging technology dimensions: digital, biological and physical. Ray Kurzweil, a noted American inventor and philosopher observes, "In the 19th century, we saw more progress [in technology] than in the nine centuries preceding it. In the first 20 years of the 20th century we saw more advancement than in all of the 19th century. And we won't experience 100 years of progress in the 21st century – it will be more like 20,000 years of progress at the current rate." It is difficult to visualize the true impact of this technology revolution because we, as human beings, live in a world of linear time. As technology progress continues at a frantic pace, the ability of organizations and businesses to change at a proportional pace remains limited due to inertia – both social and technological. An innovation gap is growing within organizations. This creates new leadership opportunities for those organizations that are able to successfully innovate to leverage technological change. Expectations Revolution Think about what life looks like to a young person today. Due to the ubiquitous spread of the Internet, the world is now global, open, real-time, transparent, and interactive. Young adults can connect with friends around the planet with the touch of a finger. Access barriers have come down dramatically as smart phones, data networks and other forms of connectivity at home and work have become available to all. The inherent real-time nature of the Internet means that waiting times have been all but eliminated. Participation has become a way of life for all as the sharing of ideas, blogs, pictures and videos has allowed for the expression of ideas from all perspectives. Today, this scenario is not very different across the developed and developing worlds. With the total number of cell phones in circulation today fast approaching the size of the global population, even the poor and new middle classes in emerging markets have similar levels of access to the global and interactive world. This is creating an expectations revolution – a broad and dramatic shift in expectations and needs that is fueling a demand for innovation across a range of organizations – both public and private business sectors. Organizations have to adapt to the new reality of the expectations revolution. In a world of instant social media, businesses must keep their fingers on the pulse of customer complaints and be ready to respond in time. For decades, governments could afford to work at a leisurely pace with limited transparency of their actions to citizens. Now, with increased expectations of transparency and participation (interactivity), citizens are placing new demands of change upon their governments, who have no choice but to innovate in the way they operate. Social Revolution As social media and technology are becoming all pervasive in our daily lives, a social revolution is taking place. Identities are getting

disaggregated, status is becoming democratized and power is becoming diffused. We are living in an "open-kimono" world. People are willingly expressing their views and sharing their lives on a variety of social media. This disaggregation of identities is changing the way we act. For example, the submitted CV is just one of the identities considered today during the hiring process. Human resource professionals have to include and evaluate multiple facets of prospective employees by aggregating information from multiple social media platforms. Views about non-work related aspects often have to be taken into account while making work-related decisions. Status, or how a person is recognized by others, traditionally was assigned to a chosen few by those with exclusive rights. For example, recording companies used their privileged positions to choose artists to promote thus bestowing status (of popularity and visibility) upon them. Today music stars are increasingly born from the recognition provided by thousands of individuals in a democratic fashion. Would we have witnessed the success of Adele and Justin Bieber had it not been for MySpace and YouTube? The democratization of status is now requiring entire industries to innovate. For example, over decades' pharmaceutical firms designed their marketing strategies around the power of selected doctors and medical groups within specific countries. All this has changed today as global patient blogs have erased national boundaries and created new influencers amongst patients and family members. Thanks to the ongoing social revolution, power is no more centralized in a few individuals and organizations but more diffused than ever before. This is requiring innovations in all aspects of government and business. Leading Change So how should leaders from the public and private sectors react to these accelerations in the pace of innovation? While there are no panaceas, here are three important recommendations to help frame your response. First, don't deny the obvious. Technology is creating disruptions across all sectors and no industry is protected from its revolutionary impact. For example, digital agriculture is changing the way farms are organized and run in both developing and developed economies. Even in traditional manufacturing industries such as textiles, smart garments with embedded health tracking sensors are creating new frontiers of product innovation. So your industry is going to be revolutionized by technology and the changes have just started. Acknowledging and internalizing the disruptive forces of change is essential to begin framing an appropriate response. Second, have an active outside-in learning strategy. While you should certainly encourage all internally generated ideas for innovation, it is likely that most disruptive ideas will emerge in startups outside your firm. It is important to have a dynamic business intelligence and scanning capability that proactively reaches out to and partners with innovative startups from around the world. The focus should be to learn from these disruptive partners and so the best talent should be assigned to this role. Few organizations manage this outside-in learning process effectively. Third, lead from the top. Organizations are not designed for disruptions and so do not expect any revolution to start in a bottom-up fashion. Yes, the job of the leader is to listen to multiple voices within the firm, but a more important need is the ability of the leader to make strategic bets on new potentially disruptive ideas and to steer the firm in the right direction. Resources have to be allocated, voices of resistance have to be managed and the energy of the organization has to be mobilized towards new directions. This requires strong and clear leadership from the top.

While the acceleration of innovation presents a formidable challenge for most, it also presents a rare and exceptional set of opportunities for a few. The few who dare to innovate and change. The few who are inspired to re-imagine the future and take risks. The few who are disciplined to execute with determination and resilience. =====================

Why the Shared Economy is Really the Access Economy

----- Arcticle source ----- https://www.infosys.com/insights/disruptions/shared-access-economy.html ----- Insights Disruptions A new television advertisement shows a tired businessman sitting in crowded airports, stuffy airplanes, and rancid reception areas, only to get home and finally, be rewarded by sitting behind the wheel of his own car. Our protagonist comes home from an arduous business trip and gets to drive his own car alone and in Zen-like peace. But in the shared economy, he would feel a sense of pride for sharing his car with three other commuters so that they collectively reduce their carbon footprint. Just one car on the road versus four. To some, the shared economy is a utopian vision for the future that may be enabled by advances in information technology. Using information technology, resources that would otherwise go unused (those three other car seats, for example) are utilized instead by people – sometimes complete strangers – who need to travel to the same place (using the car example). To others, the shared economy has socialist overtones where everyone can stake an equal claim to existing resources. To start with, there really is no sharing going on in a purely economic sense. Ubiquitous IT platforms are creating peer-to-peer networks that allow civic-minded people to be aware of opportunities to reduce, reuse, and recycle so, strictly speaking, the middleman who provides the platform isn't sharing anything. His innovative business is merely connecting parties that would have otherwise not known about the other, and among these parties, goods and services are rented out at a price. A Harvard Business School study makes a cogent case for renaming this phenomenon the `access economy'. Robust IT platforms allow more and more people to access goods and services which sometimes have the appearance of sharing. But make no mistake about it: The sharing (or access) economy is truly about utilizing every resource and byproduct by virtue of the fact that we're increasingly connected in a digital world. Economically speaking, IT has empowered businesses and individuals alike to leverage every efficiency out of existing business models. There is yet another term for these developments: Collaborative consumption. According to Ericsson's Mobility Report, there are currently 2.6 billion smartphone subscriptions in the world. The report's research points to an increase to 6.1 billion by the year 2020. Already, the access economy has shown its influence and strength through crowd funding. Up until a few years ago, an entrepreneur would have limited options in obtaining capital for a new business – a bank loan or an infusion of cash from a venture capital firm. Now, that entrepreneur can post her business vision to any number of crowd funding platforms and connect with potential investors. The technology platform typically gets a cut of whatever amount of money the entrepreneur

raises from investors. The concept of wanting to connect people to drive efficiencies is not new. In fact, sharing has been a fundamental aspect of human nature and cultural behavior. The oldest communities in recorded history – city-states that date back more than 5,000 years – were based around the concept of villagers sharing goods to form a community and most efficiently feed and protect its inhabitants. That same sense of sharing to save money and resources can be seen even today. Across many parts of the world, it has been typical for family vacation to be planned around visiting other family members in another part of the world. Accommodation and food costs are minimized because everyone is staying with relatives. An early semblance of Airbnb. Today, the owner of the apartment isn't necessarily a member of your family and is instead `sharing' (or, more accurately, giving access) with you for a profit. Technology has been the game changer, powering millions and millions of these connections and that too on-demand. The confluence of three factors is driving the access economy into the mainstream: The access economy will compel every business to rethink their business model, either to stay relevant, or drive more opportunities. Innovation in the access economy will have the following considerations common across all types of businesses: How soon will established businesses rethink their business models and carve out their roles in this new world? As we innovate to find a place in the shared economy, we will only multiply opportunities and not cannibalize existing businesses. The shared economy holds the promise of democratizing consumerism. Imagine a world where the experience of consuming goods and services is not constrained by your purchasing power. Wouldn't that result in a boom in the markets you serve? If you are watching this development from the sidelines, it is time to jump right in. The access economy is not merely a trend, but a manifestation of the zeitgeist, spurred on by economic factors and the Digital Revolution. =====================

Human Potential

----- Arcticle source ----- https://www.infosys.com/insights/human-potential.html ----- Insights The Power of Youth to Create the Next Great Sustainable Business What Archaeology Can Teach Us About Technology Learning in the Workplace of Tomorrow Lifelong Learning: Today's Tool for Tomorrow's Workplace Digital Quotient: Lodestar for Future Ready Talent Enabling Change in a Blended Workplace Why Return to the Office? The Human Side of the Digital Workplace COVID-19 Creating Unique Challenges for Workers With Disabilities Digital Transformation and the Forgotten Frontline Worker Infosys Using Distributed Agile for Continuity of Delivery in Face of COVID-19 Remote Control: Leaders Can Use Agile Principles to Better Manage Work from Home Shaping a Better Tomorrow for Tech Talent with Infosys Industry-grade Certification A Competent and Relevant Workforce Can Drive Industry Leadership Continuous Learning for Developing Talent in a Digital World A Platform to Celebrate Social Innovators Infosys Offers Learning that Maps to the Industry Demand How Can Workers Stay Relevant In A World Dominated By AI? Unlimit May Answer Perplexing Digital Questions The Blind Spot in Organizations: The First Line Employee Engagement Role of Empathetic Problem Finding in the

Remote Control: Leaders Can Use Agile Principles to Better Manage Work from Home

----- Arcticle source ----- https://www.infosys.com/insights/human-potential/agile-principles.html ----- Insights Human Potential Remote work will not suddenly disappear with the end of the current pandemic. After the COVID-19 lockdowns are over, employees will pressure their enterprises to allow for more work from home. Even before the coronavirus pandemic, working remotely was on the rise (Figure 1). Figure 1. Remote working becoming more common even before COVID-19. Source: Gallup State of the American Workplace While working from home has grown more common, employers generally resist remote work as it creates what economists call a monitoring problem. These issues arise when the incentives for employees to "shirk or work" are out of alignment. Businesses hire supervisors when the cost of employees shirking is higher than the cost of the supervisor. Allowing employees to work remotely limits the effectiveness of supervisors to rebalance working and shirking. In a remote-work world, Agile frameworks — practices that prioritize functional end products over following a plan — can re-align the work and shirk incentives. A group of software developers created Agile principles in 2001 in response to the existing software development methods' inability to react to changing requirements. A substantial and rapidly growing number of developers and companies like Apple and Philips use Agile regularly for software

development and project management. Implementing Agile frameworks has helped tech firms improve time to market, product quality, and team productivity. (As an economist, I could dive headfirst into a swimming pool of supporting stats and studies. For example, team sizes of five to nine tend to be the most balanced in the areas of productivity, quality, and responsiveness. However, smaller teams of three or fewer tend to have significantly higher productivity with significantly lower quality. Additionally, lowering the number of work-in-progress tasks per team member can lead to a 50% reduction in the time to market.) That said, not all Agile principles can be utilized with remote work. For example, Agile's preference for face-to-face interactions will need to be replaced with video and voice chats. Agile principles can be applied for other business functions, including help with the monitoring problems that arise with employees working from home: Create project backlogs that have assignable tasks. Build logs with concrete outcomes that allow employers to measure the productivity of an employee or a team. This addresses the monitoring problem that comes with remote work. Work in quick iterations and measure results frequently. Quick iterations on project tasks lets productivity be measured often. That allows supervisors to catch downturns in work output before they become insurmountable. Measure results, not work hours. Gauge progress in terms of functional products created. Whether the product is software or a news article, the usability or functionality of the product is what matters. Time spent on the project is irrelevant as long as the product is functional. Take introspective breaks between short periods of high productivity. Long periods of hyperproductivity lead to burnout, which causes a reduction in quality and higher turnover. Reflect on the previous work cycle and discuss what went well and what did not. Make changes to adapt to the fluctuating work environment. Implementing learned best practices will help maintain a more consistent level of productivity regardless of the environment. Allow teams to self-organize. Self-organizing teams will hold members accountable, reduce the need for monitoring, and tend to assign tasks to skills more optimally. Allowing remote work holds benefits for employers. They can lower their office space footprint and thereby lower related expenditures. It can also lead to more satisfied employees, which reduces turnover and the need to hire and train new employees. Engagement is also greater among employees who spend some of their week working remotely (Figure 2). Figure 2. Employees who work remotely 60-80% of the time are more engaged. Source: Gallup State of the American Workplace Agile revolutionized software production. The linear-sequential lifecycle model, or waterfall model, of software development was not well suited to large projects because project activities did not change to match the evolving nature of the true customer requirements. The longer the project length, the worse the potential for project plans to vary widely from real-world needs. Agile principles created an environment of lower risk and higher adaptability to changing business conditions. Applying Agile principles to remote work has the promise to bring a similar structure — and benefits — to uncertain times. While working from home has grown more common, employers generally resist remote work as it creates what economists call a monitoring problem. These issues arise when the incentives for employees to "shirk or work" are out of alignment. Businesses hire supervisors when the cost of employees shirking is higher than the cost of the supervisor. Allowing employees to work remotely limits the effectiveness of supervisors

to rebalance working and shirking. In a remote-work world, Agile frameworks — practices that prioritize functional end products over following a plan — can re-align the work and shirk incentives. A group of software developers created Agile principles in 2001 in response to the existing software development methods' inability to react to changing requirements. A substantial and rapidly growing number of developers and companies like Apple and Philips use Agile regularly for software development and project management. Implementing Agile frameworks has helped tech firms improve time to market, product quality, and team productivity. (As an economist, I could dive headfirst into a swimming pool of supporting stats and studies. For example, team sizes of five to nine tend to be the most balanced in the areas of productivity, quality, and responsiveness. However, smaller teams of three or fewer tend to have significantly higher productivity with significantly lower quality. Additionally, lowering the number of work-in-progress tasks per team member can lead to a 50% reduction in the time to market.) That said, not all Agile principles can be utilized with remote work. For example, Agile's preference for face-to-face interactions will need to be replaced with video and voice chats. Agile principles can be applied for other business functions, including help with the monitoring problems that arise with employees working from home: Allowing remote work holds benefits for employers. They can lower their office space footprint and thereby lower related expenditures. It can also lead to more satisfied employees, which reduces turnover and the need to hire and train new employees. Engagement is also greater among employees who spend some of their week working remotely (Figure 2). Figure 2. Employees who work remotely 60-80% of the time are more engaged. Source: Gallup State of the American Workplace Agile revolutionized software production. The linear-sequential lifecycle model, or waterfall model, of software development was not well suited to large projects because project activities did not change to match the evolving nature of the true customer requirements. The longer the project length, the worse the potential for project plans to vary widely from real-world needs. Agile principles created an environment of lower risk and higher adaptability to changing business conditions. Applying Agile principles to remote work has the promise to bring a similar structure — and benefits — to uncertain times. Agile revolutionized software production. The linear-sequential lifecycle model, or waterfall model, of software development was not well suited to large projects because project activities did not change to match the evolving nature of the true customer requirements. The longer the project length, the worse the potential for project plans to vary widely from real-world needs. Agile principles created an environment of lower risk and higher adaptability to changing business conditions. Applying Agile principles to remote work has the promise to bring a similar structure — and benefits — to uncertain times. =====================

What Archaeology Can Teach Us About Technology

Insights Human Potential Through their innovations, people and organizations go to places they never imagined. But as they break new ground, their innovations too often begin by following predictable patterns — ones that are visible only by looking at the underlying metastructures. Even when paving a new path, people often want it to look just like the old one, all the way down to the same cobblestones and signposts. Perhaps that desire stems from a sense of comfort or, worse, a lack of imagination. This storyline can be seen in today's virtual experiences, and it can be spotted just as easily in ancient architecture. Barabar Caves The Barabar Caves near Patna, in northeastern India, are among the country's oldest rock-cut caves. These simple caves were carved in the fourth century BCE for monks. Their façade features two not-quite parallel columns that form a gateway. These columns move closer together as they reach the top. That load-bearing design is critical for building with wood: It keeps the center of gravity in the base. But this form serves no practical purpose when it comes to carving a stone entrance. The Barabar Caves were created when the preferred medium for ceremonial architecture was shifting from timber to rock. Although it calls for speculation, it appears that architects used a design from the old medium that they were familiar with, while moving to a new medium. Virtual brick and mortar Two and a half millennia later, corporations worldwide are facing comparable choices in a period of rapid transition. The traditional medium (brick and mortar) is giving way to virtual stores. As businesses decide how they will function in this increasingly digital world, they have too often rushed to simply create virtual avatars of brick-and-mortar experiences. Virtual storefronts use the same familiar constructs: aisles, wheeled shopping carts, shelf displays, mannequins, and so on. Online conferences feature virtual registration desks, lobbies, walkways, halls, and auditoriums filled with digitally rendered seats and people. Online teachers use slides instead of a blackboard and present information in a window rather than from behind a podium, but they primarily do the same thing as in the analog world: They talk. In short, we are re-creating the familiar, just as the ancient architects did in their early transitional stage. Meanwhile, we fail to ask the most basic question: Is this the best way to explore a new medium? No, it isn't. When transitioning to the virtual world, the sooner we excise the compulsion to re-create brick-and-mortar features, the sooner we will be able to truly utilize the potential of the new medium. Only then will we be able to rid ourselves of the familiar and truly reimagine each of these experiences in our new world. For example, features such as lobbies and reception desks came into existence due to a number of constraints: the need to make economical use of available real estate and the necessity of linear entry processes. These constraints do not exist in the virtual medium, where space is neither limited nor linear. The same is true of schooling, shopping, or any other experience. If we are to learn from the ancients, we must break away from their patterns. That is, we must let go of the traditional constructs that served us well in the past and figure out the new

constructs that will serve us well in the future. The virtual world offers limitless new possibilities that the brick-and-mortar world simply could not. Opportunities are available to rethink how customers view, select, buy, and pay for experiences and services. Engagement with employees, customers, students, and citizens needs to be completely reenvisioned. The sooner we do this, the sooner we will be able to realize the true benefits of this transitional time. Despite their sometimes halted efforts, those early architects did eventually progress beyond their initial efforts to re-create the familiar. As time progressed, the master builders of antiquity realized that old limitations no longer existed, and they boldly explored new creative possibilities. Only then could they embrace new mediums wholeheartedly and create things that were not possible with old mediums. A stunning example of this bold reimagining can be found at the eighth-century Kailasa Temple at Ellora in western India. The massive temple is carved out of a single monolith, a staggering artistic and engineering feat. It involved the removal of 150,000 to 200,000 tons of solid rock. The complex measures some 164 feet (50 meters) long, 108 feet (33 meters) wide, and 100 feet (30 meters) high. It still amazes visitors today. At the same time, it is completely free of any emotional attachment to timber in its design, features, or execution. It was imagined in rock and realized in rock. For those artisans, however, time operated differently. The ancients had centuries to bring about change. We have weeks, or at best, a few months — if we are lucky. So how can we do this? We have found three guiding principles that help. Despite its challenges, it is still important to make the transition to a true virtual paradigm. Not doing so would lead end users to believe they can expect old familiar experiences in the new virtual world. But this will not likely be true. The new medium will offer new strengths but may not necessarily offer the strengths of the old world. Misleading users is unfair to them and also diminishes the opportunities presented by the new virtual world. Instead of seeing many possibilities on the horizon, users may encounter disappointment and stress. Signs of this stress are already evident in online schooling, an early adopter of technology but one in which both teachers and students are complaining about the lack of engagement. As innovators and technologists, the sooner we get rid of the compulsion to re-create the familiar, and the sooner we dive into the new medium with an open mind, the sooner we can turn involuntary change into a great new opportunity. =====================

Back To School For All

----- Arcticle source ----- https://www.infosys.com/insights/human-potential/back-to-school.html ----- Insights Human Potential The 'back to school season' in the U.S. is like a holiday, celebrating education - and new backpacks. But for too many, celebrating education stops at graduation. Far too often, when classrooms become cubicles, K-12 becomes 9-5, and students become employees, that commitment to learning stops. It shouldn't. Today especially, when the speed of change is measured at the speed of light, workers must continually sharpen their skills and bolster their knowledge. And importantly, employers have to help. Companies need to ensure their workforce is the most innovative and productive it can be.

Companies must make training and professional development a priority. I've seen the quick pace of change firsthand. When I graduated in Electronics Engineering in 1995, I was proud to know how to code in Basic. Today? Javascript, HTML5, and Python are the "basics." And parents, who remember typewriters in high school, now have children who use iPads in elementary school. These aren't just anecdotes; the evidence agrees. The world is adopting new technology faster than ever. It took decades for the telephone to reach 50 percent of households. It only took five or so years for cellphones to do the same. And just as quickly, job descriptions are becoming more demanding. The ability to employ big data, analytics, automation and even artificial intelligence is in high demand--but low supply. By 2018, the U.S. could face a shortage of 140,000 to 190,000 people with analytical skills as well as 1.5 million managers and analysts who can use big data in their decision-making. In a rapidly changing marketplace, that's a crisis of qualification. The solution? It starts in schools. Coding, STEM and computer science education must be a core curriculum in schools and colleges: for everyone. Women and minorities are underrepresented in STEM. That's something we need to change. To help, Infosys Foundation USA proudly funds and supports STEM initiatives, and computer science education across the U.S. However, technology changes so quickly that re-focused schooling isn't enough. Learning can't stop at graduation. Just ask a doctor. Years and years of schooling and training aren't enough. There's always a new life-saving procedure or drug. After graduation, doctors don't surrender to educational complacency. They keep learning. It's a white coat and never a white flag. All workers need that commitment to continual learning. All employers need it too. Training and education have been priorities for Infosys for more than 30 years. It's a proud heritage that's made us one of the world leaders in corporate education. And it all starts with our graduate training program. Through our 23-week residential training program, we help new hires transition from success in the academic world to success in the corporate world. Over 10 years, we've trained more than 100,000 engineers--all at the Mysore Infosys Global Education Center, one of the world's largest corporate universities in the world. But training can't be constrained to a corporate campus any more than a college campus. So our social learning platform, Digital Tutor, brings learning online and allows us to tap into the Infosys expertise available across the world. The platform has more than 2,000 training videos on nearly 300 topics made by Infosys employees and made available to Infosys employees. Beyond just a new skill, we train a new awareness. As part of our Zero Distance innovation program, every employee is expected to find ways to help our clients find new solutions to old--and new--problems. To assist, we've trained more than 100,000 people on Design Thinking, a problem-solving protocol that's like a reliable roadmap to innovation. Altogether, our employees and our company work better because we make continual education a priority. A well-trained workforce is a heritage, not an accident. Across the U.S., it's back to school season. As students and communities re-commit to education, employees and companies must too. In a world moving so fast, we can't stand still and expect to get ahead. Employers must make workforce training and development a priority, because workers trained for success will drive companies to success. This back to school season, let's all commit to get back to learning. =====================

Enabling Change in a Blended Workplace

Insights The shifting workplace, again Human Potential The ongoing pandemic has profoundly disrupted the operating rhythm of organizations — challenging employee, manager, organizational, and client-partner relationships. Human beings are social creatures, and the core of organizations are built upon relationships and face-to-face interactions. This is how we build trust. In the current environment, those multidimensional connections have turned into a series of linear, formal interactions. The organic, ad hoc connections have been lost as we socially distance physically from one another. There are few — if any — coffee conversations, chance interactions in a corridor that solve problems, or impromptu whiteboard or brainstorming sessions. Physical interactions are replaced by video conferences, phone calls, and emails. While some organizations pivoted without a beat, many were simply not prepared for this transformation. A recent survey by SHRM Research showed that 34% of U.S. employers did not have an emergency preparedness plan before COVID-19. Seven out of 10 said they struggled to adapt to remote work. Now, relaxed restrictions across the world have allowed a staggered return to the office, only with fundamentally different ways of working. There is no direct replacement for face-to-face contact and in-person engagement. However, balancing productivity in a working environment with remote and on-site activities is critical to organizational success. As the world continuously readjusts, organizations are under increasing pressure. Many continue to implement large scale transition or transformation programs, delivered to very tight timelines. Meanwhile, they must also manage routine business operations and changes associated with creating a blended work environment. The complexity requires organizations to perform at the highest level in all areas. When enabling change, they need to take into consideration not just the tangible elements but also the intangibles, such as creating connections and trust. A blended work environment To better manage change, employees need to feel in control of their immediate environment and have access to tools and platforms that allow them to focus on effective job performance. This includes having the right mix of onsite and remote working connections, multiple communication channels, and access to help desk and human resources (HR) contacts. By minimizing external disruptions, the workforce is better able to move along various stages of their transformation or transition programs. Upskilling the workforce Training and upskilling in collaboration platforms were already important, since clients and vendors often introduce new platforms. However, the shift to remote working has changed how these issues are managed. This extends to delivering workshops, focus sessions, and presentations online, which require different delivery and planning for feedback and engagement. Shifting collaboration from a traditional to digital approach, however, has multiple benefits. They include a reduction in rework and a potential for increased collaboration as employees and organizations reach for new tools and strategies. These can include co-editing documents or PowerPoint slides, or simultaneous, real time editing

of documents on a digital whiteboard during a video conference. Managers should also focus on the nontechnical aspects of supporting their employees and overseeing outcomes. Those supervisors will concentrate on providing soft skills courses; conflict management and resolution; and other efforts that lead to a more engaged and motivated workforce. If well executed, the results are increased output and improved results for the business. Staying connected The impact of a blended environment will differ based on the previous working structures, proximity, environment, and reporting hierarchies. For example, a team co-located in the same workspace would experience a different impact than a distributed team with multiple delivery locations worldwide and a matrixed reporting line. To most in the workforce, however, staying connected in a remote working environment has common challenges, now that serendipitous meetings and conversations are mostly out of reach. Managing fast-paced changes will also require a strong network of connections in a remote setting. This is where clear roles and responsibilities, as well as connecting the right change agent with the right stakeholder group, will get more traction and engagement. Having regular formal and informal meetings, such as scheduling a regular watercooler discussion — in addition to daily stand up meetings — will help bridge some of the social gaps felt across the screens. Creating and maintaining trust Trust is composed of tangible elements, such as setting the right expectations or meeting objectives and timelines. There are also intangible elements that result from encountering someone in person, including the gut feel of whether an individual is trustworthy or gathering knowledge from informal conversations. Creating a foundation of trust is important for effective working relationships, particularly when there is limited face-to-face interaction. While there are limitations in getting a read on an individual over phone or Skype, the focus can shift more to tangible items such as setting the right expectations and meeting agreed deadlines and outcomes. Employees, managers, clients, and vendors will need to establish what works best in their environment — shorter term goals and check-points at more regular intervals and setting expectations around response times and availabilities. An outcome-based working model can create a functional and supportive environment through shared and up-to-date calendars, blocked out availability, and agreements on outcomes and timelines. Meaningful engagement and communication Two-way communication is crucial in maintaining engagement in both formal and informal forums. Keeping the conversation going is an important medium for engaging employees and creating an environment of inclusion and supportiveness. Leaders see a positive response from employees when they actively direct conversations about their organizations' response to the pandemic. Consistent messaging is needed through multiple forums, such as town hall meetings, email updates, FAQs, and responses and directions based on local events. An engaged HR department is also a critical component. As organizations and countries navigate the shifting local restrictions and COVID-safe return to work plans, they will increasingly need to focus outside the office. The economic pressure of revenue loss and operating scope will steer leaders' attention back to core business objectives and require them to seek competitive advantages. Leading change was never an easy feat, but greater disruption and change fatigue will only increase the degree of difficulty. There is no blanket solution, but a strong workforce will be needed to anchor those efforts. Executives must create an environment to

effectively manage change since this blended setting is here for the foreseeable future. =====================

Boosting American Innovation: Hiring American Workers And Shrinking The IT Skills Gap

Insights HUMAN POTENTIAL This is an interesting time to be a young American. You are beginning your career in the midst of a massive digital revolution, that in part, you helped accelerate by adapting so easily to the connected world we've now created for ourselves. Advancing digital technologies, like Artificial Intelligence, continue to drive this revolution, and reshape the space human beings will occupy in it - including what and how our jobs will be. I often hear questions about how these advances might take away our jobs. And the debates are polarized between those who foresee limitless new opportunities and those that predict massive displacement of jobs. But our most likely tomorrow lies somewhere in between. As entire industries adjust to digitization, most occupations are indeed undergoing a fundamental transformation. And some of those tried and tested jobs that were performed by earlier generations of Americans will no longer be available to you. But, in exchange, you'll find a new vista of exciting roles - many of which are still unfolding and will continue to evolve in the future - testing your uniquely human abilities, such as creative thinking, problem finding and innovation. In fact, it's estimated that some 65 percent of children entering primary schools today will likely work in roles that don't yet exist! Now that isn't something new. It's just history repeating itself once again. Every technology revolution in the past has mechanized a large number of jobs - jobs that were repetitive, predictable, often requiring little curiosity or the ability to 'problem-find', and were therefore easily done by machines. But that didn't put people out of their jobs, because the new technologies created new roles more suited to be performed by humans than machines, and in many cases, generated additional employment. Think of the ATM or cash machine as an example; it relieved tellers of dispensing cash at bank counters, allowing them to focus on expanding the scope of their roles, and serve bigger customer needs. At the same time, it also created new jobs for technicians building and maintaining these machines, data analysts who must work to predict the usage patterns of these ATMs, security experts who must ensure these ATMs are safe to transact with and even engineers who work to predict and prevent ATMs breakdowns. In the current digital revolution, Machine Learning, Robotics and Artificial Intelligence technologies will inevitably take on more and more roles previously performed only by humans. But that's only half the story told. The bigger picture is that these technologies will amplify human ability and achievement by performing tasks that people would rather leave to machines. (Think of the time it takes for you to read a report and the few seconds it takes Google to 'read' millions of pages to whip out answers in less than a second.) The opportunity is to then create

new roles and careers for people in the adoption, management, and future innovation of AI and intelligent automation - things that no machine can do. When you step into these exciting new roles, you must be prepared to be part of an augmented workforce where collaboration between man and machine is the new order of the day. And yet we must be watchful. Not so much of technological change - because we know we have the power and innovation to harness and direct its use as we deem fit. But we must be heedful of how equitable and accessible the opportunities it brings are. What will be absolutely pivotal is how we equip our youngsters and our colleagues to harness the power of these technologies to transform our world for the better, and move us all forward. A huge part of that preparation comes from having the right technical skills and experience in the latest, greatest digital technologies surrounding you. Unfortunately, our educational system is not quite geared to help young Americans slip readily into a career in technology. Against the 120,000 jobs requiring a computer science degree, which are added to the job pool each year, the U.S. educational system graduates only 49,000, inflating the overall tech skills shortage by 71,000 positions every 12 months. Although the education system is doing what it can, proactive companies are pulling their weight by running intensive training programs of their own. In fact, research studies including one that Infosys commissioned recently show that about 80 percent of organizations deploying AI technologies plan to retrain and redeploy the employees who are impacted. Which then brings us to what you can do as young professionals to make your choice of workplace mindfully. Here are some things to carefully consider: Is the company a thriving hub of activity and a rich ecosystem for new joiners? Is the firm thinking about which jobs to automate and how to augment their people potential while doing so? Do they have a demonstrated record in employee training - not just in functional and digital skills but also in personal effectiveness? Here, the infrastructure, duration, intensity and quality of training are useful indicators. Equally important is their willingness to commit resources to employee skilling, not just today, but as a lifelong investment in learning. And, is their work environment structured for openness, collaboration and innovation opportunities? Answers to some of these will serve as the compass you need to point you to the future you aspire to create for yourself. I wish you good luck as you start to bring that future to life! =======================

Continuous Learning: Millennials Want It, Organizations Need To Foster It

----- Arcticle source ----- https://www.infosys.com/insights/human-potential/continuous-learning-millennials.html ----- Insights Human Potential My friends and I learned the hard way. As baby boomers, we entered the workforce in the '60s, '70s, and '80s with the fresh-faced expectation of 'jobs for life'. Many of us assumed we'd fill out our W-4, buy our first car, get married, raise our kids, and finally retire with the same company's name at

the top of our paycheck. My idyll was shattered when my Fortune 10 employer - a company which had never downsized its staff in its 100-year history - launched the first of what became a decade of annual staff reductions. Most of my generation had received the same wake-up call by the end of the millennium. Fast forward to 2016. The millennials harbor no illusions. Two similar studies on millennials' job outlook, one published in January by Infosys and one released last week by ManpowerGroup, underscore the sharp re-set of their expectations. They want employment security, but know that it's elusive; they've cleverly redefined security in terms of career, not job. They think in terms of serial jobs, job portfolios, gigs. Long-term career growth in one company is the ideal - but they know it is hard to find. However, in addition to their yearning for security (ManpowerGroup finds that 87% list security as their highest priority), they simultaneously want change. Born of the fast-paced digital world, they crave a steady diet of new experiences. Few, apparently, want to stay in one position for more than a year. These are seemingly contradictory priorities. How and where do they converge, and what are the implications both for individuals and for employers? Learning is the glue that twines these threads together - the quest for security and the hunger for new experiences. Learnability is the skill of the hour; individuals must be able to acquire new skills and adapt. They need personal agility in shifting from one role to the next. Learnability is the key to career security, giving the individual the ability to ride the crest of successive waves of strategy, technology and product innovation. It also offers a path to new experiences and responsibilities at the desired pace. The takeaway for individuals is that learning is not optional. Whether this means taking advantage of company training, seeking training on their own time, working with superiors to chart a course across a progression of roles, or job hopping to tick off developmental needs - employees cannot stand still. Most millennials grasp that they need to invest in lifelong growth and development to be secure. So what's the takeaway for employers? With talent as one of today's biggest differentiators, employers have to provide continual learning - whether in the form of formal training or job experiences. The Infosys study found that millennials recognize that technology skills are only half the story; they view soft skills as equally critical. Employers ignore this at their own risk. In addition to the standard corporate curricula, many businesses are now exploring the use of MOOCs - massive open online courses - to enrich employees' overall learning experiences. Through partnerships with entities such as Coursera, edX, or Udacity, they are offering a rich portfolio of learning experiences that allow employees to explore new interests at their own pace. Gamification is helping employers drive continued learning through challenges and games. Some new approaches might also be timely. Could partner companies in a value chain create exchange programs that help talented employees tack between companies, offering them broadening opportunities while remaining within a managed talent pool? Employers have long-managed rotational programs within the bounds of their own organization; could that be extended across a value chain or network of partners? This might satisfy millennials' appetite for new experiences without losing them to the larger market. It's time to think creatively about creating cultures of learning in our organizations. Thirty years ago, companies struggled to get employees to attend training. Today's talent leaders realize that a continual learning proposition is a differentiator that

attracts and retains top talent - and helps them win in the marketplace.
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Intellectual Property a Mass Movement for Innovation

----- Arcticle source ----- https://www.infosys.com/insights/human-potential/ could-intellectual-property-be-a-mass-movement-for-innovation.html ----- Insights Human Potential 26th April, is Intellectual Property Day. The theme for this year according to the World Intellectual Property Organization (WIPO) is 'Innovation - Improving Lives'. As an IT professional, this resonates deeply with me and contextualizes the effort of millions of people, who work with intangible software code to create tangible, positively beautiful products that improve human life. IP is fundamental to the emerging digital world. Many technologies are required to create a product, and companies often outsource the development of components, or share technologies through licensing arrangements. IP is especially core to the e-commerce economy, which depends on companies working together to share the opportunities and risks of business through licensing. A couple of other industries which are engaged in aggressive innovation and thus need to plan for IP are travel and engineering. Innovation in 3D printing is set to significantly improve lives. Today, 3D printing enables a house to be built in as little as 24 hours. The first model of 400-square-feet was built in Moscow recently by tech startup Apis Cor at under $ 11,000. Smart machines did the heavy lifting and built a concrete house with all the regular features. Unlike the usual practice of constructing offsite, this house was built by a mobile printer onsite. 3D printed houses offer significant hope to the 60 million displaced people of the world, particularly refugees. But on the IP side, Gartner predicts that 3D printing will result in the loss of at least $100 billion per year by 2018. This loss will be as a result of IP infringement into design patents, trademarks, copyrights and reverse engineering of equipment parts. Paradoxically, while one side of us humans yearn to settle down, another side wishes to travel further and gain new experiences. Technology in the aerodynamic shape of the XB-1 Supersonic jet can take us at a breathtaking speed of 2,333 kph, for work or leisure, from one continent to the next. Travelers will be able to zoom from London and New York in as little as three and a half hours. The XB-1 envisages making commercial travel cost-effective. So forget about virtual reality as we now have an opportunity to get up and personal even across great distances. The XB-1 is brimming with innovation and Boom Technology Inc. will likely be investing extensively to protect their IP. Thanks to Bill Gates wanting to tax them, robots have recently been at the heart of many heated discussions. This, even as their interaction with humans get more inextricable. Robots have moved beyond just being industrial arms to offering intelligent support. They could soon be the primary makers of food. No, I'm not referring to their role in farming, but in the kitchen. A robotic chef is slated to be commissioned shortly this year and its 129 sensors and 20 motors promise to cook 2,000 mouthwatering recipes. Imagine a cruise liner, a music festival or a refugee camp and the role of a robotic chef becomes invaluable. As the field of

robotics gets more sophisticated and we humans begin to increasingly rely on them, manufacturers of robots and companies engaged in advanced robotics will need IP regulations to protect their interests. The most recent innovation improving lives is machine learning. Here, technology is ensuring access to products, simplifying delivery and introducing convenience. IP is playing a central role in all AI-related innovation, and the graph below published by ClearViewIP in Feb. 2017 indicates that companies are protecting their innovation by filing AI-related patents. Innovation through automation and AI has the potential to release humans from the drudgery of repetitive effort and channelize their creativity and skills to create something new. The driving goal of technology is to amplify the human spirit and potential. But the IP question is still hotly debated - Since the algorithm is self-learning, who should apply for the patent, the engineer or the algorithm? If the AI algorithm is aware and being creative why should rights not be accorded to it? And so on. This years' theme of World Intellectual Property Day, 'Innovation - Improving Lives' ties into Infosys' belief in letting a 'thousand flowers bloom'. We believe that ideas should be freely available to be used and built upon to solve problems faced by humanity. Innovation is not an intrinsic skill that one is born with, but rather one that can be taught, trained in, and honed. Our Design Thinking (a technique that nurtures innovation) and Zero Distance (an organization-wide movement to enable innovation at all levels) initiatives, progressively strengthen each other, and are outcomes of this core belief. Every employee in the company has the opportunity to attend a Design Thinking workshop. The objective is to empower employees to proactively empathize with end users, be it our clients or our client's client, and address even their tiniest pain-point. Imagine when 200,000 employees are empowered to identify such innovation possibilities. The intellectual property movement no longer remains isolated to a few, but becomes a mass movement. The benefit to Infosys' clients is smarter solutions that can save thousands if not millions of dollars. For end users, it reduces effort, improves UX and sometimes even cost. =====================

Cracking the Code Barrier

----- Arcticle source ----- https://www.infosys.com/insights/human-potential/cracking-code-barrier.html ----- Insights Human Potential In a 2014 study conducted in the United States and the United Kingdom, manufacturing companies lamented the shortage of not manufacturing, but digital talent. The massive demand for advanced technology skills and the near impossibility of fulfillment is a recurrent theme that runs through virtually every industry today. The United States alone will create 1.2 million new jobs in Science, Technology, Engineering, and Math (STEM) fields by 2018, which it will struggle to fill, says a White House initiative called US2020. Likewise, Digital Agenda for Europe, a Europe 2020 initiative under the aegis of the European Commission, predicts their region will fall short of at least 825,000 Information and Communication Technology (ICT) professionals at the end of the decade. Here, it is necessary to clarify that the broad technology domain requires a variety of skills related to STEM qualifications, digital literacy, and code literacy. While they are often

bracketed together, in any discussion on talent shortage, STEM qualifications, digital literacy, and code literacy are all different. Clearly, digital is the new literacy in the job market. With 90 percent of jobs in a long list of fields requiring digital skills in the near future – if they do not already – digital literacy is fast becoming employability hygiene. And as the demand for digital literacy goes up, derivatively, inevitably, so will the need for code literacy. Which is why, it is hard to understand that so little is being done to build this vital skill from an early age. Even as advanced computing has come off its pedestal to become personal, pervading every aspect of day-to-day life, basic computer science – coding, programming, developing – has clung on to remain the esoteric preserve of a few. In the United States, and likely elsewhere, the relegation of code literacy is rooted in a variety of legacy societal issues, ranging from financial to social to cultural. But now a new narrative is slowly unfolding, scripted by a grassroots movement to build coding awareness and education in the country, made famous by none other than President Obama himself, who even knuckled down to write some. Organizations such as Code.org and The New York Academy of Sciences are working tirelessly with school districts across the country to get them to make coding part of the curriculum, right from the early grades. That apart, they are socializing the need through the 'Hour of Code' campaign, exhorting every American student to spend just one hour trying to learn programming, and organizing events around the Computer Science Education Week, to name a couple. But while the whole idea of improving code literacy may sound simple, it is in fact an enormous agenda. There are huge challenges in execution, ranging from the absence of nationwide harmonized standards for school curricula and a lack of assessment frameworks to a shortage of funding for teacher training and other resourcing and legislative issues. But the biggest challenge by far is changing the people's mindset from 'coding-is-for-geeks' to accepting it as a fundamental skill that can really change lives. Hi-tech digital jobs routinely top the listings. Cutting-edge careers are now made in artificial intelligence, data science, robotics, and gaming. Naturally, they also pay better, almost twice the U.S. average, says the Bureau of Labor Statistics. But the closing argument is that soon jobs requiring digital skills will be the only ones available. A list of ten jobs that will soon disappear has only one digital entry, Social Media Manager, at number ten. On the other hand, digital jobs will become more and more fantastic, opening up opportunities to telesurgeons, media remixers, simplicity experts, and robotic counselors. For those trapped in dead-end jobs at risk of redundancy, the acquisition of coding skills might well mean a new lease of life. For instance, a worker in a traditional assembly line could find himself at the cutting-edge of manufacturing if he learns how 3D printing models and the software used to create them, are built. So you don't want to be a programmer? You do not even want a `science' job. Fair enough. But knowledge of code is still relevant because it enables you to excel at your chosen profession. Or simply, do things more efficiently. Here are some scenarios: Today's filmmaker does pretty much everything from shooting to screening, digitally. Knowing how the software is built would enable her to extract maximum performance from it. Now think of a sales head in a bank. Familiarity with the code of a corporate banking app would enable him to tell a client whether the customization they were asking for was possible or not, without having to check back with IT. Now cut to the legislative domain, where

lawmakers connected with NSA hearings are now expected to understand concepts like encryption. Essentially, knowledge of software code facilitates a better understanding and appreciation of the working environment surrounding any job involving the use of technology. Code literacy is of higher import than mere computer literacy, because where the latter teaches people how to use digital tools from the outside, the former helps them understand the very same tools from the inside, and thereby exercise greater control over them. The U.S. technology workforce is starkly homogeneous – White or Asian, middle class to affluent, and male. That's because access to computer science education – the pipeline the workforce feeds off – is highly unequal. Data on the U.S. high school AP computer science enrollment says, 15 percent are girls, and about half that, 8 percent, are African American or Hispanic. The reasons for exclusion are, to a large extent, cultural and steeped in stereotypes – "girls can't code", or "it's too hard" and so on. By excluding computer science from their education, vast sections of the population, most of whom are economically and socially disadvantaged, are shutting the door on an attractive computing career and the prospect of upward mobility. Clearly, governments concerned with issues of diversity and inclusion should leverage code literacy as a powerful instrument of that agenda. In a recent joint study, two leading analyst firms predicted that digital technologies could add as much as US$1.36 trillion to the world economy of 2020. While that might not be much in itself, the important thing is that digital growth also improves economic growth rates in general. Thus, a 10-point (on a scale of 100) improvement in digital density is likely to accelerate developing economy growth by 50 basis points. This is why computer science is being hailed as the most important driver of wealth in the post-Industrial Revolution era. Given that wealth is increasingly being generated through Intellectual Property, modern economies that fail to develop the necessary infrastructural computer skills base will soon lag behind. While it will take years of effort for the code literacy message to sink in within our social and educational systems, the idea is already resonating strongly within the industry community. The technology industry also recognizes the need for throwing its weight behind the code literacy movement. Infosys, for instance, is trying to help the development of coherent career pathways for kids right from an early age by supporting computer science education in schools and colleges. Infosys Foundation USA is engaging with a number of agencies involved in various related activities, ranging from service delivery and advocacy to research and policy-making. Such top-down efforts are necessary, but they can only do so much. For the coding literacy needle to move, there needs to be an urgent demand at the grassroots level for computer science education. It is imperative that parents get involved with their local schools and communities to participate in the conversation around the future development of school curricula, and petition the lawmakers to legislate in its favor. They also need to see the bigger picture, that by advocating the recognition of computer science as a core standard, they are not only solving some of the greatest problems of today, but also preparing to meet the challenges and opportunities of tomorrow.
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COVID-19 Creating Unique Challenges for Workers With Disabilities

----- Arcticle source ----- https://www.infosys.com/insights/human-potential/creating-unique-challenges.html ----- Insights Human Potential The lives of billions of people have been disrupted in a variety of ways by the COVID-19 pandemic. The challenges, however, have not been experienced equally by everyone. More than 1 billion people — about 15% of the world's population — have a disability, according to the World Health Organization.1 An estimated 386 million of them are in the workforce.2 Employees with disabilities often thrive in the workplace with the assistance of technology or personal guidance. Now the current crisis has upended offices worldwide, which creates unique sets of challenges for these workers. The Australian Network on Disability is helping companies — including Infosys — accommodate workers with disabilities in this new environment.3 The organization was founded in 2000 as a resource for employers seeking to create accessible and inclusive workplaces for people with a variety of disabilities.4 The ultimate goal is to provide an environment in which employees can enjoy their work and achieve their full potential. Network CEO and founder Suzanne Colbert said workplace accommodations — from furniture to software to mentoring — always have been a complex subject. Now it is even more difficult, with the sudden transition to remote working. Infosys Insights interviewed her this year about the current state of the workplace for people with disabilities. How have people with disabilities generally fared in the workplace? When employees with disability have the adjustments they need, they are very engaged and successful. Getting that right in a large, complex organization is really a challenge. It's not only about having a piece of equipment. It's [also] about having the kind of manager who can ask what you need and how you like to communicate and — at a time like the COVID-19 pandemic — who can recognize challenges that employees with disability may experience. In our project with Infosys in Australia, we focused on attracting people with very specific skills and people on the autism spectrum. Essentially, we helped Infosys welcome a whole range of people with disability who have the skills and capabilities to add value and achieve great career success. [Tech companies in particular have discovered that workers on the autism spectrum often thrive in this industry.]5 How is working from home different for people with disabilities? Even in agile workplaces, some people with disability gravitate toward a particular workstation configuration, seeking a setup that is just right for them. Now that we're working from home, how do we replicate that? They might have had a different screen or keyboard or a headset. Having these tools available at home is an asset and means people don't lose valuable productivity time. For mature organizations used to making adjustments, they were able to decide to work from home on Friday — then on Monday morning, ship everyone's equipment to their home. They didn't miss a beat. Most of us are quite routine bound, and being asked to work from home does rather turn that upside down. We might need a bit of extra help from our manager to adjust. Some folks might need help to think through what

[they] will do. Supervisors, managers, and even our colleagues can help people establish good work routines. That's an adaptation. How is technology affecting the transition to remote working? Some in-person collaboration in the workplace provides incidental help [for people with disabilities]. For example, if you're hard of hearing, you can face somebody and lip-read. However, if you find yourself on a Microsoft Teams meeting with 20 colleagues, it's much harder, even though Teams has captioning — of course, there's a little delay. It's tough for people who use sign language as their primary method for communication. And it's also a huge disadvantage if people don't have a strong internet connection. Other disabilities require more manager feedback. For people with intellectual disability who are reliant on more supervision and support in carrying out routine tasks, this is really tough for them. And often the kind of work that they might be involved in doesn't lend itself to being done from home. Some people find it relatively easy to adjust to new technology, but for some people with disability, that technology needs to be accessible and inclusive. While Microsoft has done a fabulous job of ensuring accessibility, not all platforms are as easy. Live captions are really valuable. Make sure that text colors can be adapted so you can change the contrast; some people might want to read black on yellow, for example. Also remember that when we prepare documents, we should send an accessibility document so that somebody who uses a screen reader or a screen enlarger can still get that important information. When companies are thinking about introducing technology, find out if it is going to work for our folks who are blind or have low vision. Is it going to work for the folks who are hard of hearing or deaf? Do we need extra support to help people on the autism spectrum or people with cognitive disability? What are the social impacts of working from home? Many of us are missing the water cooler conversations. You can miss someone you don't necessarily work with regularly but who's going to be your check-in person — not about work but [about] how you are holding up and whether you are getting the support you need. Some people have great strategies for remote work support and are sharing them. Something we're struggling with in our organization is that people sit down and they beaver away. They forget [and], oh wow, it's been two hours, and [they] haven't stood up. Looking after our health and taking a break from the screen is important. At work, when you see a colleague get up for water, you go and say, "Hello." We don't have the same incidental prompts in our [home] environment. Those organizations that are mature at providing adjustments have done so really well. Their employees with disability have been able to maintain their work. That's on the positive side. The challenge as time goes on is the loss of being in the company of others, the impact of isolation, and structuring your work when every day pretty much feels the same. Successful organizations are putting more structure around work and giving good acknowledgment of that informal connection. Hey, it's Friday afternoon, let's meet on Microsoft Teams with a weird hat or with your glass of wine. Let's have much more of that connection. We need to be nurturing. How will the workplace of the future be different? We are suffering a bit more [from isolation] as time goes on. On the upside, we are building structures and making adjustments and adapting more effectively. If we can get the level of psychological supports right for people, then it's fair to say that many are probably never going to return to the office five days a week. If we think it's going to be like it was, we might be disappointed. Managing

those expectations is important. Our workplaces might be sparser. For that reason, if I'm the kind of person who benefits from my work environment, I might go back to the office craving that connection with my colleagues. And not many are there. We will have to go through more adjustments, right? And for people with disability, where adjustments might take a little bit longer, it is going to be more challenging. Work is not going to be like it was previously. We've got quite a long time and a series of adjustments ahead of us. To make it easier for people with disability, be really specific about how they're adapting and what other supports they might require. Encourage them, and encourage people to think deeply about what would be helpful or needed in order to manage those levels of change. How might the worsening economy affect people with disabilities? We're going to see economic contraction. That's going to be tough for so many people, but we need to make sure that people with disability aren't disproportionately left behind. We don't want to see that for any particular group of workers, women, or older workers, or people with disability. We need to see a fairness, and that is going to be very challenging. We want to make sure that decisions are made with everybody's skills and capabilities in mind. We know that diverse and inclusive teams are three times more likely to innovate, four times more likely to provide excellent customer service, and more likely to stay with their organization. There's a lot of data around the benefits of diverse and inclusive teams. That awareness has changed in the last 10 years. We hope that would carry us in good stead and make sure that people with disability are not left behind. In Australia, we had a recession in the early '90s, and many of the people who lost their jobs [then] have never worked again. I've spent 30 years working in employment for people with disability in one way or another. Poverty is grim. If you have a disability and you've got some resources, you can create a better life. But it's much harder if you're poor. What makes me feel very hopeful is that as we speak to our members [about internships], they're not saying no. They're saying we want to continue, but we might have to change the time frame. That makes me feel positive that organizations still welcome skilled and talented university students with disability into their organizations. It's only the time frame that will change, not the intention. What do you see happening in your world after this current crisis? We're working differently, so it takes a little longer when we're reaching out to our colleagues. But more people are making sure that no one has been left behind. And people are being kind. I would hope we can take them beyond the pandemic — making sure our employees and customers with disability aren't left behind. I think those [efforts] show just how good we are as humans when we come together to solve problems. If we come out of this being better people, better organizations, better governments with better thinking about an inclusive world, that would be pretty awesome. 1World report on disability, 2011, World Health Organization. 2Factsheet on Persons with Disabilities, United Nations. 3Infosys has been recognized for "Role Model Corporate" award at the National Centre for Promotion of Employment for Disabled People, 2019, Infosys. 4Australian Network on Disability — Our History, Australian Network on Disability. 5Young Adults With Autism Can Thrive In High-Tech Jobs, Lauren Silverman, April 22, 2013, NPR.
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Design Thinking and the Enterprise

As a customer-centric organization, my telecom service provider routinely reaches out to me, as they do to other customers, to solicit my feedback on their services. I know they need my feedback, yet, I rarely submit to the process. Put it down to a discomfort of discussing service quality with an impersonal, automated call service, a service that has been thrust upon me without my permission. However, it is easy to see the service provider's perspective. Here is a technology that eases the arduous process of extracting customer assessments. Which, incidentally, is much more economical than deploying valuable human resources. It's hard to stand against the compelling proposition of a convenient alternative, which is both technically feasible and commercially viable. What we have here is just one of a large set of readily available options that the typical enterprise approach of convergent thinking has delivered. And that is the inherent limitation of taking this particular cognitive path to finding solutions – it is structured to identify a finite set of choices that are deemed to be acceptable, solely because they have been distilled from the tried and tested way of doing things. Convergent thinking, then, is the science of making choices that come pre-validated by convention. So what enterprises end up with, are some choices that are patently enterprise-worthy, in as much as they tick the all-important boxes of technological feasibility and economic viability. However, like my mobile operator, most enterprises don't factor-in the all-important parameter of user desirability – that is, what does the customer really want? Should enterprises pause to ask, they would find that customers understandably tend to value their own experience much higher than organizational priorities like feasibility and viability, if they value them at all. With expectations of experience on a constantly rising trajectory, end consumers becoming more prudent and empowered, enterprises need to switch to a more integrated cognitive approach - that is as much about divergent thinking or the art of creating choices, as it is about convergent thinking, which is the science of making choices. Or to put it more simply, enterprises need to switch to Design Thinking. Design Thinking emphasizes a more human-centric and empathetic cognitive process that relies on harnessing intuition, inspiration, and emotion to create solutions - all without losing sight of the practical considerations of technological feasibility and business viability. In and of itself, it is not a new paradigm - for years, designers have successfully used this approach to create concepts that effortlessly marry desirability with functionality and profitability. What is new is the effort to extend the concept of Design Thinking into areas and practices beyond the realm of pure design. Like the enterprise, for example. The typical corporation is built on a bed-rock of rational thought, analytical reasoning, and data-driven strategy. And over the years, this model has served as a reliable enabler of value for the enterprise. But in this citadel of reason, the philosophy of intuitive thinking – what Roger Martin, author of The Design of Business calls 'the art of knowing without reasoning' – has at best been a peripheral influence thus far. Given this historic context, it is a bit hard to

imagine a future, where the enterprise model harmoniously amalgamates seemingly irreconcilable concepts such as analytics and intuition, reason and emotion, and data and inspiration. And yet, that is exactly the transformation that enterprises will have to achieve in order to survive and thrive in this rapidly evolving marketplace. Consider the Experience Economy – from products through services, experience is today the fundamental arbiter of competitive differentiation and economic value. It is about renewing traditional products and services, and exploring new opportunities arising from the economic construct of experience. This completely new paradigm, arguably even more radical than the transition from an agrarian to an industrial economy, compels a new model of enterprise thinking. Or consider Innovation – no longer the preserve of a few pioneers, innovation is now a prescription for survival for enterprises irrespective of size, sector, or market. Though most conversations about innovation tend to focus on technology, truly sustainable innovations are those that explore beyond the possibilities of technology. In fact, as a cognitive model, Design Thinking has the potential to create solutions in areas where technology has failed to. Infosys has embraced Design Thinking as a core, foundational capability that can be relevant for every single employee of the company. I am often asked to explain what this means – and luckily, the core idea behind Design Thinking is very simple. It is a method for improving the creative confidence of individuals, teams and organizations to explore areas of significant opportunity which are also complicated by substantial ambiguity. Creative endeavor is, by definition, a risky activity. If we know exactly how to do something – it usually means it has been done before – and hence it is not creative or innovative. We are born learners and explorers, but sometime during our formative years, many of us lose that ability to explore, experiment, and take calculated risks that increase our learning velocity. Design Thinking gives us a scaffolding for such "positive" behaviors – such as developing empathy, effective problem framing, and working in rapid, iterative cycles of prototyping, experimentation, learning, and continuous improvement. Applying these behaviors every single day to the issues we encounter – both internally and during our engagement with clients - can improve our creative confidence, and help us to renew the things we already do, while also enabling us to pursue new opportunities with conviction. Sanjay Rajagopalan Human-centric / empathetic: As a human-centric process, empathy for the customers' needs is central to the Design Thinking philosophy. But as opposed to conventional market research techniques, the Design Thinking model emphasizes the need to interview and engage with customers, observe user behavior in context, and to also experience first-hand the customer context. Uncovering the emotional aspects of behavior is critical and the model uses a range of research techniques and design tools to understand customer expectations, motivations, and values as well as to systematically map the key tasks and stages in a particular process. Iterative: By its very nature Design Thinking is a dynamic and iterative process, but with an unwavering focus on the expectations and needs of the end user. It creates a fast and, if required, repetitive learning loop that makes it easier and quicker to optimize and refocus. Tim Brown, CEO of IDEO and author of Change by Design, defines the design thinking process as a system of three overlapping, rather than sequential, spaces that can loop back depending on the team's need to refine ideas or change direction.

Design Think. Design Do: Design Thinking emphasizes action as part of the problem solving process. Teams are encouraged to actively create simple experimental prototypes that not only contribute to an enhanced learning experience, but also make ideas more tangible and real. Rapid prototyping, using techniques as simple as storyboards or role-playing, can also help focus ideas, enable discussions about usability and experience, and accelerate feedback. Collaborative: Collaboration is strategic to the success of Design Thinking and is the key to unlocking enterprise creativity. In Change by Design, Tim Brown emphasizes the importance of creating "interdisciplinary teams that take collective ownership of, and responsibility for ideas, as opposed to multidisciplinary teams, where each member acts as an advocate for their own specialty." Going forward, enterprises will be increasingly compelled to transition from a CSR strategy that is incremental to corporate strategy, to a broader and deeper commitment to Corporate Social Innovation. It is no longer about giving back to society. It is about addressing the challenges that affect the very societies that corporations operate in. Design Thinking has already made some inroads into the practice of social innovation, but it has to be adopted widely, keeping the society and nature at the epicenter while finding and solving the societal problems. As enterprises embrace Design Thinking to address their own problem solving needs, they also have the huge opportunity to deploy the skills and resources that they build to support and drive social innovation programs of scale. Since empathy and human-centricity will form the common strategic core for both enterprise and social innovation models, it will also probably make it that bit easier to reconcile the focus of both. Summing up: As customer-led innovation rapidly emerges as the only sustainable competitive advantage, Design Thinking offers the most efficient and effective model to harness the creative power and potential of the enterprise. But to be truly successful, enterprises have to ensure that Design Thinking is embedded in the very culture of the organization. While it may represent a marked departure from the conventional analytical approach to driving enterprise innovation, performance and profitability, it provides a really powerful tool that puts people at the center of the innovation model, thereby opening up new possibilities to engage productively with both customers and the community. Download article =======================

How Enterprises can Design Think their Way Out of Disruption

----- Arcticle source ----- https://www.infosys.com/insights/human-potential/design-think-their-way-out.html ----- Insights Human Potential The conventional "convergent thinking" approach prescribes that organizations find a solution from a finite set of proven choices delivering yet another me-too solution in the name of innovation. Design Thinking on the other hand, says "find the problem and the rest will follow" Everywhere you look, the old order is crumbling. Today customers, and not corporations, are the custodians of market power. Monolithic "pipeline" businesses are making way for platform-based ecosystems. And technology is evolving even as it becomes obsolete. Nowhere is this upheaval more evident than in the

disruption of heavyweight incumbent organizations at the hands of young digital businesses whose main assets are their ideas and innovations. The S&P 500 tells this tale eloquently – in 1965, the average shelf life on the index was 33 years, which shrank to 20 years by 1990, and will further reduce to 14 years by 2026. Currently, Facebook and Google's parent Alphabet are in the top 10 by market cap. Eastman Kodak was replaced by Netflix on the index in 2010, the camera film pioneer filed for bankruptcy two years later. In contrast to the meteoric rise of new age firms, the fate of companies like Eastman Kodak and Blockbuster is a cautionary tale of the consequences of not adapting to a world that has changed beyond recognition. Incumbents still trapped in legacy need to find a way out quickly, a new way it must be said, if they are to escape being disrupted in the digital age. Find the Problem and the Rest Will Follow One framework is to use Design Thinking for innovation. Ask any company what its purpose is and the answer will distil down to solving the needs of the consumer. The conventional "convergent thinking" approach prescribes that the organization find a solution from a finite set of choices that have worked in the past. By definition, this approach delivers yet another me-too solution in the name of innovation. Design Thinking on the other hand, says "find the problem and the rest will follow". Where convergent thinking sees innovation through an organizational lens – can we build the solution? Will it make money? – Design Thinking values customer interest above all else. At the outset it is concerned with one question, and one question alone: "Is this innovation really what my customers desire?" If the answer to that is yes – so, because the innovation solves a longstanding, fundamental problem of the customer – only then does the attention shift to establishing technical feasibility and financial viability. While they may not have planned it, some of the most iconic businesses of our times have taken exactly this approach – rumor goes that the idea for Uber was born one cold winter night when the co-founders couldn't get a cab – to disrupt the market to bits. But is there a framework that an organization, without the benefit of serendipity-inspired-vision, can use to Design Think its way out of digital oblivion? Indeed, there is. The d.School at Stanford University describes Design Thinking as an iterative five step process. Building empathy: The first step in Design Thinking is to connect emotionally with users by feeling what they feel during any experience. At Infosys we also call this being at Zero Distance to customers. Building empathy is easy and obvious in theory, but is remarkably difficult to achieve in practice. It may call for setting aside something that an enterprise has been doing for years and going back to the drawing board all over again. Most organizations will balk at this. However, just because a certain solution has worked and even succeeded spectacularly, doesn't mean it cannot be bettered. The KAZbrella is proof. This is the brainchild of Jenan Kazim, who refused to settle for the umbrella as the world has known it for 3,000 years. Railing at its flaws, he realized that most of the umbrella's problems – that it dripped water on the floor after closing, poked other people in the eye while opening, or had to be shut before one could enter a car – arose from a faulty design which required it to close "downward" and open "upward". By simply reversing the direction of closing and opening, so the dry side was on the outside of a closed umbrella, Kazim eliminated all these problems. Building models: While innovators can feel empathy with users by observing or sharing their experiences, at some point they will need to formalize that insight into a

model that everyone can follow. The problem is that the emotions associated with experience aren't always easy to quantify, and they can be messy, obscure and even contradictory. The need is for a model that can accommodate this disorderliness, and nothing can beat storytelling at that. Design Thinkers have accordingly evolved a system of collaborative model building in which teams use pin boards, sticky notes, and free form drawings to tell the story of the customer's journey and pain points along the way. Improving experiences: The enterprise is a repository of rich knowledge, which is almost always underutilized. Design Thinking believes this learning should be available across the enterprise, so it can improve experience and inform innovation. Ideally this process should happen as naturally as possible, all in a day's work, so to speak. One of our divisions implemented this concept with great success: During one engagement, it found that technical support offered to customers in the field was riddled with delay and inefficiencies because the technicians had to wait for resolution instructions from the back office. The Infosys team applied Design Thinking to ideate on a solution that catalogued the firm's knowledge and built a digital assistant that used this learning to advise the technicians on how to resolve a problem on the spot. Prototyping and testing: Prototyping in Design Thinking is about building quick and dirty solutions, iteratively, until they become perfect. It is not about going for gold right from the start. This approach allows ideas to fail fast so they can be discarded before too much has been invested in them. A very important attitudinal difference in Design Thinking is non-judgmental acceptance of failure. Simplicity and restraint are also important tenets of Design Thinking, which cautions innovators against adding excessive features. This approach has proved itself again and again in the simple propositions of Uber, Square Cash and Google. Design Thinking the Infosys way The Infosys approach to design thinking is to view it as an intentional human-centered activity driven by cross functional co-collaboration and computational design that encompasses every aspect of an organization from people, objects, environments, messages, and systems to accomplish not just digital but also cultural and organizational transformation. Emphasis is on accelerating collaboration between consultants, employees, users, and subject matter experts to help enterprises move from static products to dynamic services by To tackle the present VUCA (volatile, uncertain, complex and ambiguous) environment, Infosys spends as much as 80 percent of its time and effort in delving into the 20 percent of the unknown variables in the marketplace, experimenting with secondary and primary research via an iterative process to distill an informed point of view that has a shared understanding at the enterprise level. This helps organizations arrive at their desirable states. The journey from the desirable to the viable is then led through feasibility checks with prototype releases and viability tests. Infosys has strategic design consulting capabilities to provide human and data centric insights using digital platforms, data, and computational tools to deliver intelligent systems that are then combined with human centric objectives and business goals to arrive at new solutions. Conclusion Every business is being disrupted by digital. Incumbent organizations, no matter how large or illustrious, are also at risk. As enterprises seek to reinvent themselves, Design Thinking comes to their rescue with a different perspective to innovation that fits right in with the needs of the digital age. It is no coincidence that the principles of Design Thinking have inspired the success of many young digital disruptors.

It is time to design think your own way to success.
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Continuous Learning for Developing Talent in a Digital World

----- Arcticle source ----- https://www.infosys.com/insights/human-potential/ developing-talent.html ----- Insights Human Potential Emerging technologies like automation and Artificial Intelligence (AI) have dramatically changed the skills needed within the technology industry over the past decade. On one hand, these technologies are making certain jobs obsolete, sparking unemployment fears. On the other, they are creating new opportunities requiring specialised skills that are in short supply. According to the Australian Computer Society (ACS)1, an additional 200,000 technology workers will be needed if Australia is to become a world leader in the digital economy in the next five years. With advances in technology rapidly driving the need for more specialised skills, this gap isn't going to reduce unless there is a drastic shift in the way we approach digital skills. Building a culture of continuous learning will be key to ensuring the workforce remains relevant. The future growth of Australia's technology sector cannot happen unless people in all stages of their career, from a fresh intern to a highly-skilled architect or a well-experienced business leader, are constantly reskilling and/or upskilling to ensure their skills match industry demands. What we classify as 'digital skills' has changed over the years. From being as narrow as programming or coding, the skills in demand today are a mix of technical and creative capabilities. We are realising, as an industry, that digital means much more than technical. Digital skills have historically been dependent on STEM (Science, Technology, Engineering, Mathematics) education, however, with emerging technologies there is now a need to include liberal arts and design as key areas of talent. The technologies and solutions we develop for our clients are built to solve business problems. We need to create unique business models that are disruptive, but still human-centric, so an understanding of human behaviour, society, and culture is key. With focus on a human-centric, data-driven methodology, digital has evolved beyond technical roles, opening avenues for talent with a range of skills and academic backgrounds. This ensures a more holistic approach to identifying and solving business problems. Academia and theory provide a strong foundation and basis for digital skills but learning by doing is key to ensuring that talent is job-ready. Participating in experiential learning programs provides an opportunity for the practical application of skills, with people collaborating to solve problems. For students in both high school and university, my advice is to be involved in as many experiential learning programs as you can. From hackathons, to internships, there is such a wide range of opportunities available. The Infosys InStep internship program is one such platform. We accept 140 interns globally, with 30 students from Australia and New Zealand alone, to work on projects across business units and business enabling functions. So what should you look for in a

workplace? Find a workplace with a culture that supports employees, at all stages of their careers, to upskill and reskill – continuously and on-demand. When we say on-demand, we mean opportunities to learn across a range of platforms, formats and times. We are no longer bound to learning in a classroom, we can now learn on our mobile phones while we are on the move, travelling to and from work. Our always-on learning culture has led to the development of our on-demand learning platform, LEX. Our staff is enabled by 'always-on' learning using a platform available anytime, anywhere, and on any-device. The content and programs are constantly updated, supporting our staff to learn, based on their interests, role, and skill set. It's this type of learning that enables employees to proactively further their own skills with their career growth in mind. The culture of a workplace should be to celebrate people's efforts and provide room for failure. There is no better way to learn than by trying, failing, and trying again. This is an ethos we strongly believe in. We recently announced our commitment to hire 1,200 people in Australia and also plans to develop three technology and innovation hubs. We are investing in local talent, and through our hubs, we'll be giving our staff, opportunities to get involved in new projects to practice and enhance their skills and capabilities, take risks and improve from the lessons learnt. Irrespective of the stage of your career, the opportunities available to you as technology continues to advance are immense. Use these opportunities, and proactively look for projects to upskill and reskill, with the support of the right workplace environment. =======================

KYC Impelmentation for banks made easy

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/ needs-come-age.html ----- Insights Industry Stories Banks (and customers) generally treat the Know your customer (KYC) process as an inconvenient yet necessary formality to open a new bank account. Banks need to do adequate due diligence to verify the identity of their clients and assess potential risks, especially ensuring compliance with anti-money laundering regulations. Yet, both bankers and customers agree that current KYC processes are very antiquated and at odds with the highly digital world that we live in. KYC process typically requires multiple documents, multiple verifications, and multiple interactions between the banker and the customer. Here are some key factors that makes KYC implementation difficult. Inconsistent standards: Given the lack of standardization, there is little consistency in the documents required for KYC processes. It varies with banks and with every geography. For banks that run global operations, complications increase even more with different regulations becoming applicable to different clients and regions. Time-consuming, tedious and costly: Often, banks need to go through considerable back and forth with customers when it comes to completing KYC requirements. This also drives up the cost of conducting the KYC process and makes it extremely time consuming. Besides, any material changes at the customer end need to be reported, which customers often neglect to do. New and evolving data

security regulations: Data privacy mandates like GDPR or the 2018 California Consumer Privacy Act require banks to be stringent with the data that they gather and manage, placing demands on making their processes and data secured and compliant. Also, it is important to note that KYC implementation is a compliance issue that doesn't absolve the bank from the responsibility of trying to do better when it comes to providing a superior customer experience. Every bank must take care of the following two aspects when revisiting their KYC process. First is security, and the second is customer experience. Security is paramount because it is the reason KYC exists in the first place. For identity management, most banks rely on data and documents that can be easily compromised or hacked. In certain cases, it includes personal and confidential documents raising concerns about who has access to this information. Hard copies are exposed to the risk of being stolen or misplaced while digital documents can be hacked. Banks cannot afford to overlook the aspect of customer experience and convenience either. A study by an identity assurance provider found that four in ten consumers had abandoned an application for a banking account midway; and most of them did so because they found the form too lengthy! So how can banks make KYC simple yet secured? In today's world, where technology is enabling every process, in every business, digital capabilities that offer security, visibility and ease of operation are available to banks to address the challenges in KYC implementation. Digital Technologies to Consider for a Smooth KYC Biometrics: The use of biometrics offers several possibilities around the use of fingerprints or facial recognition or even iris recognition. Many of the newer smart phones come with features such as advanced cameras, facial recognition software, fingerprint readers etc., making it easy to submit biometric information remotely. New wearables are being developed that also act as a payment app. Tappy Technologies, a wearable payments specialist, unveiled a new watch strap design that combines its existing contactless payments module with a passive fingerprint sensor that can be used to increase the security and transaction limit of wearable contactless payments. Blockchain: Blockchain also brings several advantages because it allows data to be stored across the network, in a single repository. By its very nature, blockchain enables secure data backup since it is replicated across the chain. US-based Rambus, which specializes in the performance and protection of data, recently launched Vaultify Trade, which is essentially a blockchain and cryptocurrency security platform. It leverages the company's expertise in tokenization and encryption to let banks safely offer their clients a range of value-added digital asset services from within their existing mobile banking apps — with bank-grade security. Artificial Intelligence: AI and machine-learning have a very important role to play in drastically improving the KYC process. One issue that often delays the KYC process is the number of false positives that current solutions throw up while identifying high risk customers. Based on techniques such as pattern recognition and unstructured data analysis, AI can help identify customers who are truly high risk, thereby making the process far more efficient. AI can also help keep track of regulatory changes, thereby ensuring that customer forms are updated regularly. This avoids a situation where customers are wasting time filling out a ton of information just because it is part of a standard form, even if current regulation no longer requires that information. A Secure and Easy KYC for a Superior Customer Experience The above technologies ensure that the

identity infrastructure that banks use do not remain static. They reduce the risk of information leakage of documents that exist in digital formats. Use of digital capabilities that leverage bio-sensitive data, cryptographic fingerprint and consensus based processing, patterns, and data analysis ensure maximum safety. On the other hand, customers are delighted to find that a single swipe of a finger or just their face is adequate to establish their identity. Not having to fill lengthy forms or submit multiple documents are conveniences customers look for. With these digital technologies, banks can make it as seamless and simple for customers do get their KYC done as it is for them to sign up for a Netflix subscription or a grocery delivery service. For banks too, leveraging these digital capabilities, will make it easy for them to manage their KYC process implementation at optimal costs and minimum complexities. Many of these are already work in progress and it is a matter of time before these technologies become the norm rather than being the differentiators! =====================

Mission to Mars: New Frontiers for Media & Entertainment

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/new-frontiers-media.html ----- Insights Industry Stories On 20th June 1969, an estimated 600 million people watched the televised landing on the moon. Audiences saw Armstrong walk, while Armstrong and Aldrin planted an American flag on the rocky surface. The world is eagerly awaiting the first manned mission to Mars. Unlike the baby boomers, Generation-I are not content with an enhanced version of a televised landing on Mars. They seek an immersive, interactive and imaginative experience. The challenge at hand for the media and entertainment (M&E) industry is to enable the participation of Population Earth minus 25 explorers in the event. How can 25 physical human forms and 10+ billion virtual human minds travel to Mars simultaneously? The rapid development of technology and familiarity with this pace of technological evolution has ensured that Generation-I expect the M&E industry to stay in sync with their imagination. No longer are they happy with linear streaming and episodic content. The industry needs to respond by renewing existing offerings, adapting to a dynamic ecosystem, and introducing new viewer experiences. Media and entertainment enterprises can stay relevant by managing production, distribution, monetization and support. Circa 2030: The onslaught of Hollywood sci-fi blockbusters on space exploration has ensured that a televised version of Mars landing is almost passé. What would impress audiences is his/her digital twin, who travelled along with the astronauts to the red planet. The digital twin experiences everything the astronauts do and the human counterpart gets a real-time view even from 249 million miles away. Not only can they have the same experience as the astronauts, each person through their digital twin can have their own individual experiences as well - they see what they want, do what they want to and go where they want within the spacecraft. Subscribers of premium content wear retinal cameras and haptic boots to experience gravitational force and walk on Mars. The mission breaks new ground in broadcasting and content delivery. Discerning

viewers co-create content based on their unique interests. Significantly, they can choose between on-demand, catch-up and exclusive 'in it' experiences. Technology doesn't exist to do this today, but so doesn't a spacecraft that can undertake a manned mission to Mars too. Progress in augmented and virtual reality will ensure that by the time man lands on Mars, all of us will have a chance to become a virtual astronaut. The key point is that by inventing technologies and a value chain for the Mars mission, media companies can revolutionize experiences today - imagine if what we elaborated above was possible today? What we could do with F1, Grand Slam and the Superbowl! Circa 2030: Expecting content to be consumed in a specified set of devices in a pre-designated window of time is irrational even today. In order to be an effective content provider to Generation-I, distributors have to deliver 'here and now' content, while ensuring visibility across diverse viewer segments. Wearable technology, sensors and the Internet of Things (IoT) generate data that provides insights into consumer behavior and consumption patterns. M&E companies should address the challenges in making the experience convenient and affordable by integrating diverse partner and stakeholder ecosystems. Circa 2030: The Mars mission will open new revenue streams and business models across the media, entertainment and telecom industries. Predictive algorithms will enable brands to adopt smart product placement during the interaction of astronauts and viewers. Programmatic advertising will enable the display of relevant messages at the right time. Media companies should quickly monetize content across platforms to overcome the short content lifecycle. However, increasing revenue from an existing ad inventory and content archive requires visibility into data across content consumption platforms. Digital natives look forward to non-intrusive advertising during media consumption. Accurate customer profiling and programmatic advertising will ensure proper allocation of ad inventory to the right customer at the right time, on the most appropriate screen. Circa 2030: Gen-I natives personalize their experience based on preferences, local context and form factor. The media and content operations should support intelligent content discovery and incorporate mechanisms to recommend content based on the platform, context, and consumption pattern. The processes and systems of media service providers should be geared for multiple consumption points and unique content requirements of viewers. Circa 2031: After travelling in space for 6 months, the Mars mission spacecraft has touched down. Media and Entertainment industry was able to give its patrons a unique immersive experience and Gen-I natives have begun to wonder, 'what next?'
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The Oil and Gas Industry's Path to Net Zero Emissions

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/oil-gas-industry.html ----- Insights Innovating toward net zero Industry Stories Carbon dioxide in the atmosphere has reached its highest level in at least 800,000 years and is still increasing. Scientists agree that greenhouse gas emissions must be reduced dramatically to combat the climate change crisis.

However, progress isn't possible without significant changes to the oil and gas industry. The sector's own carbon footprint — operations plus emissions from energy consumed — is at least 2.6 billion tons annually out of the 37.1 billion tons produced by human activity. The bigger challenge, though, is that the end product inevitably produces carbon dioxide and other greenhouse gases (GHG). The efforts to move the world's energy mix toward net zero emissions is a defining challenge for the oil and gas industry and humanity overall. The petroleum industry is vilified for its role in exacerbating global warming. At the same time, these companies are well positioned to help address the climate problem. The industry has the science and engineering know-how — and increasingly the incentives — to roll back GHG emissions for generations to come. The COVID-19 pandemic and resulting economic downturn has heightened the stark realization that peak oil was really about a peak in demand, not supply. Eventually, the industry must change and make decarbonization a reality. Many in the industry were already committed to net zero goals before the current crisis started (as the figure below shows). But more importantly, these commitments remain even as the companies have seen demand fall off a cliff. The industry has created three categories to classify their emissions sources, with each featuring its own challenges and solutions. Those are: The figure below shows the goals some industry leaders have set for emissions reductions. The scope 1 and 2 goals are generally more ambitious than the ones for scope 3 emissions. Figure 1. Several major oil and gas companies have set goals to eliminate scope 1 and 2 emissions, with some deciding on interim reductions Figure 2. Oil and gas companies say they will lower scope 3 emissions but not as quickly or deeply as scope 1 and 2 Despite the large divide among companies about how deeply to cut emissions, the industry is bracing for a tectonic shift in priorities. Energy company Ørsted — previously Danish Oil and Natural Gas — evolved from an oil and gas company to a renewable energy leader in just a decade. The company intends to be carbon neutral across its entire portfolio by 2040. Although Ørsted is an outlier, other major oil and gas companies have also set ambitious goals. Several companies have committed to both making their operations (scope 1 and 2) carbon neutral and reducing the carbon intensity of their products (scope 3) by 50% to 60% by 2050. Some have also set intermediate goals. Success in reaching those goals is critical. The World Resources Institute projected that GHG emissions need to drop in half by 2030 and reach net zero by mid-century to avoid the worst effects of climate change. Figure 3. How oil and gas companies intend to reduce GHG emissions Much of the technology needed to reduce scope 1 and 2 emissions are already intertwined with industry processes and used to varying degrees. Some of those include carbon capture, use, and storage for enhanced oil recovery, or generating hydrogen from methane. Many companies also use advanced leak detection and repair technology, and predictive maintenance powered by artificial intelligence (AI) and machine learning (although not always on a companywide scale). Often, these solutions rely on digital technology to gather and analyze camera and satellite data. Scope 3 carbon mitigation is much more complex and often involves technology that isn't mature or might not even exist. Current strategies are either geared towards reducing the carbon intensity of products sold or creating carbon credits. Members of the Oil and Gas Climate Initiative (OGCI) — the largest industry consortium for climate action — invests about $7 billion each year in low carbon solutions. Often,

these companies build $30 to $50 per ton of carbon into the cost of new projects. This level of investment is barely enough to address scope 1 and 2 emissions by 2050, let alone make a dent in scope 3 emissions. Many startups, however, are using AI and machine learning, fast internet, edge computing, and robotic remote data collection to accelerate their climate innovations. To approach their goals, oil and gas companies need exponential growth in environmental innovation. They should look for ideas within their own research labs and seek the assistance of startups and innovators in adjacent industries. Technological advances need to change systems at the global level. A recent International Energy Agency report highlighted the need to close innovation gaps in order to meet the Paris Agreement goal. That global deal seeks to restrict global warming to "well below" 2 degree Celsius above pre-industrial levels. Figure 4. Studios, digital sandboxes, and platforms can accelerate net zero initiatives The oil and gas industry wants and needs to evolve but can't go it alone. This is the time for the technology industry to partner with oil and gas firms to solve the most imminent challenge facing our generation. Here are ways to make that happen. Adapt and scale existing solutions Oil and gas companies already have many of the right tools to address their operational challenges, such as equipment maintenance, remote operations, and asset integrity. But their usage is not always at a sufficiently large scale or uniformly adopted across all assets. Many solutions are developed as minimum viable products or proofs of concept that fail to scale up. Some reasons include asset disparity, geographical differences, and data availability and quality. Companies can use AI, machine learning, automation, and other digital technologies to both optimize operations and reduce emissions. For example, a methane emissions platform can use internet of things (IoT) sensors, drones, and wearables to capture fugitive emissions across the entire value chain (production, processing, transmission, and storage and distribution). These tools are valuable and rapidly scalable but often need the boost provided by a platform approach and industrywide collaborations. Create an innovation ecosystem No one company can solve the energy challenge, not even the super majors. It is critical that all parties, including operators, oilfield services, system integrators, hyperscalers, and startups collaborate to create solutions. Sharing data across the industry is critical if companies want to reach their goals. AI and machine learning algorithms used to predict equipment failure can be trained more efficiently and for broader operating conditions, if they are trained on data from multiple operators. Service and equipment providers and technology providers, with their wide access to data, should take an active role in creating this new ecosystem. Adoption of industry platforms — such as ones for carbon offsets — will accelerate the pace of improvement. Provide a sandbox to innovate This energy transition requires a steady flow of innovation and rapid prototyping during the next several decades. The industry needs to identify the best resources, such as digital studios that conduct climate hackathons in a tech incubator-type environment. Technology companies have already embraced carbon reduction strategies. Infosys' Sira solar power project is notable for its size — 120,000 solar panels — as well as its use of automation to generate predictive insights and greater efficiency. Renewable energy now provides the company with 44% of its total consumption. Through this work, Infosys has developed significant internal expertise in several areas, including predictive AI and machine learning models, IoT solutions, and data

models and standards for emissions capture and reporting. Ticking clock Advancing toward a net zero emissions future is one of the biggest challenges — if not the biggest — facing humanity today, and the clock is ticking loudly. The oil and gas industry must take a leadership role by not only reducing its own carbon footprint but transforming the global energy systems. Today there are innovation and investment gaps in achieving these targets, but the ingredients are either available or within reach. As in other industries, digital technologies will be the catalyst to speed up and democratize innovation. ======================

Disrupting the Last Mile in Oil and Gas Retail

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/oil-gas-retail.html ----- Insights Industry Stories Few industries have felt the pressure to digitally transform themselves as urgently and broadly as retailers. The e-commerce upheaval has altered how buyers and sellers approach everything — from cars to clothes to groceries. In 2018, online shopping accounted for 14.3% of U.S. retail sales, up from 5.1% a decade earlier. Almost any product is now just an app away.1 However, one sliver of the retail ecosystem remains largely unchanged in terms of last-mile delivery: oil and gas. Sure, there have been some minor upgrades, such as newer payment methods and app-based loyalty programs, but these changes are hardly transformational, particularly in comparison with other retailers. Transformation overdue This limited progress means that immense opportunities are still available for oil and gas retailers. They can emulate other retail sectors and use technology to launch large-scale business transformations. Some of the changes in traditional retail — which also apply to fuel retail — include: At the end of the day, retail is competing for the finite amount of time that consumers already have divided among work, entertainment, commuting, education and family. Any retail approach needs to meet consumers where they live — or work. Instead of waiting for a consumer to go to the gas station for fuel, can we deliver it to their doorstep? Can the omnichannel retail model that has upended the grocery stores and the consumer packaged goods companies succeed for oil and gas retail too? Consumers are increasingly conditioned to assume that purchases will be fast, frictionless and delivered to their doorsteps. Food delivery — a longtime consumer convenience — has evolved to the point that some meals arrive from "cloud kitchens" that don't even have physical restaurants attached. On the retail side, the Amazon Key service delivers parcels to the buyer's parked car with the help of internet of things technology. Similarly, Walmart recently introduced its InHome service in which the retailer delivers fresh groceries directly from the store to the consumer's refrigerator. Duplicating that model for fuel retail would add tremendous value for busy consumers and allow oil and gas companies to differentiate themselves from their competition. A few oil and gas companies, as well as many smaller startups, have begun exploring doorstep delivery systems for gasoline and diesel fuel. Earlier this year, the Indian Oil Corp. started its home delivery of diesel for industrial equipment service.2

Other Indian startups, such as MyPetrolPump, PepFuels and ReadyAssist, have started delivering fuel to consumer vehicles and generators.3 Similarly, Booster has started a same-day fuel delivery service in the United States. ExxonMobil has invested in Yoshi, another U.S.-based company that provides fuel and maintenance services for vehicles at the consumer's doorstep. WeFuel offers an unlimited delivery subscription model at $19.99 per month. Filld and Purple are other startup competitors. A study of the above-mentioned startups shows that consumers can benefit from them in multiple ways. The advantages of these new models include: However, providing an on-demand service model is more complicated for the oil and gas industry than for other retail categories. A certain amount of innovation is needed to offset price volatility and address greater safety concerns. Some U.S. cities have warned of fire risks from fuel deliveries. Also, there are still questions about how widespread the demand will be for such services. In many areas, gas stations are plentiful, convenient and not particularly time-consuming. It's easy to see fuel delivery gaining a foothold in selected areas, while failing in others. The switch to electric cars could also put pressure on these businesses in the future, although there will still be ample fuel demand for decades. Catching up There are always risks when experimenting with business models, but the opportunities are broad and apparent for the oil and gas industry. Fuel retail companies should offer on-demand fuel delivery for a variety of reasons. Customer stickiness Gasoline is largely seen as a commodity. Consumers rarely have an affinity or preference when it comes to choosing one brand of gasoline or diesel fuel over the other. Most purchases are purely need-based and depend more on factors such as proximity to a gas station. Disrupting the service model through a convenient "anytime, anywhere" service will go a long way to help fuel retailers gain brand loyalty. It is also possible to provide incentives, such as discounts for pre-ordering. Demand forecasting With existing fuel retail models, companies have little visibility in terms of expected sales over the next week or month. The pre-order and delivery models provide greater opportunities to lock in customers for an extended period through incentives. In turn, this can facilitate much better demand forecasting. Many drivers have a good sense of their expected fuel consumption over a given period. If they get good offers or incentives, many consumers will take that opportunity to lock in fuel prices. This brings much greater predictability for companies and consumers. Customer insights Retailers today have greater insight into their customers' preferences and buying habits than at any time in the past. When used in conjunction with data analytics and machine learning, this information allows them to offer personalization at scale. In the current oil and gas retail model, there are fewer opportunities to collect detailed customer data or identify individual buying patterns. Revamping the delivery model can help generate useful insights to drive better customer experiences and create new services. Some fuel delivery companies have expanded their offerings to include basic maintenance as well as washing and detailing. Ultimately, these and other innovations are needed to catch up to the current retail market. A platform-led model for oil and gas retail will likely find initial-use cases with fleet vehicles, such as school buses, taxis or rental cars. In the long run, however, on-demand gasoline and diesel could expand beyond its current startup-based niche and broaden the future for fuel retail. 1 www.digitalcommerce360.com/article/e-commerce-sales-retail-sales-ten-year-review 2 www.iocl.com/aboutus/

Evolve Business Continuity Into an Operational Resilience Change Agent

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/operational-resilience.html ----- Insights Industry Stories Customer trust is difficult to earn and easy to lose. Companies learned long ago that they must keep their promises to customers or risk potential disaster. Those commitments are easier to deliver on when times are stable. But what if customer and market needs shift and your business must pivot and adapt rather than stay the course? In those circumstances, a renewed focus on resilience can provide strategic insights beyond recovery in a crisis. Operational resilience has become the new currency for building and holding customer trust in both times of calm and times of change. In a February 2021 report, Forrester risk and resilience analysts noted that resiliency practices are different from adaptive practices and that firms need to develop both. Adaptive practices address "foreseeable trends," such as changing market dynamics, new competitors, or evolving customer needs. Robust resilience practices allow organizations to "dynamically react" to sudden events that might or might not have been foreseeable. While separation of these practices ensures both receive proper attention, the lines are blurring between the need to respond to unexpected crises and the need to adapt to new opportunities. Crises will uncover new opportunities, while pivoting to new opportunities can avoid a crisis in the making. Resilience leaders can improve the adaptability of their firms and thus make an even greater strategic impact on the organization. The reevaluation of resilience is particularly important in the financial services sector, which is entering a new regulatory phase. Emerging international rules are forcing firms to reconsider how they analyze, test, plan, and improve their resilience practices. These regulatory requirements, for the first time, focus on assessing resilience from the customer's perspective. These new operational resilience regulations cover a variety of areas. These practices seem naturally targeted at the resilience practices that Forrester considered, rather than adaptability. However, organizations that commit to becoming more resilient will find that their resilience practices will also be a resource for their adaptive practices. "Financial services firms have progressed 10 years in the past 10 months," said Dennis Gada, Infosys senior vice president and head of financial services, North America, during a March 2021 Screaming in the Cloud podcast. He explained that those who have been most successful are the ones looking at their processes from end to end with the customer at the center. This approach is acutely needed now as banking processes evolve at amazing speed; the U.S. Paycheck Protection Program increased loan demands 25-fold almost overnight. Customer-facing

services — particularly ones with great impact — need to be examined thoroughly and not just be given a surface treatment. Success in this type of demanding environment requires a deep understanding of end-to-end processes that are critical to customers. To support this shift, resilience leaders can use the information they are amassing to convince regulators that their company's important business services are appropriately resilient. Operational resilience teams can help shape strategy by providing insights about where an adaptive change could make a difference. As a result, the firm can pivot its end-to-end customer journey without sacrificing resilience. The building blocks of these new practices can help firms be more adaptive when strategic thinking is at play — the times between crises, when new opportunities present themselves. The insights gained from understanding how to keep important business services resilient can drive a firm to adapt its strategy to protect and grow the business. Forrester has described the characteristics of resilient firms that are on par, advanced, and differentiated versus their peers. Those that are differentiated can "spot where gaps exist in competitor offerings and fill them quickly, identify customers who are underserved and create new offerings, or predict how an event will unfold to respond to current and future customer needs." These capabilities, including filling competitive gaps and creating new offerings, start to shift resilience into the realm of adapting and pivoting business strategy. However, firms can go even further by leveraging their resilience knowledge base before there is ever a crisis. The insights that a next-generation operational resilience program can provide will allow organizations to pivot in a truly adaptive (not just resilient) manner. As Gada mentioned in his podcast appearance, the pandemic allowed financial firms to shift from their traditionally controlled ways of operating. Previously, a bank would function much like an opera where everything is planned and carefully orchestrated. More recently, adaptive firms have resembled a flash mob with creative energy to quickly understand and tackle challenges in weeks and even days, not months and years. This shift can, and should, be a place where resilience teams directly contribute with insights that can further accelerate decision-making and transformation. To learn more about how business continuity practices must evolve with the new regulations and market demands, download The Resilience Imperative white paper from Infosys and Fusion Risk Management. =======================

Patient centric Innovation That Delivers More than Wellness

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/patient-centric-innovation.html ----- Insights Industry Stories As life sciences companies move from analog to digital, they must also move towards becoming more customer-centric to truly meet patient needs and deliver improved outcomes. In other words, move towards a more patient centric care model. The life sciences industry has made great strides to change the way care is accessed and delivered. A case in point – recently, we designed a digital service use case for gestational diabetes in high-risk pregnancies to enhance patient centered care. Typically, a gestational diabetes patient

connects with family members and multiple professionals – her primary doctor, Gynecologist, Obstetrician, Endocrinologist, Dietician, and Physiotherapist – who collectively manage her blood sugar levels, monitor progress, and deliver care. We adopted a service design approach that looked at the patient's needs, goals and limitations holistically and designed a digital service platform that brought together the various stakeholders and satisfied the patient's need for access, control, value and convenience. The platform comprises a web portal and mobile apps with the facility to text, call, video chat, and schedule a physician home visit at a cost. It enrolls various specialist physicians, monitors blood sugar levels, schedules regular appointments with doctors and diagnostic labs, checks quality of life triggers to track the patient's health, triggers pill reminders, offers home delivery of medications and diagnostic services, and travel management services for the entire duration of the pregnancy. A patient can choose her care team with whom she can converse anytime. She is also connected to a similar group of patients to share her emotions and experiences, her family, and an outside universe of experts for second opinions. Designed as a six months' service package till the baby is born, the service may be extended for a year, connecting the new mother to the pediatrician who guides her through all vaccination cycles. At the end of the journey, the patient's feedback on the service provided and the care team is duly recorded. This is one of the many use cases we have recently developed for our life sciences partners that leverage service design and digital technologies to deliver patient centric healthcare. Connected experiences are the future The clear driver of connected experiences is the unprecedented collaboration it enables between all the stakeholders – patients, physicians, providers, payers, care givers and family. Such collaborations can lead to dramatic outcomes. Besides, connected experiences are simply a necessity in today's healthcare landscape where: Delivering truly connected experiences will require a big shift in the way life sciences companies view their customers and their needs. It will require a new holistic outlook that takes into account every moment of need. Data and analytics won't be enough Life sciences and healthcare have some of the most contextually rich data sets of any industry with electronic databases used by physicians, pharmaceutical companies, and researchers. This data can help understand product efficacy, treatment adherence, patient journeys, and predict many patient outcomes. But merely collecting and analyzing this data won't be enough to deliver connected experiences. Only when data from all touch points is viewed collectively as a whole and not as isolated experiences, can it be interpreted in useful ways, allowing informed decision-making for providing better patient centric healthcare and customer experience Service design for patient-centric innovation Service design is a systematic, creative, and user-centric approach for creating services. It looks at things entirely from the user's point of view and designs services to satisfy key needs. It examines all activities, infrastructure, stakeholders, and material components involved in the service as a whole. This way it meets the rising customer expectations of choice and quality while fostering collaboration. It accomplishes this by strategically creating new and engaging experiences across multiple touch points – a touch point being any interaction between the user (patient) and other stakeholders (doctors, nurses, pharmacists, medical device manufacturers, researchers, payers and family). Service design is founded on four core principles: Holistic: It considers environments beyond the

device, viewing the entire patient journey, and considering and designing touch points around specific moments of need. Co-creation: It involves all stakeholders, not just in the design phase, but also in production and development. Multidisciplinary teams develop, create and test these services to make them more useful, usable and desirable. Sequencing: It visualizes the service as a series of interrelated actions. Evidencing: It visualizes intangible services in terms of physical artifacts. And this stems from a deeper understanding of patients – their drives, habits and reactions. By involving all the stakeholders in the innovation process, service design creates value for all concerned. And digital technologies enable this value co-creation. How can Infosys help catalyze innovation? Service design begins by first understanding the patient, then nurturing empathy throughout the treatment journey, collaborating with various stakeholders, and sharing data across the care ecosystem to offer connected care all through the journey. But bringing together all stakeholders and ensuring everyone works cohesively makes the design process difficult. Infosys can help at every stage of the design process. Contextual research services Specialized ethnographic research and use of qualitative tools to unveil disruptive insights to address unarticulated, unmet patient needs. Technology-fueled patient journeys Real-time patient journeys fueled by technology to uncover insights that would need evidencing and new ways of solving. Onboarding stakeholders Careful definition of the roles and actions of various stakeholders who help the patient take care of his/her health, in the system. Connecting fragmented services Cloud-based software platforms and open application programming interfaces (APIs) help to better connect fragmented services, thereby reducing the patient's workload. Such platforms enable secure data sharing and solution integration. Delivering connected experiences requires a deep understanding of the customer / patient. And service design addresses this key need, opening up significant opportunities for the life sciences industry. Life sciences organizations that capitalize on these opportunities to adopt a compelling patient centric approach will be able to offer services that is effective and emotionally appealing thus unlocking new growth. =====================

Pharma's New Phase

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/pharmas-new-phase.html ----- Insights Industry Stories Technological integrators play as crucial a role as banks in Big Pharma's latest M&A boom They're back. Mergers & acquisitions, that is - and in a big way. Wall Street and City of London bankers haven't seen this kind of action since before the onset of the global economic crisis. Indeed, it has been a while since global corporations considered expanding their business lines by acquiring rivals and merging with powerful new players in the industry. Overall, a number of factors are influencing this M&A renaissance, not the least of which is the mountains of cash that corporations have on their balance sheets. Among the hottest industries that now enjoys the upsurge in global commerce, lower interest rates, and overall economic confidence is Big Pharma. No sector continues to evolve faster, or more profoundly than pharmaceuticals. Except for – possibly – the ever-complex book publishing business, no other

industry even comes close in terms of how its underlying economics have changed. The main reasons driving the M&A wave in pharma are: Gold standard names in Life Sciences companies such as Pfizer, J&J, GSK, Novartis, Bristol Myers Squibb, and AstraZeneca are reportedly looking to merge or acquire for a number of strategic reasons. Their M&A strategies might be complex and multidimensional, but the fiercely competitive stalwarts of Big Pharma need IT systems that are streamlined and simple. They're looking for technological synergies at every level, and within tight timeframes. That can be a tall order. Manufacturing plants of blockbuster drugs have to be synchronized with equally large plants of the newly acquired company – sometimes a continent away. IT consulting for Big Pharma is not only about delivering on scale and reach, but also about being able to make outcome-based models ready to go, the moment the companies merge. Such expectations position talent on center stage – the right resources, both technical and domain experts, who are able to collaborate to make smart technology work for the stakeholders involved. Lawyers and investment bankers still focus on how the companies come together on paper. But global IT consultancies are fast becoming the most vital go-to firms during big mergers of Life Sciences enterprises. That's because enormous corporations with complex strategies and top-secret drug pipelines can't allow mergers to slow down their operations. They need innovative thinking that is tailored to their sector. It is what's known as Day-1-Assurance. Knowing the ins and outs of the Life Sciences industry's radical transformation is what Day-1 is all about. That's why this time around, as M&A activity picks up, Big Pharma and related industries like Biotech, Life Sciences, and Agrochemicals are facing issues that they've never before had to consider. This new wave of mergers and acquisitions, especially in the Life Sciences arena, has become so technical and specialized, that all companies involved require a strong technology integrator. Not only must the enterprises that merge have the appropriate guidance to make their technological operations as efficient and streamlined as possible, but also need the integrator to display and execute a deep knowledge of the complexities of the Life Sciences sector. The IT partner must focus on building a core team of technical and domain experts who are clued up in pharma and can be leveraged across projects. Another of the newer terms that they're using is a mouthful: "Specialization-Based Consolidation." Essentially that means today's change management and compliance alignments are not about simply making sure the lights stay on when two companies come together. These days, parts of companies are sold-off before the main merger takes place. Secretive drug R&D programs have to remain purely "need-to-know." So the technological framework around such mergers has to be as innovative and groundbreaking as possible. Technological innovation must ensure discretion during merger processes – quite a challenge when deals involve multiple investment banks, law firms, advisors, and the leadership of the companies involved (often fierce rivals). It's vital to help life sciences companies in the throes of the merger process ensure that all of their IT systems operate seamlessly throughout all stages of the process. Customer Relationship Management solutions, Master Data Management, and massive data migration tools that selectively transfer data are all must-have ingredients of a process that requires corporate information to remain selective and discreet at all times. There is so much complexity to the technological implementations, yet time

is not on our side. This calls for extraordinary project management prowess, on the part of the systems integrator, and the ability to quickly understand the business situation and goals. So much depends on this. Pharmaceutical and Biotech firms operate within tight deadlines – the life of a patented molecule is only 20 years or so and that includes the time needed for commercialization and clinical trials. Their mergers and acquisitions require that their IT systems enable them to scale up quickly and achieve ambitious outcomes to both the board(s) of directors and shareholders. Billions of dollars are at stake if these enterprises do not use cutting-edge technology to deliver stellar – and fully expected – results. With so much money involved, boards of directors want to hear the sweet sound of success stories as quickly as possible. The executive leadership that proposed and closed these mega-deals certainly doesn't want the first post-merger reports to be about IT hiccups. Which is why senior management participation in the program - right from the outset - is crucial. I previously mentioned the new wave of corporate headquarter inversions that figure into the modern M&A process. Because these are multidimensional, cross-border mergers, enterprises must have IT systems that work anywhere on the planet, and are compliant with every nation's tax specifications. Hence, investment banks that pitch the financial benefits of mergers & acquisitions in the first place always, always make sure to tout their global reach. So, too, must today's IT consultants establish the fact that no matter what country, product line, or software platform, they will ensure that Life Sciences mergers come together seamlessly. Global reach and scale largely define an IT enterprise's full capabilities. No matter where the next life science M&A deal takes place, it is best to be prepared with a centrally mobilized IT workforce that operates and manages more efficiently than its peers. I enjoy telling our partners that we pick up at the very moment McKinsey leaves. Yet that program prioritization has changed. These days it's not uncommon to be engaged from soup to nuts – from the pre-assessment phase and onward until all the technology of the merged companies are enabled and integrated. Today's IT consultancy typically has a greater overall role in the strategic planning of mergers and divestitures. IT is becoming part of every process – from value analysis to creating a technology roadmap to implementing new frameworks. Teams from the organizations that are being merged as well as teams from the integrator must come up to speed with each other's processes, systems and business environments before, during and after the merger. More importantly, cultural barriers, which are inevitable in trans-continental mergers, must disappear the moment conversations start towards a probable closure. The life science sector's heightened M&A activities mean we are helping enterprises to renew today, prepare them to explore new opportunities in the future. Download article Learn about our offerings for the Life Sciences industry >>
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Getting Digital Marketing Right

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/powering-digital-marketing-reach.html ----- Insights Industry Stories Marketing across the board is increasingly moving to digital and mobile, as

more customers spend time online and consume more content over their phones. As important as having the right content is, presenting it in digital-first ways and calibrating it for speed and reach need to be prioritized in order to have effective marketing campaigns. An industrial equipment maker realized this, and wanted to optimize their campaigns for mobile and have easy workflow management. See how Infosys helped and the five key takeaways from the project. ======================

Seven Principles to Power the Resilience Imperative

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/power-resilience-imperative.html ----- Insights Industry Stories Companies have traditionally valued operational resilience, but it rarely reached the top of their long list of priorities. Now, a once-in-a-century pandemic, extraordinary civil unrest, increasing weather-related disasters, and more have pushed this concern to the top of the agenda. Operational resilience was voted the single most important nonfinancial risk, jumping ahead of technology and IT risk, third-party risk, and even cyber risk, according to a 2021 CeFPro survey. Financial regulators anticipated the increased risk of disruption in 2018 when the Bank of England released its discussion paper on operational resilience. Those proposals have developed into actual financial sector policies that will be enforced starting in 2022. This dynamic has forced organizations to rethink how they manage operational resilience. In a joint whitepaper, Infosys and Fusion Risk Management laid out seven key principles that serve as the foundation for success. The goal is not just to meet regulatory demands but also to make resilience a competitive differentiator that can build customer trust in this new era of uncertainty. Figure 1. Know your business inside and out Source: Fusion Risk Management Here is a brief overview of those seven principles that can make operational resilience a strategic advantage. In a changed world that demands greater operational resilience, organizations must find new approaches to both meet regulatory demands and make resilience a competitive differentiator. This will take time, guidance, and improved technology. The payoff, however, will be increased visibility as organizations break down silos and build a shared understanding of how the most critical business services work. Seeing the organization and its priorities clearly will allow companies to respond in an agile way to any situation and deliver effectively on customer commitments. To learn more about these seven principles that can guide your operational resilience strategy, download The Resilience Imperative white paper. ======================

Product Cost Optimization: Balancing Legacy and Innovation in Manufacturing

Insights Industry Stories A decade of unparalleled technological innovation, sustained economic growth, and unprecedented globalization has financially pressured manufacturing and engineering firms from every direction. They must find the right balance in their product portfolios, navigating a careful strategy of investing in legacy products and introducing new ones. Companies worry about leaving money on the table in the next quarter, while still trying to prepare for a potentially tectonic business shift in a year or two. To protect their bottom lines, companies often find that it is just as important to increase the margins of legacy products as it is to generate revenue growth through innovation, new products, and accelerated time to market. The only effective way to shore up this foundation is through stringent controls while still retaining market share. However, identifying these savings without choking innovation is easier said than done. Businesses need better ways to measure their variables, particularly when their physical costs dictate profitability far more than associated services do. The challenges of tradition Manufacturers often find that traditional mindsets are the biggest barriers when trying to control recurring production costs. The product definition for functions and features is usually engineered without a sufficiently detailed analysis of the cost of materials, shapes, and processes. The industrial planning team typically provides a feasibility assessment and a general direction for production. The procurement team then takes over and often struggles to manage availability and to meet schedules. Inevitably, cost becomes a secondary objective. In some sectors, these traditional processes exacerbate the problem. Aerospace, automotive, high tech, discrete manufacturing, and similar industries often assume they must provide end users with as many options and upgrades as possible. Iterative design has become the norm. However, dynamically changing production volumes — even quarter to quarter — is commonplace in order to avoid inventory and logistical challenges. Whether because of commodities, labor, or the cost of capital, markets today move at a frantic pace. But most manufacturers struggle to define and plan for costs with enough precision and definition to make suitable adjustments. As a result, costs fluctuate significantly enough to affect pricing margins conceived in preproduction stages. There are two basic questions that companies need to ask when confronting these problems. How do we factor in costs at every stage as we build product portfolios and production systems? And how do we build an enterprise mindset to retain the competitive edge and realize the growth we must achieve? Product cost optimization Although tradition can be a hindrance, companies have tools available that allow them to look beyond past practices. A product cost optimization (PCO) strategy offers a glimpse of how organizations can navigate growing financial demands. PCO is a comprehensive set of services and solutions designed to estimate and analyze costs and then optimize accordingly. The underlying philosophy is to

look at every aspect of the product development, production, and service life cycle from a cost perspective. PCO solutions arrive at the "should cost" of an engineered product by analyzing cost trends against build attributes. This identifies optimization potential and lays out a road map to savings. It can be likened to how the driver, car, fuel, and crew of a Formula One race team all work together to reach the finish line. Traditional cost solutions need help Manufacturers have long understood the need to improve margins while growing their customer base. Cost estimation, value analysis, value engineering, and product benchmarking have sought to manage these issues. However, cost engineers and analysts have always been dependent on tribal knowledge and hand calculations, applied mostly to legacy two-dimensional engineering. Gaps in these efforts can now be filled by accelerating technology, including automation, data analytics frameworks, and more powerful computing infrastructure. Companies now have a greater ability to generate accurate cost estimates in near-real time and to make decisions based on accurate data. Figure 1. Manufacturers struggle to accurately estimate, store, and repurpose costs Source: Infosys New life cycle design In industries such as aerospace and discrete manufacturing, product design determines nearly 80% of the manufacturing cost. Form, fit, and functionality requirements drive variability over relatively small production volumes. With these dynamics, it is important that engineering teams understand cost trade-offs in the research and development stage. The previous "design to cost" approach can now be aided by the rapid evaluation of multiple engineering alternatives from a cost perspective. All this can be done without needing to fabricate a prototype. Even at the development stage, designers can calculate geometrical features, such as tolerances or the composition of alloys and the cost impacts of these choices. The changes then can be tracked across revisions. For legacy products, physical teardown and analysis for the potential value engineering of components can be replaced with estimated configurations compared to cost baselines. These can be simulated for function and performance and ultimately can reduce recurring costs. Manufacturing and operations phase Industrial planners, manufacturing leaders, and operations managers need to consider many moving parts for serial production. They determine how to allocate manufacturing capacity for legacy and new products, plan for demand fluctuation, and optimize throughput. All the while, they face pressure to be lean and to invest in the right capabilities for future needs. To make better-informed decisions, manufacturers need to visualize cost alternatives, such as selecting processes based on volume, equipment availability, and tooling and consumable needs. For example, when deciding between a 3-axis mill and 5-axis mill, a company would need to consider balancing the recurring cost efficiency of manufacturing and the investment and maintenance costs. Organizations need to perform these analyses at scale for every relevant component. And the calculations need to be geography-specific to take into account varying labor and machine rates. Supply chain complexity Supply chain leaders have a particularly complex set of tasks. They must optimize the procurement spend without significant control over the engineering and manufacturing costs. They complement make-versus-buy decisions; negotiate contracts for cost and volume flexibility; reduce supply chain complexity; and ensure on-time and on-dock availability of components, products, materials, and spares. At the same time, these leaders need to watch commodity and labor pricing trends to

avoid short- and long-term price changes that eat into revenue. To manage some of this complexity, companies often analyze the most expensive components to assess the supplier's pricing strategy. However, a thorough, bottom-up estimation of all components provides more useful data. With common parameters to compare, supply chain leaders can easily identify outliers and understand sources of a pricing squeeze. With a comprehensive understanding of all parameters, businesses are better positioned to organize their global sourcing strategy. Firms can compare suppliers and bids on a level ground and analyze past performance on cost, quality, and schedule. Sourcing can be apportioned and routed to the appropriate contractors. All those inputs provide more accurate financial projections. The visibility into capacity, capabilities, quality, and cost performance help manufacturers retain an edge in negotiations. Also, most suppliers benefit from understanding details like process times, material wastage, and machinery options. A comprehensive approach to sourcing — based on quality data — can simplify supply chain spread, eliminate blind spots like tail spend, improve quality issues, and reduce scrap. Figure 2. Connected cost estimation and management across functions Source: Infosys Product marketing benefits The benefits of PCO go well beyond the manufacturing and supply chain. Marketers can also use the data to compare their products to those of the competition and understand when and where to introduce new features, functionalities, or products. A data-driven approach allows marketers to understand the associated costs of features and functions and then determine what a particular market will bear. This sort of analysis upfront lets companies pass on less-popular options and ensure that must-have features are included. For example, competitive benchmarking when using a should-cost model would help eliminate drag in production and pricing needs and also provide priced-in flexibility. Technology as a differentiator A cost optimization strategy is tremendously valuable, but it is not without challenges. Companies encounter a number of hurdles when starting or implementing these strategies. Those include: Enterprises need a technology framework that provides speed and accuracy at an industrial scale and allows executives to make intelligent decisions about global sourcing and product rationalization. Automation toolkits, such as computer-aided design extractors, help engineers use existing data to estimate design iteration costs. Parts communization with functional and cost attributes improves cost and product reliability by reusing proven components. Template-based algorithms help create and modify cost models based on end-user requirements, providing agility despite a variety of components. Constituent cost databanks can help derive parametric calculations and refine form-fit-function-cost ontology models. Statistical tools can then be assembled for derivative cost estimation to scale estimates accurately across component families. Cognitive models that are built using existing data can process engineering attributes, manufacturing complexity, and supply chain options. At the same time, they can significantly accelerate turnaround times. Procurement and manufacturing functions can arrive — accurately and almost instantaneously —at should-cost estimates at assembly levels and also explore the impact of changing order volumes, equipment, tooling, and locations. The estimates can establish the authenticity of purchase order pricing trends, helping identify items that need a relook and a step-down. And any changes in global commodity rates can be propagated to models through centralized databases. The needed optimization solutions, however,

vary by sector. In the aerospace industry, parts complexity is high and design decisions are made years ahead of full-scale manufacturing. There, an application framework that works across component categories helps scale costs from one component to entire product families. The automotive industry faces different challenges: multiple variants and high volume. So, enterprisewide cost and analytics platforms can have a tremendous impact on precisely managing scale and complexity without adding lead times for insights and direction. Figure 3. Cost analytics at scale Source: Infosys Cost optimization in aerospace Spirit Aerosystems, one of the world's largest suppliers of aerostructures, greatly increased production in the past decade as worldwide demand for single-aisle and twin-aisle aircraft rose. On the 737 program, Boeing raised production from 30 to 52 planes per month. Spirit supplies 70% of that aircraft's structure. The billions of dollars spent on hundreds of thousands of components required executives to rethink their supply chain sourcing and procurement strategy. Switching from a relatively fragmented approach posed obvious risks and opportunities — both short and long term. Infosys collaborated with Spirit and others to create a datacentric approach to more efficiently and effectively manage its complex supply chain. The elements included visibility, transfer of work, and in-house capability expansion. The clean sheet evaluation approach essentially reverse-engineered parts and broke down the material, labor, and processing constituents in order to compare them to the prices. The should-cost figures showed potential savings of millions of dollars annually. The data points generated simulated sourcing scenarios and helped devise the right strategy. The wealth of data also led to more than 300 value engineering opportunities and enabled simulations of trade-off studies in half the turnaround time. As the aviation market recovers, the new, adaptable supply chain is expected to help Spirit meet a projected increase in demand for aircraft and manage through the near-term market uncertainty. "This blend of services and technology has helped us in deconstructing product costs the way we wanted to — with as much detail and precision as possible," said John Pilla, Spirit's chief technology officer at the time, who helped support this initiative. "As we traverse the changing demand environment, the insights from the data will help us define the feasibility and viability of the way we operate and help us remain competitive in these challenging times." Implementing a new approach Manufacturers have a greater ability to rethink their entire value chain, but they often need help. That can lead to localization so that products are developed and customized for each geography. Legacy product support now is often farmed out to engineering services firms. The presumption is that these companies can drive value and save costs. Also, they can provide complementary skill sets, such as the implementation of industrial internet of things, artificial intelligence, machine learning, supply chain digitization, additive manufacturing, and other elements of Industry 4.0. These types of partnerships also help chief technology officers in their efforts to increase innovation, enhance customer experience, solve stakeholder pain points, and maintain segment leadership. An effective alliance in a collaborative enterprise can extend the life of core products through modernization and testing as well as enhanced features, functionalities, and performance. The technical knowledge gained can also feed new product development. Strategic advantage Cost leadership is particularly critical now with the global economy's vast uncertainty. Companies must deal with variables that

stress the bottom line — material rates and labor costs rising with inflation, thus shrinking margins. At the same time, technology evolves faster than business. Competition lurks in every product category today, fueled by globalized innovation and markets. A lean, value-conscious approach puts industrial organizations in a stronger place to deal with rivals, demand fluctuations, and business volatility. When they are looking at profits, market share, or customer base, transformational momentum is a necessity for all executives, no matter how they calculate success.
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Pumping Intelligence into Retail Operations

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/pumping-intelligence-retail-operations.html ----- Insights Industry Stories The retail industry has undergone massive changes over the last two decades. Technology has transformed the way retail operations are run, right from the way products are sourced and stocked, to the way they are sold. Every year, the NRF event is a testament to the quantum of changes that the retail industry is going through, particularly in the proliferation of intelligent systems driven by AI. To survive in this dynamic environment, retailers need to use smart, intelligent tools and technologies to enable them to stay ahead of competition. There are several technologies that can bring the necessary intelligence into running retail operations. Here are a few of them: 3D Visualization of Planograms In retail, planograms play an important role in planning of retail spaces. They also impact how products are sold. In practice, implementation of the planogram does not happen optimally; it is often difficult to monitor and track. 3D visualization can provide more accurate models for planogramming and allow for better compliance. Combined with video and AI, 3D technologies can help ensure better implementation of planograms in retail stores. Inventory Management with Robots The combination of scanning robots and video analytics can help retail store managers get a real-time view into the inventory at all times. Robots or even low cost investment like cameras can scan aisles and capture activities to ensure that inventory is at desired levels. Data is captured across the logistic supply chain thereby ensuring that all processes are streamlined, right from ordering to returns, to customer experiences and warehouse management. Chatbots in Online Retail In the recent past, chatbots have become increasingly common in online retail. Over time, we can expect to see chatbots handling far more complex queries as they gain more experience via machine learning. Over a period of time, they will mature into virtual agents with a human touch. Robots as Customer Touchpoints Robots have tremendous potential across various customer touchpoints in retail. They could act as sales assistants or even delivery robots. They could support in billing and operations too. There is ample scope to infuse intelligence into every retail store and system through the use of smart tools and technologies including AI, IoT, and analytics. This year, Infosys is showcasing a range of intelligent retail solutions that are designed to help retailers navigate their next. If you plan to be at NRF 2019,

do drop by our booth #557, and we'll be happy to walk you through them. ======================

Adhering to Trading Regulations

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/ regulations.html ----- Insights Industry Stories Business Challenge A large European investment bank, an active member in the OTC market, needed to adhere to Swaps reporting regulations across several geographies, and required a regulatory reporting solution. Infosys View Forward-looking financial services firms must invest in comprehensive technology platforms that leverage core capabilities to meet requirements ranging from financial crime surveillance, detection, event correlation along with enterprise analytics, and regulatory reporting. Business Outcomes And more... Read about the client benefits and the 5 best practices drawn from this engagement. ======================

Reinventing the Workplace Without a Net

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/ reinventing-workplace.html ----- Insights Industry Stories The COVID-19 pandemic has upended the lives of billions of people through illness, job loss, and radical lifestyle changes. At the same time, this crisis is forcing millions of companies into unfamiliar, treacherous territory. Most companies won't emerge from this era unchanged, while others simply won't emerge. This global medical and economic disaster created sudden, imposing hurdles for Infosys and tested our ability to be agile and resilient, attributes we've promoted relentlessly to clients. With more than 240,000 employees, many working in large offices, Infosys was not structured to easily adopt government social distancing mandates. However, the company does have the knowledge and skills needed to reinvent its approach while simultaneously doing the same for clients worldwide. In just three weeks after Infosys started closing offices, more than 90% of employees were working from home. That figure has now topped 95%. There was no opportunity for weeks or months of stress testing; the new approach just had to work right away. "In the four decades of our operations, we've had occasion to fine-tune our plans for employee safety and business continuity over several crisis situations," said U.B. Pravin Rao, Infosys chief operating officer. "And that has taught us invaluable lessons." In the past, Infosys executives have scrambled to transport their employees out of Fukushima, Japan, following the nuclear disaster there and out of Houston ahead of Hurricane Rita. Infosys didn't start from scratch with this crisis, but there were still many lessons to be learned. The threat of a pandemic wasn't on most companies' radar as recently as last year. A World Economic Forum survey in 2019 found that fewer than 10% of business leaders from G20 and OECD countries thought of infectious disease as a "looming global risk." Coronavirus spreads Infosys' Bangalore headquarters, with its iconic

pyramid studio, is a showplace. Thousands work there, and it attracts business executives from around the world. At any other time, the campus would be a valuable asset to its workforce. But when governments order people to distance from each other and that workers stay at home, a grand headquarters loses some of its immediate benefit. That's what happened this spring as coronavirus infections and deaths accelerated. The rising fear about the COVID-19 epidemic, which wasn't yet classified as a pandemic, forced Infosys to take what initial actions were available. Fingerprint scanners were disabled at offices worldwide. Biometric security was suddenly a health risk; employees needed to touch fewer surfaces, not more. Most business travel was halted, and cleaning routines became more rigorous. Communication was frequent and included briefings from medical professionals and advice from local health authorities and the World Health Organization. Ultimately, these precautions were not enough. The government of India issued a lockdown order, as did local, state, and national governments where dozens of Infosys offices are located. In the space of days, most Infosys workers were sent home with no return date certain. For some employees, the transition was seamless. Many road warrior consultants and executives, who crisscross countries and circle the globe, rarely see an Infosys-owned desk. Remote work for them is just simply work. But a large-scale workplace transfer wasn't that simple for most Infosys employees. They worked on desktop computers at their offices every day. Others who perform sensitive work for clients were anchored to segregated wings. Working from a hotel room, a Starbucks, or a spare bedroom was never an option. Until March. Offices closed The mass migration of workers happened quickly but not easily. The first, and slightly simpler, hurdle was hardware. Employees needed equipment, whether it was a laptop or a work desktop transferred to their homes. Or in some cases, employees could use personal equipment or devices. Once these newly remote workers had computers — or suitable devices — they needed connectivity. Infosys worked with its staff to ensure they had internet service at speeds high enough to accomplish their work. The company also had to make sure its VPN bandwidth had enough capacity as these new connections came online. To ensure clients' work wasn't interrupted, executives also had to quickly evaluate different remote connectivity models to find the best fit for each client and each circumstance. Employees can use Infosys machines to connect to client offshore delivery centers via VPN, or they can connect directly to the client network. Using personal computers, employees can work through Windows Virtual Desktops or through iConnect virtual desktops and applications. Assuring security Preparing employees for work was only the start. COVID-19 has created privacy and security concerns in cyberspace as well as in the physical world. Once work moved out of Infosys offices, security was far more challenging but no less important. Inside the offices, the Wi-Fi is locked down tightly with security as its number one priority. Outside, the internet is more like a wilderness, a mixture of wonders and dangers. With nearly 225,000 employees working from home, cybercriminals have more targets than ever before. Social engineering attacks have increased by more than 400%, most of them using COVID-19 as a hook, according to Gartner. Immediate action was needed since Infosys often works with sensitive information, which ranges from customer data to systems that control critical infrastructure. Automated monitoring systems were less helpful in this new world. The algorithms look

for unusual activity from multiple angles, including resources accessed and time of day. New work patterns created so many false positives that it sapped the monitoring system's effectiveness. New rules and use cases were created to adjust to what is and isn't expected. Employees also accelerated software patching efforts, particularly for critical systems. New cloud systems were monitored closely for misconfigurations, a risk when work is hurried that creates a potential opening for attacks. The current mobile application management and mobile device management model were expanded to include employees' personal computers. However, that approach was designed to keep a strong separation between their personal and business use (privacy is also a factor that must be observed). None of those strategies would be possible without updated tools and infrastructure. Infosys invested in multifactor authentication, conditional access, VPN, terminal access, an endpoint protection platform, endpoint detection and response, data leakage prevention, and hardened builds. Servers, networks, and endpoints can all be actively and remotely managed, providing visibility into all parts of the IT infrastructure. Even with all those cracks sealed, there is still one factor that can't be automated. Nearly half of data breaches are caused by human error. Infosys is continually educating its employees about cybersecurity and best practices for avoiding attacks, particularly in this new environment. Surveys have shown that remote workers are often less diligent about security when it interferes with productivity. The new workplace It has been weeks since COVID-19 was finally classified as a pandemic. In that brief time, Infosys and other companies have gained a level of expertise in reinventing their workplaces that normally would have taken years. No one is certain which of these are temporary adjustments and which are permanent changes. But there is a consensus that many more people will be working from home in the future. That new landscape provides potential productivity benefits for employers: studies have often found that some degree of working from home boosts output. There are time savings for workers with long commutes and a degree of flexibility they wouldn't have in the office. The benefits can also be calculated in other ways. For a case study, Stanford University professor Nicholas Bloom convinced a Chinese travel agency owner to give all his employees the ability to work from home. That saved the firm $2,000 per employee by cutting down on office space in addition to increased productivity. A research report from Global Network Analytics places the average savings for a half-time telecommuter at $11,000 annually for the employer. Those kinds of changes — at the massive scale we anticipate — will be transformative outside the corporate world. The cleaner air we see now as the result of widespread industry shutdowns and a lack of travel won't last, even as U.K. website Carbon Brief calculated that COVID-19 is likely to trigger the largest-ever annual decrease in carbon dioxide emissions. However, more modest environmental benefits will certainly flow from this new approach to work. Global Network Analytics calculated that if people who wanted to work from home and were able did so just half the time, it would take 54 million tons of emissions out of the air each year. Removing cars from the roads will help with greenhouse gas emissions and air pollution. Smaller offices will lower a region's carbon footprint. Offices will use less electricity, although some of that will be offset by increased consumption at home. These changes could also diversify the workplace, providing more opportunities for women with young children to enter the

job market. Even though gender equality has grown, women are still responsible for a larger percentage of child care. There is no upside to a pandemic, but there are opportunities for companies and societies to emerge in a better state. Stronger now The global spread of COVID-19 has tested the resilience of almost everyone: the families locked down in their homes, medical systems bracing for the worst-case scenario, and corporations reinventing their workplaces on the fly. At Infosys, the pandemic stretched capacities and challenged operating models. Although the company has prized business continuity, the coronavirus has demanded a degree of speed, surefootedness, and empathy like never before. This crisis is far from over. The death rates haven't yet peaked in some places, and medical experts say some degree of social distancing might still be needed until 2022. Still, Infosys is emerging from this first round with confidence in the company and in its people. The crisis has forced us to be both flexible and strong, to bend but never break.

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Engage: Rethink Retail Customer Engagement

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/retail-customer-engagement.html ----- Insights Industry Stories In a digitally disruptive world, retailers are challenging standards through innovative business models that are flipping old models on their head. There are interesting, new business models that are powered by technology and are impacting retailers and non-retailers alike. Today, shoppers increasingly expect to be delighted. They seek different experiences and new ways of doing things. Technology is the answer to both for improving customer experiences in retail through new ways of engagement and also to stay ahead in the highly competitive marketplace. Technology is what enables you to reimagine interactions with customers, improve processes in your business and in your stores, optimize your supply chain from product development to post-sale customer service, and empower your retail employees with a modern workplace. Evolved Feedback Mechanisms We all know the power of relevant feedback in fine tuning our offerings or indeed in forming our strategy itself in the first place. Technology not only makes it much easier for retailers to solicit and gather feedback; but it can also enable the integration of that feedback into designing new offerings. So, you can achieve customization at scale. Here's an example. Let's say you own a departmental store specialising in baby products for mothers with both an online and offline presence. One of your customers is a young mother who regularly shops online. She is also active on your company's messaging portal, where she proactively shares her views on some of your products and services. If the store wants to launch a new campaign, this woman can be an excellent candidate to influence what the campaign looks like. Since she already has a dialogue with the store, this dialogue can be taken up a notch through a phone call to understand her exact pain points in the buying process. For instance, she could express her reservations about having to buy certain products without having an opportunity to touch and feel them,

since she primarily shops online due to childcare responsibilities. She can be a part of 'motherboard' – a curated and empanelled set of mothers (customers) who provide valuable written, spoken or video feedback on a set of targeted questions. These questions can then form a basis for the store to decide strategy, make a course correction or make surgical modifications for better sales and outreach. Based on insights from the motherboard, the innovation and product team could work on a new concept of pop up stores that cater to the mother's needs. There could be a children's entertainment area set up with childcare support, to enable the mother to shop freely at the pop up store, without having to tend to her child. The store could also use the opportunity to upsell or cross sell based on an analysis of her interests and past purchases. It could send her a curated catalogue that is tailor made for her, even before she enters the store for the special event. With a Genome solution that helps the store anticipate customer preferences using next-generation analytics, our young mom could receive personalised tips and information on promotions running at the retail store while she explores it, thus leading to great customer engagement. When used effectively, personal data is poised to have a much better traction, compared to generic promotions. The retailer could use the concept of 'Living labs' that blends studios and digital capabilities to rethink and improve customer experiences and journeys in retail. It helps retailers innovate at scale with emerging technologies and design, to fail fast, create new concepts, pivot models and experiment meaningfully. Most retailers struggle with two kinds of risks, business uncertainty and technology uncertainty. Living labs allow businesses to de-risk both. Design thinking, iterative prototyping and repeated end user validations remove some of the business risks. Technology partners who work around emerging technologies to incubate innovative solutions using newly developed digital capabilities can help with fail-fast and rapid prototyping thus reducing the risk of technological failures. Living labs can help not only incubate new solutions but actually bring differentiation and scaling abilities by providing the necessary support with an eco-system that brings together academic research and technological capabilities. As technology enables us to know more about our customers than ever before, there is a huge opportunity in retail to improve on delivering engaging experiences and phenomenal new services that are closely aligned to our customers' expectations.
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How CPGs Can Avoid Losing Brand Recognition on the Retail Shelf

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/retail-shelf.html ----- Insights Industry Stories There are several surveys and studies that point to the growing impact of social media on buying decisions. An overwhelming majority of people today rely on online reviews, recommendations and comments from friends to make purchase decisions. With the free flow of information, consumer behavior has evolved considerably in terms of how consumers find products, evaluate them and finally make a purchase. As a result, the paradigms for customer

engagement have changed too. Facebook, Amazon, Alibaba, Netflix, Google, Uber, Airbnb and TransferWise, among others, have proven that eliminating distance between the consumer and the consumable (product and/or service) is value for the consumer. Yet consumer package goods companies have not made significant changes to the way they design, produce and sell consumer goods to reflect the macro changes in societal trends. The CPG industry is going through massive expansion. According to McKinsey & Company, it is expected to grow to $14 trillion by 2025.1 Given the exposure today's consumer has, it is not easy for CPG companies to maintain and grow brand recognition and affinity. There is an unprecedented need for them to engage with their consumers directly. There have been a few surface level-changes, such as the increasing use of digital advertising. However, the basic overall processes of procuring raw materials, manufacturing the products and finally taking them to the customer has not changed. According to the Infosys "Endless Possibilities With Data for Retail, CPG and Logistics" report, only 25% of CPG companies undertook a business model transformation initiative to support better use of data analytics. Given the extent to which brand experience influences buying decisions, it is imperative that companies take necessary measures to own the process of how consumers experience their brand. Ideally, there should be zero distance between the CPG company and its consumer. With current processes, brands have little control over how a customer experiences their product once it's out of the manufacturing hub. For example, how is the product displayed on store shelves? Is it presented in an attractive manner? Is it placed alongside the most appropriate products? The same holds true in the case of online stores and e-commerce portals too. This can be worrisome given the amount of money and resources that CPG manufacturers invest to create unique, differentiated brands with a particular theme or vision in mind. There is a considerable disconnect in the way the retailer, whether a physical store or an online portal, finally displays the brand to customers. By contrast, owning the entire brand experience until the final point of sale can allow the CPG manufacturer to effectively align with the overall brand ethos and deliver a superior experience for customers. In fact, building transparent supply chains ranks among the top three priorities for CPG companies according to the "Infosys Digital Outlook for the Consumer Packaged Goods industry." Having said that, this is not easy to achieve given the complexity and diversity of the consumer mix as well as sales channels. Digital or online interactions do not offer a comprehensive view of consumer behavior since they account for only one part of the consumer experience. Most brands use online channels for information dissemination only rather than engagement. A Consistent Brand Experience Strategy The first step for a CPG company to achieve an efficient, consistent and scalable way to deliver their brand experience directly to consumers is to find ways to record and consolidate all customer interactions, both online and off-line. Digital may still account for a smaller share of the revenue pie, but it offers a wealth of consumer insights starting from how they search for products to their interactions with the brand. Our client discussion indicates a steady rise in the use of digital channels not only for actual transactions, but also inquiries for information about products and brands. By gleaning data from physical stores and converging it with digital insights, CPG companies can create intelligent and actionable insights that can result in more intelligent and effective campaigns. Some of the biggest advantages are: Consolidated

Strategy Currently, most CPG companies do not use a consistent, holistic strategy to manage their brand experience. Instead, we see piecemeal product-specific campaigns that are not well-integrated with the overall brand strategy. These one-off exercises offer limited gains and don't translate into long-term benefits for the overall company or even the brand. Besides, they result in considerable duplication of efforts and don't allow the company to accrue the tremendous benefits of scale. For instance, take the case of a CPG manufacturer running a special Valentine's Day campaign for its brand of premium chocolates through a dedicated microsite. While there might be some short-term gains from the campaign, its real value can only be accrued if the data collected is used to augment future campaigns targeted at a similar target audience. Integrating New Brands A consolidated brand platform can help integrate newer brands into the company's overall portfolio, especially in the case of mergers and acquisitions. When a company acquires a new brand, it is challenging to quickly bring that brand to their consumers globally. Adopting a global brand hub model can help integrate new brands quickly and seamlessly into the company's brand mix, like in the case of high-profile acquisitions such as Ferrero Group's acquisition of Nestle's US confectionery business or Campbell Soup Co.'s acquisition of Charlotte, North Carolina-based Snyder's-Lance. Time to Market With traditional marketing models, campaigns usually take weeks to launch. A consolidated brand hub model allows new campaigns to be launched in a matter of days. Given the dynamic nature of the market, time is of the essence when launching new campaigns. Taking action To sum up, the CPG industry needs to take ownership and control of the brand experience directly with the consumer. There is currently too much dependence on retail stores, not just for transactions but also to deliver the brand experience. In such a situation, there are several opportunities for the dilution of the brand experience, which consequently has an impact on brand loyalty and sales. With the rise in digital technologies, there is plenty of scope to eliminate the distance between the consumer and the brand. There are also several successful examples, such as the Dollar Shave Club, whose strategy is centered around building a direct connection with consumers to shape a consistent brand experience. Instead of guerrilla techniques that most CPG companies are using today, a concerted technology-led effort that integrates the digital and physical marketplaces is crucial to achieve long-term success. 1https://www.mckinsey.com/industries/consumer-packaged-goods/our-insights/three-myths-about-growth-in-consumer-packaged-goods
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The Return of the Big Box

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/return-of-bigbox.html ----- Insights Industry Stories Can brick-and-mortar retailers match the game of online giants? The battle between online retailers and traditional brick-and-mortar stores is entering a new and exciting phase. Less than a decade ago, experts had predicted the demise of the big box retailer because with online retailing, people could shop for larger inventories from the comfort of their homes and get items delivered

in a relatively short time. These experts claimed that traditional brick-and-mortar sales strategies were going to be the cause of their quick demise. And until recently, big box retailers were indeed struggling to beat the large online retailers at their own game. However, another dynamic came into play: The online-to-offline strategy, which was expected to rewrite the rules of web commerce radically, was not working so well. Fleets of unmanned delivery drones and fulfillment kiosks are yet to manifest and prove themselves. In the meantime, traditional brick-and-mortar stores found their stride, created excellent websites, and armed themselves with a host of IT tools, big data, and analytics. These traditional stores are changing time-tested strategies. Take, for example, the Adidas store in Lower Manhattan in New York City. It houses a high-tech digital wall showcasing every Adidas offering in existence. The multimedia display is akin to an endless aisle – a small store but with a huge inventory. Customers can scroll through the display and select sneakers, their colors, and features, and plug all the information into the system. Once that is done, the salesman, the first human interaction in the store, appears with the exact pair the customer requested. Everything is customized and is ready to wear. Should the customer wish to purchase the sneakers, it is instantaneous, without the wait time that one will encounter in an online order. This example of sneakers is one of many. It marks an enormous change in the brick-and-mortar store strategy. Expect big boxes like Wal-Mart and Best Buy – the latter just announced that it would be selling the new Apple Watch at its stores – to use their brick-and-mortar outlets as an advantage. The growing phenomenon called 'showrooming' is when customers drive to a store, peruse a wide selection, chat with the knowledgeable sales staff, and determine which appliance or item of clothing is right for them. Then they drive home and order that item from a pure-play web retailer for a cheaper price. Not so good news for big box retailers, but then they also figured something out that became a game-changer: What 'showrooming' also implied was that most consumers do not view a trip to a big box retailer as a chore. To them, it is a pleasurable experience because the displays are always changing and the retailer focuses on promotions and informs them about these on mobile devices while they are in the store. The process of demand fulfillment using IT software, big data, and real-time predictive analytics showed that big box retailers can ensure inventory that beat the prices of online retailers. Likewise, a customer takes pleasure in buying an item on the spot instead of having to drive to some fulfillment center or wait for a courier to bring it to her doorstep, after having ordered online. Big box retailers have realized that their spacious stores are essentially fulfillment centers – but much better looking. Their well-trained sales associates are a tremendous advantage over the experience of someone simply scrolling down a web page and looking at products. Customers can continue to drive to their favorite stores to kick the tires. And they can also order the merchandise from the same retailer online should they wish to. Target's newly introduced ship-from-store program at 136 stores in 38 markets has the ability to reach 91 percent of American households by ground transit within two days. The traditional stores now have websites that are just as good, if not better, than the online retailers. A recent study revealed that 44 percent of American shoppers access their smartphones while they are in a store. They can bring the online experience to the physical store on their mobile devices. So retail chains now have a broader digital (online, mobile,

kiosk, social media, etc.) presence than ever before. The digital consumer who prefers scrolling down web pages in the privacy of her home can order products online. But she does not have to wait for the mail to arrive. If she has ordered the item from a big box retailer's website, she can drive (or, depending on where she is, even walk) to the actual store and pick it up immediately. Therefore, we are seeing the rise of the stores as local fulfillment centers. The reason why a technologically-savvy big box retailer can successfully take on the Internet giants is its ultra-modern command of the supply chain and inventory process. Showrooms and impressive websites are the direct outcomes of the digitization of the supply chain. Inventory fulfillment and operations management have been utterly transformed by IT. Big box retailers can tell in real time which customer has entered what store, and based on her previous purchasing patterns, they can focus special promotions on her within the store. The business model that is now transforming the marketplace is based on an effective combination of digital and brick-and-mortar locations. Shoppers might not want to admit it, but hunting for deals and discovering sales online can be addictive. Brick-and-mortar retailers are also providing them with the fun shopping experience of hunting for deals in a physical store. They are engaging their consumers in a one-on-one retail relationship. They are achieving this focus by utilizing the very best analytics and big data tools. The result is omnichannel retailing in which customers genuinely enjoy a trip to the store. On the other hand, online retailers, who invented this category, are not standing by. That is why if a customer decides to 'showroom' and then go back home to order the item online, he might find 10 versions of the item he saw at the brick-and-mortar store. Simply put, online retailers are trying to negate the growing trend of big box stores as fulfillment centers. They are giving brick-and-mortar stores a shot across the bow, demonstrating that whatever a customer might find in a physical store, he will find a far larger and more expansive inventory online. And because of this vast inventory, online stores can afford to cut prices. Brick-and-mortar outlets might have won the initial battle, but the online giants are also making a comeback. Like every other web success story, this is far from being the last chapter. Expect innovative ideas, fierce strategies, and a gala time for consumers. Reinvent, Reimagine, #RethinkRetail with Infosys offerings >> =======================

What's Servitization and How it can Help Manufacturers

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/servitization-help-manufacturers.html ----- Insights Industry Stories The astounding rise of the Dollar Shave Club, from a small California start-up in 2012 to its billion-dollar acquisition by Unilever in 2016, is a classic example of successfully coupling products and services. Dollar Shave Club delivers razors and other personal grooming products to customers by mail on a subscription basis, rather than relying on one-off purchases at stores. Moving to high value products, there is GE Healthcare that not just installs their commercial medical devices in hospitals but also offer post-installation services such as maintenance and monitoring. Outside of the product, there

are usage-based or result-based services offered by manufacturers and service providers such as Xerox offering pay-per-use model to customers using their managed print services. "The concept of servitization – the coupling of service offerings with products – emerged decades ago. Rolls-Royce's pioneering "power by the hour" approach to support business jet engines in the 1960s marks an early servitization milestone. What is new, however, is how leading manufacturers now leverage digital technology advancements to deploy servitization models that drive significant growth." – Shanton Wilcox, Partner, Manufacturing Practice (U.S.) and Rafi Billucru, Partner, Manufacturing Practice (Europe), Infosys1 Manufacturers often struggle to connect with consumers and add value to products frequently classified as commodities. In the traditional model, manufacturers are forced to surrender customer relationships to agents, retailers and other third parties, thereby limiting their ability to create differentiated customer experiences. "The search for new revenue streams has driven manufacturers to think about new ways they can deliver value to customers. In an environment where products can quickly become a commodity, the ability to solve customer problems and provide enhanced experiences has created an environment where manufacturers have begun to explore service-first model." - Aly Pinder, Program Director, Service Innovation and Connected Products, IDC2 The trend toward servitization could prove to be a great opportunity for manufacturers to reclaim customer relationships. Drivers for servitization There are a couple of factors accelerating this move towards servitization. One is that manufacturers are quickly transitioning from traditional pipeline-based models towards more platform-based approaches. That allows them to unlock new sources of value by enabling seamless connections with vendors, customers and partners. Servitization is recognized as a business model that has originated or evolved due to digital disruption and is one way companies can increase their odds of success.3 Secondly, greater adoption of the "internet of things" (IoT) means that manufacturers have a credible means to access real-time information on the workings and condition of the product, even beyond the sales cycle. With greater servitization, the traditional wall beyond the factory gates are crumbling. Manufacturers can now create a direct communication channel with end users, in addition to traditional channels. We might see an arrangement where the dealer maintains the primary commercial relationship, but the manufacturer maintains a stake by later providing value-added services to the customer. For example, while John Deere provides maintenance and parts services through its wide network of dealers, it has launched several apps in the past few years that provide advanced guidance to farmers owning John Deere machines for optimizing their farming activities. The manufacturers may also choose to sell directly through an e-commerce platform and share content such as research reports, FAQs, infographics, blogs, etc. to engage better with end users. Servitization models There are several service models that manufacturers may choose to embrace. The offering could just be limited to basic services, for example providing only goods and spare parts. It could extend to include intermediate services such as product repairs, maintenance, overhauls, help desks, training and condition monitoring. Manufacturers could also opt to provide advanced services that come with customer support agreements and outcome contracts. Similarly, there are different servitization business models. There could be a basic do-it-yourself or DIY model where the

customer purchases the asset upfront and the manufacturer provides a self-service option. The other option is a pick-and-choose model where the consumer buys the product and has the option to invest in a separate service contract for upkeep. Additionally, the pay-per-use model is an option where the customer uses the specified asset as required and pays based on usage. For example, the cost could be based on measures such as the quantity or time used. "The more asset-incentive an industry is, the more complicated the products, operations and services are – and the greater the need for initial investment and the ongoing costs for end users. This pushes the need for a servitization-based model where the customer pays the original equipment manufacturer according to product usage." 4 Planning for Servitization Success, an Infosys Point of View One of the most evolved models for servitization is an outcome-based model where the usage of the asset is not measured. Instead the cost depends on the outcome that the product has helped to generate. That could be calculated based on the number of parts manufactured using a particular tool. Some printer manufacturers offer this model to enterprises, where they charge based on the number of printouts rather than number of machines used or other parameters. Greater value for customers and manufacturers Irrespective of the business model and mode, there are some inherent advantages that a servitization model brings both to customers as well as manufacturers. It enables manufacturers to build deeper customer connections and incentivizes them to innovate based on parameters that matter the most to customers or those that help drive greater profitability. Michelin Fleet Solutions, which offers tires to fleet operators on a pay-by-the-mile basis, encourages the company to invest in developing longer lasting tires. As customer experience becomes more important than ever, and technology evolves to allow manufacturers deeper insights into the operation of their products while in use, we can certainly expect to see a greater move toward servitization in the manufacturing sector. 1Infosys Consulting Report 2 IDC PeerScape: July 2018 3Gartner, Digital Business Models Compendium, April 2019 4 Planning for Servitization Success, an Infosys Point of View =====================

Shopping for Millennials

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/shopping-millennials.html ----- Insights Industry Stories Millennials now outnumber Baby Boomers in the U.S. and will quickly dominate the global workforce. This vast, youthful and increasingly important generation is one of the most desirable — and demanding — groups of consumers. Their influence is forcing companies to adjust to changing consumer preferences. This new generation is seeking: Retailers are searching for ways to present content and recommendations that resonate in different ways: lifestyle, aspiration, convenience and channel preference. Industry leaders use intuitive marketing tools that influence product selection and personalize shopping. They embrace the experience economy and pursue disintermediation, approaches that appeal to digital consumers. Disintermediation, or direct-to-consumer models, have proven to be effective for retail brands seeking to reach digital natives. However, those new

pursuits require internal changes, including deskilling of traditional roles and amplifying human potential with artificial intelligence (AI) and real-time data. Self-learning and hyperpersonalization One of the most valuable approaches to wooing this new generation of consumer is hyperpersonalization. Advanced technologies empower brands to move beyond the formative stages of personalization, which span from anywhere, anytime, anything shopping to seamless online experiences. A self-learning retail ecosystem, fueled by AI, can discover market potential and also design personalized experiences around merchandise. Hyperpersonalization empowers retail stores to differentiate the experience for every visitor and each visit while retaining a universal brand identity. This hyperpersonalized approach is at the core of Infosys' Live Enterprise Suite, which uses "thick data" and big data to generate predictive analytics that boost conversions and cultivate customer loyalty. The self-learning ecosystem takes a persona-based approach to create immersive experiences and personalize customer journeys. When optimized, a self-learning retail store collects behavioral, demographic, social and the transactional data of consumers. It then applies predictive analytics to convert this data into contextual insights, and decides what, when, where, and how to promote or sell, and to which customer. An analytics-driven self-learning system evaluates existing personalization strategies and detects opportunities to collect data required to improve recommendations and enhance the product. Hyperpersonalization benchmark One leading example of this approach is the U.S. fashion retailer Nordstrom. The company combines big data and emerging technologies to deliver personalized shopping experiences, both online and in its 225 physical stores. Customer data from social conversations, website visits, point-of-sales systems, loyalty programs, personalized credit cards and a mobile app are used to understand preferences and create profiles. Those profiles are used by marketing and sales teams to personalize customer engagement. Moreover, the analysis of shopping trips — how, where, why and when — improves effectiveness of promotions and ensures unobtrusive assistance. Nordstrom has tried, tested and fine-tuned several customer engagement solutions. A cross-channel system provides visibility into global inventory and lead times, which is valuable for product recommendations as well as buying decisions. A visual merchandising tool enables brands to personalize product presentations for store visitors. Nordstrom launched the TextStyle app to connect customers with store associates and personal stylists. Granular customer data enables the retailer to make strategic decisions, including store location and floor plans, to please customers. Most notably, Nordstrom has established an Experience Concept Store in Seattle to test innovations, including curbside pickup. Successful efforts will be implemented at the chain's other stores. While Nordstrom has excelled at this new approach, which features the blending of online and physical retail experiences, other companies are still trying to find their way. Recent Infosys Knowledge Institute research, which surveyed more than 1,000 business leaders, found that the retail sector was in the middle of the pack in its digital transition, a requirement for hyperpersonalization and other needed initiatives. To reach Millennials, retailers need to accelerate their technological innovations and refocus their approaches. Only then will they be able to cut through the marketplace clutter and differentiate themselves from their competition, almost all of whom are chasing the same demographic. Join us at NRF 2020, from January 12-14, 2020, in New York

City, to understand how we are building human-centric experiences of the future. ======================

Simplifying Insurance Claims

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/simplifying-insurance-claims.html ----- Insights Industry Stories Business Challenge A leading global insurer was using multiple claims processing systems and processes across a 100-plus countries, making claims settlement and fraud detection difficult. Infosys View A single customizable interface enabled with Digital Process Automation can amplify customer experience by increasing transparency and response time. Business Outcomes And more... Read about the client benefits and the 5 best practices drawn from this engagement. ======================

How Fintechs Can Transform Small-Business Lending

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/small-business-lending.html ----- Insights Industry Stories Small and medium-sized enterprises (SMEs) play a surprisingly large role in the global economy. These companies and microfirms account for nearly 63% of employment in developed countries, according to the Organization for Economic Cooperation and Development. But those businesses can thrive only with a steady supply of debt and equity. Those are the lifeblood of established businesses and startups. However, both approaches have downsides. Lengthy approval processes, risk of high debt and pressure to repay loans at high interest rates can exert enormous pressure on SMEs and compromise growth. Meanwhile, equity financing dilutes control and can disrupt business if the fit is not right. Although established financial services firms have long-standing offerings for SMEs, fintechs are driving innovation. They are developing newer models for underserved populations, particularly in developing countries. For instance, microfinance is a lending service that provides very small business loans — ones that banks don't find profitable or perhaps don't even know how to offer. Fintechs have harnessed mobile channels to tap into this service by providing a seamless user experience and using data to effectively underwrite loans. Some companies report write-offs lower than 5%, a number that would impress most banks. Another option that has gained significant traction is crowdfunding, where family, friends and the general public donate small amounts to support local SMEs and startups. This model uses social and digital media platforms. Several fintech firms, including Kickstarter, RocketHub and Crowdcube, are already using this approach to provide compelling offerings. The opportunities for SME lending vary by region. The European Investment Fund found that bank loans and overdrafts were the primary instruments for SME financing in Europe, followed by leasing, equity and factoring. In the United States, online lending companies provided $10 billion in funding to nearly 180,000 small businesses from 2015 to 2017, according to economic research firm

NDP Analytics. Despite its contribution to economic growth, the SME segment is still plagued by inadequate financing. Limited access to finance is among the top-ranked challenges for SMEs in developing countries. SME lending is a high-touch, expensive affair in which banks often struggle to fit small businesses into traditional relationship-lending models. Here again, fintech startups are changing the game through marketplace (peer-to-peer) lending that features unsecured loans and data-driven credit scoring. These models take advantage of low underwriting costs and automation to deliver competitive interest rates as well as to offer faster and more convenient access to funds. Other lending barriers include regulatory challenges involving cross-border investments, high personal liability, ineffective budgeting practices and steep overhead. Also, many banks consider loans of less than $250,000 unprofitable. All these factors have led to a decline in external financing for SME lending. Meanwhile, fintech companies have proven they are adept at using technology to standardize and automate underwriting processes, thereby delivering a superior customer experience. And their low-cost, innovative and flexible solutions can solve a range of problems faced by small-business owners today. Also, the emergence of online payment platforms is ushering in an era when entrepreneurs can share financial information online and find lenders that approve and disburse small loans for their businesses. These fintech gains, however, need not come at the cost of the banking industry. Traditional financial institutions can collaborate with platforms that will help optimize their relationships with small businesses. Solutions such as Wave, Autobooks and LendGenius help financial institutions provide services needed by SMEs. Banks can enable fintechs, either as sources of funds or as partners in reaching underserved SME segments. There is an opportunity to further transform small-business lending by finding underserved markets, appealing to digital natives and using better sources of data to augment underwriting. =====================

Bins With Brains: IoT for Smarter Waste Management

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/smarter-waste-management.html ----- Insights Ground-level problems A little sensor goes a long way Sensing opportunities Industry Stories Waste collection and management is an essential service that customers take for granted — until bins overflow or alleys and curbs are piled high with trash. Failures can generate public outrage and threaten the bottom line. These high stakes create intense pressure in the already financially stressed waste management industry. Companies must manage the high costs of buying, operating, and maintaining large fleets of vehicles, and labor costs add up quickly since much of the work is still managed by hand. Meanwhile, the world is generating more waste with every passing year. In the U.S. the volume of waste generated increased by 9% in 2018, up by 23.7 million tons, according to the Environmental Protection Agency. Raising collection rates is often necessary to manage competing demands, but there is a ceiling to what can be charged. Often, waste management strategies focus on what

happens when trash arrives at a landfill, but pickups and in-transit costs also provide companies and governments with areas for possible untapped efficiencies. Increasingly, waste management companies are looking to automation and sensor technology, such as the internet of things (IoT), to manage these higher waste volumes and keep costs from spiraling out of control. Garbage collection is a tedious process riddled with inefficiencies. The standard approach of predefined routes and days means that trucks empty bins whether they are full or nearly empty. Many of those stops are a waste of fuel, time, and labor — each of which adds significant costs. The failure to segregate recyclables from trash also hurts the bottom line and ultimately shortens the lifespan of landfills. Unsegregated waste is all but useless to recyclers. While some waste can be sorted at the destination, the process is inefficient and expensive — a problem that was exacerbated by China's 2018 ban on importing and processing foreign recyclables. Collection and segregation alone contribute significantly to the waste management industry's inefficiencies, costs, and sustainability concerns. The emergence and increasing adoption of IoT and data analysis, however, now offer data-driven solutions that weren't cost effective just a few years ago. It seems like every object — from mobile phones to homes to toasters — is now available in a "smart" version. It is only a matter of time before this happens with trash bins. Ultrasonic and proximity-based sensors can tell collection trucks which bins are full, calculate the level of segregation, and determine whether a driver should stop or keep going. Larger bins can also use weight sensors to track fill levels. Fleet operations can use this information to track their vehicles and reroute them in real time. Combining this data with a scheduling application can allow teams to create highly optimized collection plans and anticipate what to expect, even weeks in advance. Bins with integrated garbage compactors can further increase efficiency by storing more garbage in the same space and allowing collection vehicles to make fewer stops while picking up the same amount of garbage. When this waste reaches sorting facilities, technology can increase efficiency there too. Cameras equipped with artificial intelligence (AI) and computer vision algorithms can identify streams that need to be segregated — at speeds beyond the capabilities of humans. These advances can also improve the quality of segregation and increase the value of recyclables by 200% to 300%. Ultimately, this technology helps improve revenue while also reducing staffing costs. The industry is now experimenting with versions of these AI systems that can be installed inside garbage bins and trucks to identify segregation levels during the collection process. This data can inform operators how waste is collected and where it should go. It can also provide insight into waste generation in different neighborhoods or cities. Sensors are a clear solution to many of the waste management industry's efficiency problems, but the benefits don't stop there. The same technology can also create an array of new opportunities and services. Insights: Awareness and revenue - Besides optimizing routes, data points from smart bins can allow companies and governments to determine which customers produce the most waste and when that is most likely to happen. The data can also point to which customers fail to segregate waste altogether. Authorities could then use this data for targeted education or awareness efforts. Or if that doesn't work, customers could be charged a higher rate or additional fees to compensate for the increased costs. Privatized services - Waste management companies can also help clients track their data, identify

patterns, and find solutions to manage or, better yet, reduce the amount of waste generated. A mall or a large office building that produces huge amounts of plastic and cardboard could work with a waste management company to identify solutions, such as moving to reusable cutlery or in-house recycling. The goal is to reduce costs through lower waste volumes. Reinventing with IoT - To take full advantage of sensor technology, organizations need new tools and capabilities to analyze the data and use it in ways that are scalable and provide long-term value. IoT platforms can help organizations collect and unify data from multiple sources while also making it available to stakeholders. For instance, garbage truck drivers can be provided with notifications via a mobile device that show which bins they can skip, allowing them to dynamically reroute the vehicle's path. These real-time adjustments can save time and costs by reducing unnecessary stops. Figure 1. IoT-powered waste management Source: Infosys Powerful big data and analytics platforms can crunch vast quantities of data to help spot patterns and identify opportunities to improve the efficiency of fleets. And dashboards can allow staff to oversee and manage all operations in real time to meet more demanding collection targets while also lowering their carbon footprint. The real-time nature of how waste management companies utilize data is the industry's next frontier. While automation has been a part of this value chain for some time, it's true power will only be realized when companies can gather insights and respond to them instantaneously. New technologies that have transformed high tech manufacturers, telecommunications companies, and logistics firms offer new opportunities for the waste management industry. With the right expertise and help, these companies can identify efficiencies that were never before possible — from the alley to the landfill. Ultimately, this transformation can power leaner fleets, greener operations, and a digitally driven enterprise.
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Sports Enthusiasts Experience a Fresh Adrenalin Rush with Stadium Technology

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/ stadium-technology.html ----- Insights Industry Stories Technology has become so integrated with sports, that there is hardly any sport with an international audience devoid of technology. For a while now, coaches, team managers and players have accessed technology to monitor performance at both the individual and team level, gain feedback, plan strategies before and during matches, and continuously improvise their game so as to get that winning edge. Not surprisingly, technology is making its way to fans as well, and I don't mean to those watching the match remotely- on their television or streaming it on the internet- but rather those of us who throng sporting arenas to take in the energy and action as it happens, live. Digital native fans crave an interactive and engaging experience To get a glimpse of how technology is making its way into stadiums, take a look at the Amsterdam Arena in Holland - home of the Ajax Football Club. Technology here is so

comprehensive, it can be imagined as a digital layer over the sports venue. This layer is what brings everyone - players, coaches, team owners, merchants, food vendors, parking lot attendants, security guards, and yes, thousands of screaming fans - together for a seamless, immersive experience. So fans can use their smartphone and learn the fastest route to the stadium, see a vacant parking spot as they drive in, access high quality Wi-Fi to view real-time data on players, live stream the match even while at the food counter and stay active on their social media sites. For advertisers, there is face recognition technology for targeted advertising. Stadium owners have the opportunity to offer tighter security and better management of energy and other utilities. Technology at Amsterdam Arena, effectively converges to offer all stakeholders a markedly enhanced sporting experience. Another example of technology making its way into stadiums and closer to home is the Levi's Stadium where fans can use their smartphone and connect to a wireless beacon from their seat, order food or even check the line at the restroom. The stadium of the New York Yankees made big news last year. After only seven years of operation, the Yankees organization is paying for a $20 million renovation. It is removing bleachers in the outfield in favor of a family-friendly multiplex. Besides having an 'engaging children's play area,' the new complex will allow 'all guests to enjoy the game from multiple vantage points while having unique food and drink options available.' The Yankee stadium could also go a step further and leverage technology to knit the physical and virtual space, and thus to redefine their fans experience. Following the trend of mega stadiums are Universities like Southern Alabama, which is partnering with Infosys to implement smart-stadium technology at their basketball pavilion, Mitchell Center. Technology in sporting arenas has come a long way since the Jumbotron, which gave fans in the higher up seats a quick glimpse of outstanding play on the field as though they were sitting in the front row. Now, technology companies have progressed to offering full-scale, stadium-wide platforms that allow management and fans to connect, engage and enjoy a personalized experience, no matter where they are at the venue. Today's best sports technology platforms are an acknowledgment that no two fans are the same - so everyone deserves his or her own experience. That includes cutting through advertising clutter and customizing promotions to each and every fan at the stadium. Converting the physical venue into a digital platform Imagine you are sitting in the stands and just saw one of your favorite football players intercept a pass and run the length of the field for a touchdown. You can watch the replay as many times as you'd like because of the in-stadium streaming replays available to you on your mobile device. The neatest thing about fans is that they love to converse with each other. They argue about which team is better, which player is having a good or bad day, and whether a touchdown was scored as they watch the instant replays on their digital devices. How could such widespread digital engagement occur? Through stadium connectivity infrastructure that meets today's needs. Or rather todays 'giga-needs'. Which leads us to the fact that through digitization comes monetization. The transformation of sports through precision marketing translates into the creation of sponsorship value. That's because modern sports technology platforms leverage fan profiling and analytics. They know what their fans like to eat, so that digital devices empowered by robust, in-stadium Wi-Fi, direct them to the right food and beverage stand. Organizers know what

team and players the fan follows, so that they are directed to on-site or online stores where they can buy t-shirts and other team/player merchandise. Such an improved customer relationship means heightened fan loyalty. Fan engagement can continue well after the game is over, and go on throughout the season and off the season through digital media, social and customized content. Because these platforms are multi-tenant, Cloud-based, and highly scalable, they work just as seamlessly at any event that involves a large arena. Contextualized ads and promotions are just as lucrative for an arena or sponsor and allow for monetization. This is especially true where large numbers of people gather, such as at shopping malls, industry trade shows, convention centers, and cinemas. My favorite part of these new venue technology platforms? Beacons that let you know that a friend is in the arena. You can text him to meet up for a drink after the event. Not surprisingly, smart venue technology would allow users to engage with it much after the event as well, say to access game analysis, watch videos in action replay mode and continue celebrating with one's favorite team. Learn how we deliver business value to the Media and Entertainment industry >> ======================

Industry Stories

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/ success-stories.html ----- Insights A five-minute loan process Digitizing corporate banking with data Easing corporate lending Complying with Regulatory Change Adhering to Trading Regulations Tackling Crime and Compliance Get a Complete View of Your Customers Simplifying Insurance Claims Getting Digital Marketing Right Maximizing Your API Investment Making Marketing Simpler Modernizing Legacy Platforms for a Digital Future How to Get Customers to Love Your Brand Campaigning for Customer Loyalty with an App Digitizing the Loan Process Mobile-first Banking Easing Regulatory Compliance Bringing Utilities to the Digital Age Insights Insights Insights Insights Insights Insights Insights Insights Insights Insights Insights Insights Insights Insights Insights Insights Insights Insights ======================

What the Pandemic Has Taught Us About Supply Chain Resiliency

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/ supply-chain-resiliency.html ----- Insights Industry Stories The current pandemic threw global manufacturing into disarray this spring, disrupting regional and international networks. As the world inches toward an uncertain stability, businesses worldwide are analyzing this new landscape and trying to apply the lessons they've learned. "COVID-19 has placed an unprecedented strain on supply chains globally," said Samad Masood, head of Europe for the Infosys Knowledge Institute. "But thankfully, the world does seem to be settling into a new — perhaps precarious — normal." Masood moderated a panel discussion this summer to examine how global

supply chain leaders are managing these challenges and how their approaches have changed. The recent panel included supply chain executives from Alcon, Syngenta, and Western Digital, in addition to Dinesh Rao, an executive vice president who leads Infosys' enterprise application services. Each company faced different hardships when the pandemic disrupted the world economy and global supply chains. All their careful planning and projections were rendered unreliable at best. Here's what they encountered when economic systems ground to a near halt earlier this year and what they are doing to become more resilient. Western Digital When COVID-19 emerged in China, Western Digital and many other companies did not immediately feel the disruption. Factories were closed for the Chinese New Year, so a slowdown already was built into manufacturing schedules. But after the holiday, holes appeared in the supply chain. Although the company manufactures much of its equipment in Shanghai, one of the primary suppliers of printed circuit boards was in Wuhan, where the pandemic originated, said Mohan Dhamodaran, senior director of Western Digital's Supply Chain Centre of Excellence. Western Digital did have some inventory available, but Dhamodaran said the factory closure in Wuhan "hit us hard with reduced capacity and service levels…That's when we realized the impact of this pandemic [on] our supply chain." At that point, company officials realized they needed a more diversified set of suppliers across regions and countries. Alcon The pandemic's effect on Alcon, the world's largest eye device company and a Novartis subsidiary, was significant but not uniform among its units. On the consumer side, Alcon sells contact lenses and supplies that its customers need every day. "We do see some fluctuations and some bullwhip effect on the channels side [shift from in store to online], but people will still need their contact lenses and their solutions and eyedrops," said Hoany Thompson, Alcon's head of process improvements and global supply chain sales and operations. "That end is a little steadier." However, the ban on nonessential medical services cut into their business providing supplies for elective eye surgery, such as cataract operations. This made supply-and-demand planning particularly difficult as varying government restrictions started, ended, and sometimes restarted. Emergency surgeries weren't affected, so the nonconsumer part of the business did not shut down completely. The company knew there was pent-up demand for nonemergency eye surgeries that would boost sales eventually. "It's very localized by county, by state, by city," Thompson said. "What were the rules of elective surgeries? When was it going to open back up? So, it was quite difficult working with local planners and trying to understand that for their markets." Syngenta The pandemic's initial impact on Syngenta was minimal, particularly compared to companies that operate just-in-time supply chains. Syngenta's sales are seasonal, with customers making decisions months ahead of time. Also, agriculture fell into the essential services category, so Syngenta and similar companies were not forced to close manufacturing facilities. "You make your agreements. You have seasonal assumptions on acreage, on market share. Execution becomes relatively predictable as long as those relationships are maintained," said Matt McCall, the company's global integrated business planning lead. Most of Syngenta's supplies were already in place. Instead of its business slowing to a crawl, the company had to grapple with wild swings in demand from both existing and new customers reacting to global supply chain uncertainty. By the end of the season in North America and Europe, the bottom line

looked normal overall, but the typical patterns were disrupted, and many assumptions were incorrect. Supplier diversification At Western Digital, the business processes were created for speed, matching supply and demand weekly. That allowed company leaders to quickly see their geographic vulnerability because so much of their manufacturing was in China. Western Digital shifted parts of their supply chain to other sites in Asia, including Malaysia. "Even though initially there was an impact of 50%, slowly we could ramp up to 60% or 70% as we brought more suppliers on board," Dhamodaran said. Even then, the supply chain was still concentrated in one part of the world. "We did have alternate sources, but all in the same geographic area," Dhamodaran said. "So that's when we started to understand the risks." McCall said Syngenta already had a broad supply chain in place for structural reasons. Unlike Western Digital, his company couldn't shift production quickly. "It's very similar to a pharmaceutical-type setup, where the source that makes your products is registered and can't be switched easily," he said. "It takes a long, long time to find another supplier. … We've been rigorous about multisourcing, but I know it's not a luxury that all industries have." At Infosys, the crisis has shown the need for a better understanding of risks embedded in supplier relationships. We measure them on all the performance metrics, but the visibility of the supplier is something that we don't have a way of measuring. A strategic supplier might not be able to scale up, and [that could] potentially disrupt your entire supply chain. If you don't look for this kind of risk, Dhamodaran said, you will see only the financial rewards that result from having a smaller network of suppliers. He said many companies now need to seek a more balanced approach. "Our sourcing team on the supply side, on the procurement side, [has] really been looking at the resiliency within the suppliers to distribute that risk," Dhamodaran said. Logistics hurdles Factory closures were a significant source of disruption at the start of the pandemic, but transportation also created significant barriers. At Western Digital, the logistics costs increased substantially as a result of the cratering air travel industry. Logistics became the bottleneck. Dhamodaran said that until the pandemic struck, his company didn't realize how much it relied on commercial airlines. About 60% of Western Digital's cargo was transported on passenger airliners rather than cargo planes. Initially, transportation expenses increased to three to four times the previous cost. "Once the commercial airlines shut down, this airlift of products had to be on cargo planes or we had to find charters," he said. "And then as things evolved, commercial airlines transformed into cargo airlines as well." McCall said Syngenta didn't have to struggle with the significant manufacturing closures that affected other sectors. Instead, many of the slowdowns occurred at customs and when global shipping lanes shut down. A fourth-party logistics deal with the pharmaceutical giant Merck, however, provided some relief for Syngenta. "They really helped mitigate a lot of those logistical bottlenecks and difficulties," McCall said. "If that [were] not in place, we would have had a huge impact on supply availability locally." Optimized supply chains This crisis has forced companies to look closely at how companies are balancing their supply chains. What are the trade-offs of cost versus responsiveness? "The perception has completely changed," Dhamodaran said. "Now our finance team doesn't look at inventory as bad or evil. It's a good balance between working capital and having the right inventory with the right service level to the customer. … It's OK to have that entitled inventory."

Western Digital now has a monthly process to understand the inventory needs for the entire supply chain, from finances to risk to service levels. "We don't have the luxury of a few months of inventory," he said, "but having that short buffer could help us during spikes." McCall said the approach to optimizing inventory seems to run in cycles. Stability is elusive. "We always seem to have one season where inventory is a major driver," he said. "We must find ways to lean ourselves out. Then that will be shortly followed by 'We have a big opportunity, and we need to maintain the highest customer service levels possible.'" Going forward, McCall said, companies need to be more responsive and dynamic. Thompson said managing supply chains will be among the most important challenges in business. "The pendulum is definitely going to swing away from cost and squeezing out every bit of inventory to more risk management," she said. "It definitely will force some of the tougher conversations." Accelerated forecasting Before the pandemic, changes to Alcon's forecasts were locked down two months ahead of time. Now the crisis has forced executives there to rewrite those rules, Thompson said. The company has recently allowed planners to update forecasts during the same month so they can account for the latest information and new assumptions. "I think the key is speed," she said. "The people as well as the processes as well as the systems enablement." At Syngenta, McCall said the company wasn't set up to react quickly enough, which hampered executives' "ability to understand whether we have new demand opportunities. … For us, the big challenge was our monthly supply-and-demand balancing processes, which became too slow to keep up with the changing environment." Syngenta already had invested in new technology to make decision-making plans and processes faster, more collaborative, more transparent, and more data-driven. However, the pandemic exposed weaknesses in the company's processes. "In the end, we still weren't really ready to cope with that shifting demand from a decision-making perspective," McCall said. Technology solutions Although most companies have abundant data, that hasn't necessarily served them well during a once-in-a-century event. They need new tools to look at that data in different ways, the panelists agreed. "We paused our stat forecasting for the past two months because looking backward will not help you," Thompson said. "So, moving to more of a causal-based forecasting would be better with an AI [artificial intelligence] type of an engine to correlate the different parameters." At Syngenta, the old forecasting models were not useful because of the influx of new variables. "Luckily, we started very recently to experiment with a data science approach, which is brand-new for us," McCall said. "A couple of pilots were a bit successful in calling some of those demand shifts using a data science predictive model, a machine learning approach with variables we've never considered before." This has allowed Syngenta to analyze new scenarios more quickly, which is particularly important in a rapidly evolving situation. "It took far too long for us to even come up with one or two scenarios," McCall said about the old approach. "By the time we had a couple of scenarios and we went to make a decision, the market assumption had changed again." Infosys' experience found that the pandemic has pointed companies in the direction they need to go. That includes more powerful forecasting models that use AI and machine learning. It is more reacting, living, breathing, and sensing as opposed to looking at past historical data. Takeaways While there wasn't disagreement among the panelists, each finished with slightly different recommendations

or spins on the various topics. Every company will have its own distinct challenges and solutions. "I would definitely suggest looking at the business processes to see what in your organization you can change to be more reactive," Thompson said, emphasizing near-term adjustments. The more a company can directly integrate its different elements, she said, the better it can react. "This is almost a once-in-a-lifetime crisis," Thompson said, "but in supply chain, we deal in daily crises. Some are going to be small, some are going to be astronomical, like COVID." At Syngenta, speed is the critical new element of the company's direction. "No matter what industry you're in, the speed of decision-making needs to increase," McCall said. "The only way to do that is by leveraging technology … and people skilled to understand and interpret the information and make better decisions. You need both sides of that equation." Dhamodaran said Western Digital needs a more responsive supply chain, including a new look at logistics. "Challenge all the assumptions that have been built all these years," he said. "This event is a wake-up call." This period as an unprecedented time that requires new thinking. Corporate leaders will need to pay close attention to signals they receive from their data and also closely examine the trade-offs they make in their daily operations. We must go back and look at cost versus responsiveness and cost versus resilience. We will have to fail fast, learn fast, modify, adopt, and start up and keep running.
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Smart Technology For Sustainable Food Practices

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/sustainable-food-practices.html ----- Insights Industry Stories In the food services and logistics industry, it's all about quality, flavor and delivery: customers want their food fast and natural. Advances in technology are altering the farm-to-table journey and the food experience. As Peter Diamandis points out, an average American meal travels 1,500 miles before being consumed. With discerning customers watching their carbon footprint, interest is deepening on where food is grown, how it travels and when it is processed. The way forward is to make sustainability central to food production, adopt automation and robots for cost-efficiency and shift towards smart machinery for efficient farming. The food industry can be a high risk, low reward business. Unpredictable weather, challenges in food logistics, perishability of food, and transient trends contribute to a perfect storm. Could an innovative enterprise convert these factors of uncertainty into a sustainable food business? Froozer, a Colorado-based company, is one such example. It offers a range of frozen fruit and vegetable snacks. The company sources freshly harvested fruit and vegetables, then uses technology to freeze, blend, and package the produce. It means consumers get natural, preservative-free frozen foods. Their approach focuses on sustainable business practices as Froozer sells 'ugly produce', fruits and vegetables that look less than perfect, and mitigates food waste. The brand also supports the 'slow food' movement, which seeks to promote local food production and traditional cuisines which retain natural flavors. Automation

is the buzzword in upstream food packaging and processing. Robots using machine vision, imaging-based automatic inspection and analysis, have dexterity, speed and accuracy for inspecting produce and foods. Key Technology Inc., a Washington-based company, uses vision guidance technology in its multi-sensor, pixel fusion platform. It identifies irregularities while processing voluminous supply of food products in chutes and belt sorters. Accurate sorting delights food companies that uphold stringent quality standards. Its vision technology also automates palletizing as well as depalletizing in food logistics. It ensures that the appropriate shipping label is placed in the correct orientation. Robots also collaborate with humans in areas where the strenuous effort is done by machines. Universal Robots, a Danish company, has a robot that fetches food products from a conveyor and deftly places them in a carton for a carton erector and sealer to take over. As sanitary design is increasingly incorporated in robots, automation will become a force multiplier in the food services and logistics industry. Big data, smart machinery, and climate science are set to usher in a high yielding farm without a farmer actually being out in the fields. Picture a manager navigating a tractor on the farm using a tablet. Sensors in the soil deliver data about moisture while the local weather channel provides updates about humidity and temperature. All of this data comes together to increase the yield of arable land. A smart harvester can be calibrated to harvest crops, monitor crop quantity every hour, and identify the most fertile patch of farmland. CNH Industrial, a manufacturer of advanced farming machinery, envisages precision farming on a connected farm without a human stepping on the land. Agri-tech is paving the way for farmbots to replace legacy farming machinery for undertaking complex tasks. Drones are being used for crop monitoring in South America and spraying pesticide on crops in Japan. Indeed, the farm of the future will be digital. The row after row of produce on a farm will represent streams of data that influence the current harvest, which in turn will serve as a catalyst to plan the next harvest. Smart farming technology like blockchain can support crop insurance. It can prevent fraud and significantly reduce the cost of insurance in agriculture. Consumer trust in the food industry is critical and providing transparency through the supply chain is key. This can be made possible with robust technology like 'trustless trust' or permissioned blockchain networks. Tracing a product right from the farm to the packer who transported it, all the way to the quality certification of the product is now possible. For example, a consumer buying coffee from a specialty retailer scans a QR code through their mobile phone to trace the origins of the coffee bean, even while the coffee is steaming in their cup. We can see this trend towards traceability in other products as well, be it organic meat from China or air fresheners from Korea. Smart contracts in blockchain can trigger alerts to warehouses and trucks on product expiry and initiate an auto recall with all the participants in the supply chain real time. The United States has a big appetite for pizza. Pizza delivery is a US$ 9.7 billion industry with domestic brands establishing global franchisee models. The industry is being disrupted by Zume Pizza, a Californian pizza delivery startup that blends robotic automation with a patented delivery and logistics system. In Zume's kitchen, a robot applies sauce on flatbread, it then moves on a conveyer for pizza handlers to add cheese and toppings. Another robot picks up the flatbread and places it into an oven. Zume Pizza seeks to take pizza delivery up several notches. Robots load ovens with menu items in

patented delivery trucks. Minutes before the truck reaches the customer, the oven is switched on remotely by a command from the headquarters via the cloud. While the Associazione Verace Pizza Napoletana guarantees the authentic pizza experience in Italy, across the Atlantic Ocean, robotic efficiency and a ping-fired oven may give an artisanal twist to the humble pizza. In the 21st century, the food industry has a pressing challenge: the mismatch between the rising global population and food production. As millions of people migrate to cities for employment, urban areas lack the acreage required for commercial farming. The Floating Farm in Rotterdam, Netherlands is taking a leap of faith. It envisions a dairy farm on a floating structure by a riverbank. The farm raises 60 cows to produce milk, cheese, cream, butter, and yogurt. This high-tech laboratory-cum-dairy farm is collaborating with Philips for LED lighting to ensure maximum grass for the cows. The permeable 'floor' uses technology to recycle waste. Robots dispose manure to be converted into energy and fertilizer. Sustainable farming practices backed by technology such as artificial intelligence is the way forward across the food value chain. More so for its ability to offer higher transparency into the production process, lower the carbon footprint and still deliver quality, tasty foods. Reinvent, Reimagine, #RethinkRetail with Infosys offerings >> =====================

Tackling Crime and Compliance

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/ tackling-crime-compliance.html ----- Insights Industry Stories Business Challenge A banking and brokerage firm wanted to upgrade their legacy infrastructure for a more comprehensive crime and compliance management platform. Infosys View Organizations struggling to remain compliant amid high costs, changing regulatory requirements, and low operational efficiencies need comprehensive technology platforms for leveraging both financial crime surveillance and regulatory reporting together. Business Outcomes And more... Read about the client benefits and the 5 best practices drawn from this engagement. =====================

Bankers Must think like Technologists and Vice Versa for a True Transformation

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/ technologists-vice-versa.html ----- Insights Industry Stories If we were to estimate purely on the basis of media reports and general industry buzz, it may seem like every player in the banking sector is neck deep in the adoption of concepts such as open banking and exploring new technologies including Blockchain, Big Data, AI/ML, etc. Yet, the picture on the ground is quite different. Save for a few early adopters and innovators who are working on the above in earnest, most of the banking industry is still in the very early stages of adoption of digital technologies. This is because while

the intent to compete exists, banks often struggle with any transformation efforts as they are weighed down by legacy infrastructure, regulatory and compliance issues coupled with security concerns. Neal Cross, chief innovation officer at DBS, made a very interesting point at Sibos 2018 when he talked about how most banks in Europe and Australia still see open banking as a technical compliance program rather than a business opportunity. DBS, of course, has made several great strides when it comes to making seamless digital banking a reality for their customers. But by and large, his observation is spot on. Fortunately, the banking sector is driven by the challenges posed by fintech players who are unleashing new experiences for clients, backed by new-age technology solutions. Even though, the BFSI sector has been an early adopter of IT for technology infrastructure in the Systems of Record era, when it comes to embracing digital transformation, the sector is still grappling with the need for a technology overhaul. The banking business still doesn't understand the technology well enough to allow them to innovate. What Banks are Missing and How Technology Companies can Help In my discussions with customers and partners, I find that most businesses appreciate and acknowledge that technology has the potential to impact their business drastically but there is little clarity on the nature and magnitude of the impact or what they should do to prepare for it. For instance, there is ample evidence that technologies around predictive analytics and advanced robotics, powered by AI, can massively transform all areas of the banking sector - from compliance to customer experience to backend operations. Investments in Augmented Reality (AR) and Virtual Reality (VR) and overall emphasis on design thinking can transform the banking experience. But banks have little clarity on the exact nature of the solutions that they need to implement or prioritize. On its part, the technology industry is guilty of not doing a great job of finding the best use cases and tools for business transformation, based on these new technologies. Tech players often take a technology centric or platform centric approach, rather than a business first approach that is focused on alleviating the industry's pain points. Technology understands the underlying benefits of the new platforms but does not have enough understanding of the use cases for the business. To be fair, the industry itself is still developing in its thinking. Given the breakneck speed at which technology is evolving and the constant churn in the popularity of new technologies, the tech industry sometimes ends up spreading itself too thin to establish new use cases and evaluate the potential ROI of using new technologies over existing solutions. Creating Winning Partnerships There are several things that both sides can do to help bridge this gap. The first is to be customer-centric. Keeping the end customer at the center of any transformation effort is a good way for both banks as well as technology companies to align their approaches. The focus can then remain on solving real customer issues on ground rather than being swayed by the shiniest new technology. For banks too, it may help avoid an iterative approach of simply improving an existing process, rather than questioning if the process adds any real value to the customer. Secondly, any big technological shift needs to focus on cultural transformation as much as digital transformation. The biggest reason that organizations hesitate to embrace any major upheavals is due to the fear of the unknown. Spending enough time on communication to explain the impact of the technology; not only on the overall strategy, but also on the day-to-day work life of each individual, is

important. Also, the banking sector will benefit immensely from looking at the big picture and considering the future impact, rather than placing undue focus on short-term or 'Band-aid' approaches to technology adoption. One great way to do this is by partnering with the technology industry to design the right, future-ready solutions that can help you win. The technological revolution is already underway and is here to stay. It is in the best interests of both banks and tech companies to work together and find ways to create a winning partnership. ======================

Technology and Connectivity Set to Transform the Auto Industry

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/technology-connectivity-set.html ----- Insights Industry Stories These are exciting times for the auto industry. Before we delve into emerging trends and what to expect in the future, let us take a quick ride through the history of the automobile industry. Auto manufacturers in Germany, France, and the US deliver 'easy mobility' by making lightweight, affordable cars. Growth of the auto industry spurs demand for steel and petroleum. Ancillary industries and feeder services emerge and thrive. Japan becomes an auto leader and exports vehicles. But the proliferation of automobiles results in bumper-to-bumper traffic in cities. The socio-economic impact of easy access to personal motor vehicles comes into focus. Safety, emission control, and fuel efficiency as well as regulations to restrict usage, and even purchase. In Japan, motorists require a 'parking space certificate' to register the purchase of a new or used car. While some countries introduced curbs on movement and parking of vehicles in urban areas, others integrated bicycles in the public transit system. Shifts in technology and demographics, and psychographic changes driven by the ubiquitous internet create a 'sharing economy.' Auto sales stagnate or decline in some regions – either due to an aging population or the popularity of apps such as Uber and Turo. Governments and consumers seek 'inclusive mobility.' Digital convergence blurs the lines between industries, disrupts business models, and in extreme cases, upends businesses (a notable example being film-based photography). Retail, pharmaceutical, financial services, and oil and gas enterprises leverage digital technologies and social platforms to renew their business and explore new revenue streams. Similarly, new avenues open up for automakers as they can now combine technologies to create value and offer convenient choices to meet the aspirations of diverse customer segments. The business approach to every phase of the auto value chain is being redefined by collaboration as well as advanced technologies. Fashion designer Zachary E. Posen and Thom Browne, created exterior and interior designs for Nissan's 2014 Infiniti Q50 luxury sedan. Robots work alongside humans at assembly lines in Ford and BMW. Tesla sells directly to consumers. Most important, the car itself has become a Veblen commodity, a functional necessity, and a shareable asset, all at the same time. The shape, form, and purpose of the car are rapidly changing, with machine-to-machine communication and artificial intelligence embedded in every component. But planned obsolescence and incremental tweaking of product / production

technology are not sustainable to achieving the ultimate frontier of digitization – the autonomous car. Auto manufacturers need to focus on critical aspects that define demand for automobiles, while ensuring a safer, more intuitive travel experience. Cars are set to become an integral component of multi-modal, on-demand transportation systems. Leading auto brands embed connectivity systems for seamless mobility. Daimler launched 'car2go' in partnership with Europcar Autovermietung GmbH in 2011. Daimler's 'car2go' edition models incorporate advanced telematics, and serve more than one million users across 60 cities in eight countries. The BMW DriveNow car-sharing service is based on the 'pick up anywhere, drop off anywhere' principle. Electric cars are included in the DriveNow fleet. Passengers in San Francisco and select cities of Europe can locate cars using an app or find one on the road, use a chip in the driving license as the key, and leave the car anywhere. Users are billed based on the duration of travel, which includes fuel and parking charges. The average number of miles driven by Americans has been declining since 2004, according to 'Millennials in Motion,' a report by U.S. PRIG, an independent consumer group. Industry research also indicates that millennials in America and Germany prefer alternatives to car ownership. Traffic logjam, environmental concerns, and the high average car idle time (almost 80%) may explain the emergence of pay-per-use models such as car-sharing, e-hailing, and peer-to peer car rentals. It is not yet known whether travelers in developing countries will follow suit. In these countries, regulators are implementing policies to restrict private vehicles even as car sales is robust, and rising income levels allow first-time as well as multiple car ownership. Automobile companies will need to better understand micro consumer segments and their attitudes toward car ownership and mobility to customize models for these markets. Companies can collaborate with various stakeholders to provide mobility-as-a-service. Ford partners with Zipcar to offer car rental services in over 250 college campuses. "Today's students are thinking differently about driving and transportation than they have in the past. This program enables today's new drivers to experience our latest fuel efficient vehicles, while helping them reduce their cost of living and help relieve congestion on campus. We're looking forward to making Ford a staple of their college experience," said Bill Ford, the executive chairman. Radars, cameras, scanners, and sensors fitted within and outside a car ensure the safety of passengers as well as pedestrians. A majority of car manufacturers have adopted semiautonomous technology in their fleet. Adaptive cruise control, automatic parking, and collision warning systems transform the driving experience. Real-time data from vehicle-to-vehicle and vehicle-to infrastructure communication systems helps minimize accidents. In addition, it enables traffic control centers to predict traffic conditions and avoid congestion by rerouting flow. An intelligent transportation system ensures better response in case of emergencies. Optimized driving reduces greenhouse gas emissions significantly. Until autonomous driving becomes a reality, automakers should improve driver assistance systems in vehicles and invest in technologies to minimize the carbon footprint. Climate control systems monitor and analyze air pollution and UV radiation, and automatically calibrate the ambient conditions within the car. Tesla's Model X features a medical-grade high efficiency particulate arrestance (HEPA) air purifier. Manufacturers need to accelerate investment in electric and hybrid vehicles, including the infrastructure ecosystem. The Uber Advanced

Technologies Center is collaborating with Carnegie Mellon University to create fully autonomous cars for its e-hailing service. Toyota is experimenting to attain 'zero emissions' across brands by 2050. The company's Mirai uses hydrogen as a power source, and a Lexus fuel cell vehicle will be launched by 2020. Tesla is building a 'Supercharger network' across North America, Europe, and Asia, including wall chargers at hotels and parking areas, for convenient access to clean electricity. Japan sustained its leadership in automobile production and exports for decades through innovations in quality as well as logistics processes. Japanese carmakers invested in global distribution networks and production infrastructure to minimize costs and mitigate risks. Nissan, Toyota, Honda, and Mazda automated logistics – inbound, intra enterprise, and outbound – to leverage smart distribution technologies. A lean supply chain helps the companies address demand in any region. Trade agreements between countries and trade barriers drive vehicle production and sales. Manufacturers in Brazil are protected by high customs duties. However, they can serve only the local market. Mexico, on the other hand, is a member of the North American Free Trade Agreement (NAFTA) and Latin American Integration Association (ALADI). It has boosted the auto industry in the country. Kia Motors, Nissan, BMW, and Mercedes-Benz are establishing manufacturing facilities in Mexico. In addition, the free trade agreement with the European Union (MEFTA) is helping auto as well as auto parts manufacturers grow. As more and more proprietary systems are embedded for autonomous driving, original equipment manufacturers (OEMs) can expect growing demand for parts and after-sales service. Third-party service providers may be unable to maintain or repair critical safety systems. Moreover, OEMs will be responsible for intuitive recommendations in their smart cars and technical failures. Car sharing, whether in partnership with the OEM or otherwise, will lead to increased usage and faster wear and tear. While it is an opportunity to increase revenue, automakers will need a flexible supply chain for sustainable operations. Cars of the future need to provide more than mobility. Vehicles should combine computer-aided design, engineering finesse and functional gadgetry to address safety, pollution and traffic congestion. Learn how your enterprise can leverage the Infosys advantage >> =====================

A Telecom DNA with a Digital Personality

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/telecom-dna-digital.html ----- Insights May 2016 Industry Stories Digital services may make or mar the prospects of telecom companies. With the industry at crossroads, we bring you a conversation between Peter Sany, President and Chief Executive Officer (CEO), TM Forum, and Avi Kulshrestha, Industry Head – Communications, Media & Entertainment Europe and Global Head Telecoms OEM, Infosys. This discussion elaborates on how telcos can reinvent their offerings to morph into digital enterprises. Q (Avi): Welcome Peter. Telecommunication companies have witnessed trying times in the last fifteen years, yet they have managed to survive. They

have transitioned from analogue to digital in fixed telephony, adopted mobile technology, and allowed people to connect their computers to the copper wire network, enabling them to exchange data with one another. On every occasion, telecom operators have risen to the challenge and successfully connected millions of people, adding them to their client lists. Now, however, the biggest disruptions of all times, the digital disruption, is forcing a shift in the telecom operator's value chain. This is not like anything we have seen before in this sector. With your vantage point as the President and CEO of TM Forum, what do you think the future holds for the telecom industry? A (Peter): Our industry is a continuous work-in-progress. Every shift in technology makes living and working more inclusive. For instance, we have experienced several revolutions in our lifetime — from fixed line to wireline to wireless. Now, we are seeing boundaries blurring between the physical and the virtual worlds. The emergence of completely new digital native enterprises will rattle the right of existence of many traditional players. The winners will be those CSPs who can successfully morph from being vertically oriented players to become a horizontal player, providing a value added digital backbone of high-security, low latency network, and ecosystem-topical platforms to enable a rich applications bouquet at every customer touch point. If we step back in time, the end of telecom monopolies paved the way for healthy competition. The Internet provided a level playing field for companies, which helped spur the proliferation of Internet telephony. Now, we can brace ourselves for the next big leap, with technology companies such as Microsoft, Google, and others investing in fiber optic networks. It is a fascinating game between incumbents and disruptors. The horizon brims with fascinating possibilities because we have a robust infrastructure that needs to be monetized. While the future looks promising, we need to be cautious about the sustainability of certain stakeholders. The communications industry has witnessed capex investments on an unprecedented scale in every successive generation of network technology. However, the changing, competitive landscape between traditional players, new entrants, and asymmetrical regulations increases the risk of not receiving fair returns on investments. As we speak, the European Commission is setting the framework for a unified digital market, allowing free Wi-Fi access and unlimited roaming across the European Union. We now live in an era of digitalization of everything. Barriers between traditional industry verticals are breaking down and a set of globally and locally interconnected ecosystems are emerging, ranging from 'smart cities' to completely overhauled global manufacturing and supply chain models based on 3D printing or telemedicine, to name a few. We will soon see the emergence of completely new digital native enterprises that will rattle the right of existence of many traditional players. This transformation brings great opportunities for those communication service providers (CSPs) who successfully morph from being vertically-oriented players to 'L-shaped' digital service providers (DSP). An 'L-shaped' enterprise will offer its own vertical products and also become a horizontal player, providing a value-added digital backbone of high-security, low-latency network, and ecosystem-topical platforms that enable a rich bouquet of applications at every customer touchpoint. On the 'vertical' side, video and augmented reality hold a lot of promise. These applications may well become ubiquitous for personal, interpersonal, and business purposes. High-quality, real-time video-streaming coupled with augmented reality (AR) may

just be a game changer. If we look into a crystal ball, we can see this video and AR medley raising the bar in healthcare via telemedicine, for timely and accurate medical intervention. Also, the interplay between video and AR applications not only lends a new dimension to the field of entertainment and gaming, but also to industrial production and service management. So let me summarize what lies ahead — I believe that the disrupters challenging the incumbents will ensure that the industry remains in the best of health and renews itself. All said and done, enterprises embracing a digital ecosystem will thrive with a compelling lifetime proposition. No one is better placed than the telecommunications / communications service provider (CSP) industry to become the major provider of the digital backbone for any industry and some of the emerging ecosystem-specific platforms" Q (Avi): Very true! In India, Reliance Jio is investing over US$20 billion to create a digital marketplace. The start-up offers data tariffs as low as US$0.7-per-gigabyte and has an ambitious target of reaching 100 million customers within four months of commercial launch! All of this makes a robust digital backbone, a business imperative. The operators are looking to create new revenue streams and differentiated experience for their customers. They like to offer more than just connectivity, and would be targeting lifestyle-based experiences, aspirations, and needs of the customers, especially with the advent of the API and platforms economy. In this context, how would a telco differentiate itself from its peers, in order to engage and retain customers? A (Peter): Your examples show the significantly different production cost point that is becoming the entry ticket to play in the new digital world. Our industry needs to make massive improvements in terms of costs, flexibility, speed, and agility in order to remain viable. An open, standards-based, and highly granular architecture will provide the basis for quickly and infinitely reconfigurable digital services, products, and businesses. Let me dwell on the granularity in our industry, which started with legacy carriers who developed their own technologies, software, billing systems, and customer platforms. In the next phase, these companies implemented more modular, best-of-breed application stacks. Mobility services now demand even greater granularity to deliver on-demand, orchestrated applications, which can be delivered more efficiently using APIs for accelerated development and rollout. DevOps plays an important role in improving the time-to-market or new applications and digital services. Yet another area that demands attention is open architecture. Enterprises need to collaborate with enabling partners in order to break down monolithic blocks into smaller modules. Service-oriented architecture (SOA) allows you to co-create and accelerate application development with partners and even 'frenemies' within the ecosystem. All of this is the need of the hour to deliver a seamless, connected user experience. You need to be at the heart of the customer journey and influence the end-to-end customer experience decisively. Let me illustrate this with an example. When I order dinner to be delivered home from my smartphone, as I drive back from work or travel by train, I expect more than just a clear and uninterrupted call from 'origination' to 'termination' from my service provider. Remember, I could be zipping in my car on a motorway or entering a tunnel on the metro rail while I make the call, so the reception and coverage may be average, at best. However, I expect my service provider to transcend the 'hygiene' factor of 99.99 percent completed calls. Can I go a step further and pull up another app on

my phone and select a cuisine, then drill down and order a couple of dishes, and then pair the cuisine with a bottle of wine? Can I make an informed choice from a range of dining options by distilling reviews from social media? Can I estimate the time taken for dinner to be served at my table from the live traffic updates on my cell phone? From my point of view, as the consumer, I don't care who is providing and integrating all of these services. I care that my experience is simple and seamlessly end-to-end, and that my dinner arrives home when I do, still hot and ready to eat. If you think I am setting the bar too high for service providers, you need to at least meet, if not exceed, the expectations of the millennial demographic. If enterprises need to serve the critical mass of the digital generation, they need to have the building blocks in place to integrate services for delivering a compelling customer experience. Q (Avi): The Internet of Everything is already making an impact on our lives. I became a father a couple of months ago. My newborn son arrived at our home, which has about 20 connected devices for just three co-inhabitants. By 2020, the world's population is estimated to be 7.5 billion, whereas there will be an estimated 50 billion devices connected to and communicating with each other. Our everyday patterns of behavior have already changed — from how we buy things and consume them, to how we interact with each other via social networks and how we interact with machines. What kind of experience can customers look forward to in this hyper-connected environment? A (Peter): Congratulations, Avi. Your son is the newest member of a rapidly growing digital club. He belongs to a generation that will navigate the journey of life from a smartphone. In Estonia, for instance, every newborn enjoys free broadband as a birth right. 'Digital' is a way of life, with the state providing 600 e-services to citizens and 2,400 services to businesses. While I closely follow the animated conversation about a hyper-connected environment, I believe the industry and its lead players need to focus on 'open' standards and interoperability to deliver a seamless customer experience. Conventional wisdom suggests that we are moving from a 'talking heads' paradigm to an 'interacting devices' one. So, billions of devices will be connected and will interface with each other, but the ecosystem of devices and users is more nuanced and provides a reality check for stakeholders. Let me take a step back from this discussion about connected devices. Do I really want my smart watch to connect with my refrigerator to replenish groceries? I'm afraid not. We need to see the intrinsic value of connectivity and extrapolate the value for users. Global supply chains, automated production, and power grids can capitalize on 'interconnectedness.' Let me add a caveat: We are talking about critical applications that need to be supported by secure and reliable connectivity. Thus, as a service provider, I need to ensure near-100 percent availability for users to manage and control their domain. Q (Avi): Brilliant! What's the payback for industry players? Will OTT service providers cannibalize revenues further? Or will it be an opportunity to explore new revenue streams and innovative business models for incumbents? A (Peter): Let me elevate this conversation by several notches. If our industry stakeholders provide a smart, integrated customer experience, one or a couple of these companies may well rule the world. Imagine a scenario where a digital service provider has a robust digital backbone, enriched with a bouquet of services and visibility into customer insights, to cross-promote and monetize services in near-real-time. So, if every conceivable service that I require is available at one megastore on my cell phone, I would turn to my service

provider to enjoy an omnichannel experience. For enterprise users, digital service providers can support mission-critical applications such as surveillance of deep sea oil and gas field assets or enabling robotic surgery via best-in-class, always-on, secure video capabilities. Such a bespoke service can be eminently monetized if the service provider is acutely cognizant of the latency and security of the network. We are looking at different horses for different courses. Some players may leverage telemedicine in niche areas of healthcare. In the Netherlands, one company uses AR to help cardiac patients or their attendants locate automated external defibrillators all over town. Other players can focus on platforms for smart cities. Governance can be smooth only when digital becomes a part of the social fabric. Did you know that Jun, a town in Spain, has zero bureaucracy? The residents of Jun use Twitter for almost everything — from booking a doctor's appointment to reporting petty crimes. The future is waiting to be seized by a new breed of digital service providers. If you allow me to indulge in some more crystal ball-gazing, I predict that leaders will emerge from traditional telecom companies that have made the transition to communication services providers and then morphed into digital service providers. Having said that, I do not rule out a rank outsider disrupting the pecking order! Avi Kulshrestha: Thank you Peter. We live in interesting times! =====================

The Changing Role of Telecom in a 5G World

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/telecom-industry.html ----- Insights Industry Stories Traditionally, fixed and mobile telco operators have enjoyed particularly high EBITDA (earnings before interest, tax, depreciation and amortization) margins; much higher than those of other value chain players such as handset manufacturers, network tech and infrastructure players, and media/content providers. These high margins, however, have incentivized other value chain players to dip into this market and gain a share of the pie. Digital native companies such as Google, Facebook, and Skype that form part of the telecom value chain are quickly disrupting the telecom industry and squeezing profits. These companies have been great at finding smart ways to monetize data and customer demand by building products that people want to use. As it struggles to hold its ground in the new reality, 5G technology could provide a fillip to the telecom industry to make the transition from being a connectivity provider to becoming an ecosystem integrator. 5G: Limitless possibilities People have begun to understand the tremendous potential of communication and its ability to disrupt industries. Slowly but surely, we are seeing communication/telecom make the transition from being just another industry vertical to becoming a horizontal. Communication now impacts industries across the board from financial services to energy to healthcare. 5G is rendering communication as a foundational industry that serves other industries. Let's take oil and gas as an example. Drilling is one of the most expensive and resource-intensive processes in the oil and gas industry. Typically, the process begins with the drilling personnel getting the required

download/ briefing regarding the drilling site in terms of terrain, depth, sensitivity etc. This briefing happens offline, possibly at a command center. Post this, the drilling process begins on the ground, often using highly expensive, rented equipment. Frequently, the drillers find some discrepancy between the stored data and the actual situation on the ground. In such a situation, they need to head back to the command center, record the changes that they find and then draft the new plan before proceeding with the drilling. Needless to say, this is a highly inefficient process that often costs the company humungous amounts of money in the form of rentals, not to mention losses resulting from delays. Given the volume of data that needs to be transferred, existing connectivity technologies simply could not handle the load. But with 5G, it is possible to ensure near real time connectivity between the driller and the command center, thereby facilitating an autonomous drilling process that is much faster and cheaper than existing processes. Telecom as the Ecosystem Integrator Telecom companies, by offering a stack of offerings beyond mere connectivity, can remain highly relevant and valuable to their enterprise customers. Currently, the switching costs are quite low for enterprises that would like to switch networks. If the telecom service provider takes on the role of an integrator, it has the potential to become a critical supplier in the ecosystem of customers, increasing stickiness. Becoming an end-to-end integrator of solutions isn't an easy transition for telecom players. The basic DNA of the business needs to change from being a connectivity business, in favour of being an ecosystem business. This means offering advanced services, networking slicing etc. and driving a much deeper customer engagement. This is certainly not an easy transition. Coordinating with multiple partners can be very challenging. In addition, they will need to build the technical skillsets required to support the new business model, not to mention the mind-set shift. The time is ripe for operators to look inward and review their own readiness in 5G deployment. What are the organizational changes required to introduce new business models? How can they operate in an ecosystem driving cross industry collaboration, consortium models, and platform opportunities? The bottom line is that the telecom industry is set for a digital disruption, and 5G will lead the path for its transition into a new era.
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The Bank Is Open For Business

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/the-bank-is-open-for-business.html ----- Insights Industry Stories This week, Australian bank Macquarie announced the launch of its Open Banking platform, joining the ranks of financial institutions with similar initiatives. So what's the fuss about? As the term suggests, Open Banking believes in democratizing access to banking data, and making it available in real-time to customers so that they can manage their finances better. Open Banking relies extensively on the use of Application Programming Interfaces (API) to securely share customer data among banks, as well as allow third party developers to access the bank's technology environment to build innovative applications and services. But above all, Open Banking marks a significant shift in banking structures, as it forces monolithic, universal banking

institutions to make way for a collaborative ecosystem of financial providers. Unlike most business trends, which feed off consumer, technology or competitive changes, Open Banking draws its momentum from regulation and governmental drive. Examples include the Payment Services Directive 2 (PSD2) in Europe, the Open Banking Working Group in the United Kingdom, the Unified Payments Interface (UPI) in India, and the Open Banking regime in Australia. Faced with a deadline to open up their customer data, banks around the world are scrambling to get their act together. A big part of this process involves transitioning from a pipeline model of business – where the bank creates, owns, and distributes its products and services on its own – to a platform model, where it acts as an aggregator of the best financial products and services available in its market. In doing so, the bank is able to offer customers, products and services that are in their best interest (not necessarily from its own stable), to create maximum value for all concerned. Typically, a bank can go from the pipeline to the platform model using any or a combination of the following strategies: Embed services in an application chosen by the customer The most popular strategy is to use APIs to expose various banking services that corporate and small business clients, or even third parties such as FinTechs can pick, choose and structure as required. This presents a challenge to the bank, which must now find a way to embed its services in the users' applications, form factors, and business processes to enable them to add value to their customers. A number of banks, including BBVA, Barclays, Citibank, and Deutsche Bank are setting up API stores/ marketplaces and development centers for this purpose. Join an established ecosystem With tech giants emerging as a force to reckon with in the payments space, it makes sense for banks to be part of an ecosystem led by Apple Pay, Amazon Pay or PayPal. While this decision is voluntary, banks may also be required by law to join other ecosystems, such as the Unified Payments Interface in India. Take the lead in curating an ecosystem Several banks have taken the initiative to build their own Open Banking ecosystems. Recently, seven banks in Singapore came together to create PayNow, a money transfer facility that only needs a mobile number or National Registration Identity Card (NRIC) to work. HSBC has its HSBC Connections Hub, a social network that business customers can use to connect with other HSBC customers worldwide. Last year, Deutsche Bank pioneered a digital platform for SME clients where they could access benchmarking, business intelligence, credit monitoring, and trade information tools. And in October 2016, ICICI Bank and Emirates NBD, one of the largest banking groups in the Middle East piloted a Blockchain-based network for international remittances. Provide banking as a service FinTech firms and startups are key actors in the banking ecosystem. Actually, no platform strategy is complete without their participation. This is why many banks are seeking to combine their strengths with those of FinTech companies and neo banks to create a banking offering. In this symbiotic arrangement, the younger partner relies on a licensed bank for basic banking components, such as technology stack, operations, network connections and compliance, all of which the latter offers as a service, on top of which the FinTech firm builds new customer experiences and value propositions. The Moven-CBW combine, and Fidor Bank's tie-up with telecom company O2 are examples of this. Open or ecosystem banking will benefit customers by expanding their product options, and financial service providers by expanding their reach. But there are a few hurdles along the

way. At present, each bank defines its APIs differently, which hampers integration and interoperability, and generally defeats the whole purpose of Open Banking. Bodies, such as BIAN (Banking Industry Architecture Network), are working hard to remedy this situation by formulating clear, standardized definitions for various banking APIs. Infosys is also helping banks transition to a platform model by offering a broad selection of open APIs and applications, facilitating engagement with FinTech firms, building an applications marketplace, as well as creating a core banking-agnostic omni-channel hub through which banks can distribute their own and third party partner products. Learn more about our offering for the financial services industry >> =======================

The Future of Consumption – A Closer Look

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/the-future-of-consumption.html ----- Insights Industry Stories I have a friend who still has a Betamax player from the 1980s. During that decade he enjoyed picking up videos from the rental store to watch movies at home. After a while the rental store only carried tapes in the VHS format. About two decades later, the store, and many like it, closed. At that point, people were overwhelmingly choosing to order movies to watch on their DVD players. Today, of course, that consumption mode has been largely replaced by movie streaming services. If you look at that vintage Betamax player, you will realize just how rapidly a seemingly healthy market can be disrupted. Technology has been impacting consumption - time and again. What has changed, however, is that the new technologies are replacing not only physical labor and mundane jobs, but what our minds are capable of too. And unlike the three-decade transformation of home movie consumption, the pace and scale of technological change today is dizzying. Decades? Try months. The Internet of Things, mobility, artificial intelligence, robotics, virtual reality, augmented reality, chat-bots, sensors, and more recently, blockchain have precipitated new methods of consumption such as the sharing and the on-demand paradigms. As organizations leverage technology to stay responsive to their customers, here are four considerations they would do well to address: Catering to millennials is a double-edged sword. This youngest of consumer groups can be demanding in terms of instant gratification. But their other demands such as personalization and transparency about the provenance of the goods they buy have revolutionized the retail experience for the better. Blockchain, for example, is being embraced by a wide range of industries. To illustrate just how powerful and game-changing blockchain can be, let us take the example of the complex global fish market. With blockchain, a fisherman in Indonesia can record the date on which he caught the tuna and its quantity, and through the many trails in the global food supply chain, a shopper in the United States can, on her smart phone, verify the exact place, time, and circumstances in which the fish she is about to buy was caught. If a consumer at a supermarket can tell that the tuna was sourced irresponsibly, she won't buy it, causing a chain reaction that will impede questionable

practices half a world away. Bricks-and-mortar or online retail? How about both? Technology has given consumers the power to decide when, where and how they access a product. Indeed, omni-channel has become the new normal as digital natives (mostly millennials) demand insurance, banking, and retail products anytime, anywhere. The challenge for those consumer-facing enterprises is not only to figure out how best to deliver seamless services both online and in person, but also to respond to every subtle change in the fast evolving consumption patterns. Algorithms are recreating the retail store online through a virtual shopping assistant who makes recommendations based on past shopping history. But consider Amazon Go, a new type of grocery store, where you show up and walk around a beautifully laid out bricks-and-mortar location, pick out your food, and then walk out, while the groceries are delivered to your residence. Amazon, it seems, is leaving no stone unturned to make it fast and easy for customers. When their 30 minutes delivery through drones go into commercial operation, Amazon would have given new meaning to omni-channel. However, they are not about to stop here. Flying warehouses ("airborne fulfillment centers") are set to partner their drone delivery service, which is slated to crunch the delivery time further. So imagine sitting in a stadium, ordering a jersey and receiving the delivery before the game starts. This would definitely redefine omni-channel. Being able to unlock your door and turn on the climate control system in your house from your smart phone, right before you begin your drive home is a luxury offered by the Internet of Things . Yet a recent report by an international research firm, Parks Associates, reveals that 60 % American households with broadband connections are concerned about the security of smart home devices, with 45 % being very concerned. Sometimes it seems that technology, especially involving connected devices, has outpaced the ability to keep it secure. IoT will become a commercial success only when companies offer robust security measures as part of their smart home devices. Retailers are also on thin ice when it comes to privacy. Beacons and sensors detect when a customer enters a store and make shopping interactive through prompts and suggestions. In addition, data is also collected online. But how does a retailer use this information to offer a pleasant personalized experience with unknown quantities of information? The solution lies in ensuring transparency. Letting the consumer know when information is being collected and how it will be used, and giving him a choice to opt-in for a personalized interaction, and above all, establishing stringent security measures against hackers and data thieves. With increasing automation, the question is, what will folks who are freed up as a result, do? How can they be reskilled to complement the automated tasks? A recent study on AI adoption commissioned by Infosys has revealed that for the full benefits of AI to be realized, investment in the workforce including new job creation, education, and skills development are critical areas. Majority of the respondents, 80% globally, said they will re-train and re-deploy employees with jobs impacted, and 84% plan to train employees about the benefits and use of AI. Of course we have positive experiences with job automation in history as well. In 1900, 40 % Americans worked the land as farmers. Today the country produces more food and grains than ever in its history, but thanks to automation, the American workforce is scattered across technology, banking, retail, healthcare, and other sophisticated sectors. With automation set to impact millions of jobs in the future, governments will

have to take a closer look at new industries that can be developed and realign education to the new needs of these industries and technology. I see the private sector playing just as important a role here in helping governments plan the future needs of infrastructure and investment, sometimes for entire industries based on changing requirements. And what better place for such discussions and collaborations to shape the global socio-economic agenda than WEF Davos, from where I write. This gathering of representatives from governments, corporates, start-ups, non-profits and other influencers from across the world, helps ensure a multi-stakeholder dialogue to evolve our world in a responsible and inclusive manner. Reinvent, Reimagine, #RethinkRetail with Infosys offerings >> =======================

Preventive Medicine, the Future State

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/the-future-state.html ----- Insights Industry Stories The pharmaceutical industry is in a state of flux. Besides a dwindling drug pipeline and patent expiries across the world, one of the biggest concerns for the industry are the spiraling costs of research and development, necessary for new drug discoveries. Plus, the end customers of the pharma sector, including governments, patients, and insurance companies, are becoming increasingly reluctant to pay the escalating prices for new medicines. They are demanding more value for lower prices. This sea change raises concerns for the pharma industry that is already facing issues with the existing pharmaceutical model, which is not likely to yield traditional profits or meet these growing demands. Thus, the industry has started looking for a sustainable model. Non-communicable diseases such as cancer, diabetes, and heart disease account for about seven out of ten deaths in America and are responsible for nearly 75 percent of America's health spend. Preventive medicine can help reduce these numbers. At the industry level, the practice of preventive medicine, as opposed to the more traditional reactive medicine, helps decrease the cost of patient hospitalization, which puts a huge burden on the system. The burgeoning field of preventive medicine is a multifaceted system that depends on the collaboration between Big Pharma and start-up biotech's, as well as corporate HR departments and their wellness programs, occupational medicine, and public health officials. The success of preventive medicine depends on such a large ecosystem – especially on the collaboration of private enterprise and public institutions – and of course, leveraging the new, emerging technologies in big data, analytics, and digitization. Novo Nordisk, a multinational pharmaceutical company based in Denmark, has embraced preventive medicine in an exemplary fashion. Working with the company's partners, including policymakers and health organizations, they are raising awareness, improving access to care, and investing in research. Its program, 'Cities Changing Diabetes,' explores and develops effective ways to address the issue of diabetes across metropolitan areas. It has become a roadmap of sorts for pharmaceutical companies to put preventive medicine into

practice. Today, the technology exists that allows companies to analyze client genome information, clinical or biological makeup, and lifestyle issues. All these factors are combined to prescribe suggestions that are tailor-made for the client based on her genetic composition. Arivale is a biotechnology company that has made big strides in this area; and according to Clayton Lewis, its cofounder, the key focus for the company is to offer solutions that enable the prevention of diseases. Another company, Quanterix, has developed a technology platform with single-molecule sensitivity that helps identify the presence of proteins released in the presence of diseases, even before the symptoms show up. For instance, potential heart attacks can be diagnosed with Quanterix's technology, which measures the presence of a protein called troponin before the person experiences the attack. The global pharma giant, Eli Lilly, has undertaken a critical double-blind study in which the company discovered encouraging data that has proved that investigational medicine for migraine prevention can help not just prevent migraines, but also cluster headaches. Most patients suffering from debilitating headaches like migraines, currently get relief only with strong drugs. A preventive medicine for a condition like a migraine can go a long way in allowing sufferers to lead relatively normal lives. Many revolutionary technologies are coming together to enhance health, medicines, and caregiving in general. The most fascinating aspect, of course, is that these advancements tend to originate in the information technology sector. The same technology that knows that a customer prefers a certain make and style of shirt in a store, and is instantly sent a customized offer to his mobile device while he is in a shopping mall, is what is set to transform the health and welfare of human society. These technologies, which can make short order of the biggest of big data in nanoseconds and pinpoint treatments and medical courses of action, are the tip of the iceberg when it comes to preventive medicine. Surveys indicate that a majority of the people are keen to monitor their health. The availability of health-related information on the Internet, including esoteric data, as well as some popular wearable devices – such as Fitbit and Apple Watch, which are track daily activities and corresponding bodily functions – have led today's consumer to be more aware about health. This awareness, in turn, has encouraged people to become more oriented toward preventing health problems and diseases. Back in 2007, the concept of `Quantified Self' was started in the Bay Area, advocating the use of technology to track a person's daily activities in order to measure wellness and health. IT is providing the technological framework that allows the design of personalized treatments based on family histories and genetic indicators. Because of IT, a patient can go beyond `self-tracking' and now has the option to find out about a disease she is prone to contract. Additionally, her doctors get the opportunity to manage the disease at an early stage. From that perspective, preventive medicine is empowering people to be more conscious about their health and lifestyle. Such encouraging instances notwithstanding, life sciences companies have been wary of making big investments in drug R&D programs that focus on preventive medicine. Companies are uncertain about how evaluation and approval of preventive drugs can be done on time, and marketed to the right audience. Some of the questions holding them back are: These questions are valid concerns to explore. Pharma companies should make a consolidated list of the core competencies they possess and the areas of disease prevention they can handle. If there are areas that they cannot address, they

can perhaps collaborate with other companies that have competencies in those areas. Doing so will save both time and effort. Let us examine some of these concerns and provide some perspectives. With disruptive innovations, newer business models will emerge. Let us take the example of the curative drug Sovaldi, to address this question. Considering the cost and the uncertainty around a cure will be factors at play in preventive drugs – just like Sovaldi. This drug has had an excellent track record of curing Hepatitis C. It costs about US$1,000 a pill, and a grand total of US$84,000 for the complete treatment. Gilead, the pharmaceutical company that created the drug, priced Sovaldi accordingly. The pricing strategy seems to have worked; enough people are willing to pay the US$84,000 to cure themselves of Hepatitis C. Sovaldi, an antiviral treatment aimed at people who already have the disease, does not work universally. However, in many cases, Sovaldi can cure those afflicted with the deadly and debilitating Hepatitis C virus. It will be a far different situation in a country like India. In the case of Sovaldi, the Indian government would not allow Gilead to use its American pricing strategy, considering the context of affordability will completely change in a developing country. It has been mandated that the entire course of treatment – US$84,000 in the United States – be lowered to a total of US$900 in India. So who would absorb the cost if the discount is that steep? It would have to be the insurance companies and the government. The taxpayers will be paying for the drastically reduced cost of the treatment program, and insurance companies will pass on those extra costs to the consumers. In the end, Gilead would recover the cost of its expensive drug, no matter who pays and at what point in the process. For curative medicines, there has been a direct connection between the drug and the patient with a specific disease. For preventive medicines, there is now an indirect connection between the drug and a healthy person or a person who is susceptible to the ailment. Elias A. Zerhouni, MD, who led America's National Health Institutes and Centers from 2002 to 2008, in an interview during his NHI leadership, outlined what was then the upcoming field of preventive medicine. He accurately predicted that we are in a revolutionary period of medicine and referred to the `four Ps' of medicine – predictive, personalized, preemptive, and participatory. The four Ps require patient involvement well before the disease strikes, as opposed to the doctor-centric, curative model of the past. The future, he said, is going to be patient-centric and proactive. It must be based on education and communication. Still, these factors will bring about complexity when it comes to regulations. Development of genomic analysis is precipitating, along with preventive medicine, the development of personalized and precision medicine. The significant shift in thinking and approach is towards truly individualized care. Instead of a one-size-fits-all medicine, which can lead to unnecessary and even harmful treatments for some patients, advanced genomic testing devotes its attention to studying a single individual – the patient whose tumor is being tested. When a study group has just one participant, scientists can focus all their efforts on attacking that patient's tumor at its source, that is, the mutations coded in the person's DNA. Let us take the example of cancer treatment. The traditional approach is that cancer is defined by where it occurs in the body (e.g. lung cancer). Then, the treatment that follows is directed toward the lungs using various types of chemotherapy. In recent years, though, researchers and physicians have found that a particular cancer in one patient doesn't

necessarily behave the same way in another patient – even though the cancers are in the same location. Some cancers even bear similarities to cancers that were once thought to be completely different. Breast tumor, for example, may look and act like a lung tumor. By looking at the tumor's genetic profile with genomic testing, physicians might be able to recommend a drug or protocol not previously considered. Imagine using a traditional breast cancer therapy to prevent a lung tumor. Another approach with enormous potential is what is known as chemoprevention, which is the use of various agents to stop the initial phases where cancerous cells begin to mutate. Interest in this area of research has spiked because doctors are increasingly understanding the biology of how cancer begins and how they identify potential molecular targets. When people know about their vulnerability to diseases, they will be more likely to discuss prevention with their doctors. The market for preventive medicines will function in a pay-for-outcome model, among others. An existing example of this model is the Social Impact Bond (SIB), also known as a Pay for Success Bond or a Social Benefit Bond. Whatever the name, think of the bond as a kind of contract between an investor and a public sector that is committed to improve social outcomes. The idea here is that improving social outcomes translates into public sector savings. In such an arrangement, the private sector pays for smaller-scale, exploratory social interventions. If the specific program goals are met, the investors receive a payout. As these programs prove themselves, they can eventually be considered for use on a larger scale with public sector funding. SIBs are not as common in the United States as they are in the United Kingdom. In a report released in April 2016, Mark Pauly, a professor of healthcare management, economics, and public policy, at the University of Pennsylvania's Wharton School, along with his colleagues, studied the potential for Social Impact Bonds in the pharma industry. Professor Pauly concluded that for SIBs to work in this industry, there would have to be a concrete, provable cost reduction in a program. Another success factor would be to engage investors in the projects. Better still, private entrepreneurs might be inclined to accept lower returns than they might in a traditional investment because they are investing in the name of altruism. But they do not want to settle for zero returns, either. Having private sector investors tends to ensure that project is not only funded, but carried out successfully. An American project, Social Finance, is currently working on a pilot program that it hopes to turn into the first major healthcare SIB in the nation. It is based in Fresno, California, which has one of the highest rates of asthma among American children. According to a report by Healthcare Finance News, 20 people are treated every day in the emergency room for asthma complications at a cost of some US$35 million annually. Members of Social Finance are working with 200 low-income families to provide education and home care to reduce environmental factors that can aggravate asthma. Their goal is to reduce emergency room visits by 30% and hospitalizations by 50% over the course of a year, which the group estimates could save US$5,000 per child annually. Insurance claims data will be used to measure cost savings. Indeed, as the pay-for-outcomes paradigm becomes increasingly successful, people who eat healthy and adopt healthy lifestyles will receive attractive incentives for doing so. Preventive medicine is taking shape in markets that can afford access to cutting-edge IT. Therefore, it has the potential to become a truly global solution, especially when integrated with the existing systems in

developing countries, such as telemedicine. The retail, manufacturing, aerospace, and financial services industries are using software, hardware, and big data-crunching programs as keys to unlocking solutions to decades-old problems. So too, are leaders in the life sciences and healthcare sectors – specifically in the context of preventive medicine. This new way of approaching health and wellness will be a fundamental transformation, not only in the way the healthcare ecosystem operates, but in collective attitudes toward health. Learn about our offerings for the Life Sciences industry >> ======================

The New Challenge For Retailers: Delivering Online Convenience With In-Store Personalization

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/the-new-challenge-for-retailers.html ----- Insights Industry Stories I recently caught up with Anna, a regional manager of a leading retail brand. Over coffee, our conversation steered towards the mounting pressure on retailers to focus on extracting insights to improve in-store experiences for customers. Today's shoppers - the millennials, aging baby boomers and the general affluent population - seek personalization, convenience, accessibility as well as 'shareable' experiences'. It is common knowledge that retailers need to know their customers as individuals, not by segments or even by micro-segments, to provide truly personalized service. One example is Under Armour, the popular fitness and sportswear brand. They created a host of apps, MapMyFitness to track every run, walk, hike, and gym session of a user. Endomondo motivates a user and enables them to reach their goals. And to back this up they also have MyFitnessPal, a food diary and nutrition tracker. With thousands of fitness-conscious users of these apps, Under Armour gathers huge quantities of data on their users habits and wellness lifecycle to personalize their offerings to each apparel customer. Anna had a question: 'How do we focus on customers while addressing operational challenges?' Let me share what I told her. While brick-and-mortar stores still account for a lion's share of the industry revenue, more shopping is happening online than ever before. In this scenario, it is imperative for customers to have a superior and personalized in-store experience, which complements their on-line experience. Retailers need to enhance their omni-channel shopping experience. We need to create a digital environment that enhances the in-store experience. It may be the reason why Amazon, the flag bearer of e-Commerce, is investing in Amazon Go, its convenience sans checkout queues and cashier. Anna wanted to know, 'How does Amazon predict their customers will visit the store?' and 'What will drive Amazon Go?' The crucial link between a customer's needs and experience is data. We need to accept that a shopping trip begins much before footfalls. Your shopper may have 'liked' a jacket or read reviews about the new protein supplement before walking into the store. And perhaps, has ordered the jacket online and is visiting the store to pick it up. A data-driven store with insights into lifestyle and preferences can enhance

the in-store experience by presenting a real-time offer for accessories. Virtual agents can help with the customer's selection, which the shopper may double check with a friend before making the purchase. Several retail brands are refurbishing their stores with technology since it enables them to engage with millennials while rationalizing costs. Fitting rooms and 'magic' mirrors for virtual trials allow retailers to engage shoppers, with interactive digital technology. Burberry and Sport Chek outlets provide an immersive shopping environment. Crate & Barrel's 'Mobile Tote' blends the in-store and mobile experiences by letting customers use tablets at the store to learn about products and create a wish list of items. Target is in the process of creating several new 'flex format' stores - with a unique store design and relevant, curated merchandise. These flex format stores enable shoppers to order online and pick up the items at the Target store near them, they will be able to access a larger assortment of products, self-checkout and even relax at the in-store café. The key ingredient to making an omni-channel strategy more relevant and an in-store experience more meaningful is customer data. The best retailers spend a lot of effort understanding their customer demographics and micro-merchandising. Some grocery retailers even change their assortment of products every 3 miles. The 'right' data delivers the right product at the right price to each customer. Costco and Trader Joes have an aggressive pricing strategy and a few stock keeping units but their sales are high volume and it is the right pricing and that element of surprise that keeps them competitive, growing and loved by their customers. In-store personalization encourages impulse buying. However, to convert an opportunity into actual sale, you should identify the persona of customers, understand their requirements in real time, and offer contextual recommendations while they are still in the store. Advanced analytical platforms with machine learning and artificial intelligence enable hyper personalization. In this case, data is stored on every product purchased by an individual shopper on every trip to the store. This would amount to a huge quantity of data at the product and category level, location where it was purchased, and frequency at which it was bought. It would also require a fair bit of computing power to calculate a brand loyalty score and discount propensity score, but would give retailers invaluable intelligence on each shopper so that offers can be timed and personalized to the day. In turn, retailers can plan sales and project returns. TJX, Costco and Trader Joes thrive on an element of surprise. Customers don't know what they will find at the store and how long a product is going to be there. This effort of the retailer to stay relevant keeps shoppers returning to their brick-and-mortar stores. Retailers should also integrate the seamlessness of digital commerce with the in-store shopping experience. Physical spaces should deliver tangible value. A counter for return and exchange of products bought online is an opportunity for on-premise personalization, upsell and cross sell. Dedicated space for in-store pick up of online orders is a must until the Amazon Go (no) checkout model becomes a success. I told Anna that the key to staying relevant would be to combine the convenience of online shopping with the amenities and experiences associated with the brick and mortar retail formats - food for thought until we meet again. Reinvent, Reimagine, #RethinkRetail with Infosys offerings >> =====================

Now is the Time for Digitalization in the Oil & Gas Industry

The oil & gas industry has never had it easy. Fortunes rise and fall with the price of each barrel of oil that arrives in the market. Subject to the 'Boom & Bust' economy, with every lay off and loss incurred during low oil prices, the industry awaits the inevitable rise in the price of oil in order to make investments that will yield returns, and thereby profits. In between, the industry has to cope with a spectrum of challenges - long gestation periods, geo-political uncertainties, government policies, financial recessions, and natural disasters. This is the way things have been for over one hundred years. In recent times, the rise of shale oil production in the USA and competition from increasing investments in renewable energy technologies like solar and wind has made the industry more vulnerable. The boom of $100+ a barrel is over and $50 - $60 a barrel is the new norm. But things are set to change dramatically and for the better. Drilling into IT for efficiencies Oil stalwarts can no longer wait for the 'Boom' to happen. The industry needs to unlearn what it knows and find a way to be profitable at $50 a barrel. It is important to recognize that the industry's ability to invest in innovation is sensitive to the price of oil. During the downturn that began in 2014, when prices dropped to the $30 range, companies were simply focused on keeping themselves afloat with positive cash flow. But with the current price at $60, the very same companies are now at a turning point, where they can afford to make investments, however modest, in innovation to help them be more competitive. In fact, even if the prices were to go up to $80 or $90, there is little likelihood of companies going back to doing things the old way, which was to strive for maximum profits with more production rather than earmark a larger budget for innovation. Traditionally, IT investments made by the oil & gas industry were restricted to managing information systems and streamlining processes around support functions like HR. They were rarely used to improve the bottom line. The 4th Industrial Revolution is promising new ways of driving efficiencies in the industry to insulate it better against a volatile ecosystem. It is compelling the CTOs and the CIOs of oil & gas companies to join hands to find better ways of doing things at the field level in order to tide over fluctuations in the price of oil that often threaten their very survival. Companies have started investing in digital technologies like Big Data, Analytics, Automation & AI, 3D printing, Internet of Things (IoT) and more in order to optimize core operational activities like production, maintenance, safety, and asset management by integrating IT with operations. More importantly, availability of new business models such as Pay as You Use have made it possible to invest in the new technologies without committing to huge investments. Key strategic imperatives in the digital journey Scalable IT: Digital technology is not new to the oil and gas Industry. The digital oil fields (DoFs) are over a decade old - connecting remote oil & gas fields to operations centers from where asset performance could be monitored and decisions made based on real time data. What is new in the digital space within the oil and gas industry is different consumption patterns and flexible

pricing being offered by software companies. It is the new focus on IoT, machine learning and analytics; the change in attitude within the industry which is now considering outsourcing 'innovation' to partners because they see the value in digitalization. And through it all, it is the concept of scalable IT. The Cloud based As-a-Service model has opened up very attractive options to oil companies that have thus far been susceptible to the boom and bust cycles. With this model, one need not worry about investments lying idle during a downturn nor make additional investments for scaling up when the boom arrives. Infosys AI Report: Opportunities 60% of O&G already experiencing disruption due to AI technologies 79% organizations' future business strategy will be informed through opportunities available by deploying AI technologies Source: Infosys AI report Digital Technologies: Digitalization is used to create a singularity between the physical assets and the associated data which is collected in real time and then analyzed, visualized and utilized for taking business decisions that lead to greater efficiency. It is about industrial internet (automated remote operations), unmanned aerial vehicles (real-time information from remote installations), cognitive computing (appraising exploration blocks), robotics (pipeline leakage detection), augmented reality (visualizing complex equipment), nano-technology (self-healing pipelines), or 3D printing (on-demand parts replacement in remote locations). It is about moving towards a world where the digital and the physical merge to provide information that is real-time, relevant and actionable for the workforce in order to make informed decisions. In this context, exploration has a new connotation in the industry. It is about drilling deeper into IT enabled capabilities to find new value in their business. It is about being the first to explore technologies that can transform business beyond simply managing systems or storing information. It is about using it to: Lastly, exploration is about using technology when you need it, and at costs you can afford so as to be free of the booms and the busts of the industry in the years to come.

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How Banks can Transform User Experience

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/transform-banking-user-experience.html ----- Insights Industry Stories HSBC Bank had a great mortgage product, but back in 2015, a litany of customer complaints showed a high level of dissatisfaction with the product. Interestingly, 73% of mortgage complaints were regarding the application process and processing of new mortgages. Customers complained about being kept in the dark on the status of their application. Based on a thorough root-cause analysis, the bank worked on a process overhaul to improve customer experience. Sure enough, in two years, the bank was able to bring mortgage complaints down by 40%, which meant 15,000 fewer complaints per year.1 As the example demonstrates, user experience has emerged as an important focus area for banks. Customers today are exposed to Amazon- or Uber-like experiences that are highly intuitive and user-friendly. It's only natural that they expect similar emphasis on user

experience from the banking sector as well. Of course, banks need to deal with greater regulatory and compliance requirements compared to most other sectors, which limits them to some extent. But having said that, it will certainly serve banks well to put more emphasis on the user experience and map the user journey. For instance, when a customer interacts with a bank, whether remotely or in person or over the telephone, it is important to ensure a seamless experience. As in the case of HSBC, the entire process for closing a mortgage should be as easy and quick as possible. From the information capture stage to "know your customer" (KYC) to determining the amount of mortgage that the person is eligible for to closing the deal, the entire process should be seamless and quick. For most banks though, the current processes they use is quite cumbersome. Ease of doing transactions means that even customers who are not digital natives or digitally savvy should also be able to conduct transactions intuitively, as long as they are connected. In India, mobile wallet providers such as Paytm are disrupting the market by enabling users to conduct monetary transactions with ease using simple steps on their smart phones. In the process, they are also collecting huge amount of data on spending patterns – something that only banks were privy to earlier. For banks, this presents several challenges. How do they ensure that they deliver the best possible user experience to their customers and own the customer relationship? In short, how do banks prepare for the new generation of customer? Below are a few suggestions: Agile approach In the age of rapidly evolving customer preferences, taking an incubation or pilot-based approach to launching new offerings makes immense sense. An Agile approach to launching new services, such that they have short completion cycles with plenty of opportunities to collect feedback, works best. Banks can make some iterations, build surveys, check on how they resonate and then bring new services to the mainstream, rather than going full-steam ahead. Be cognizant of privacy regulations While user experience is important, it is crucial that banks do not lose sight of data privacy and regulatory regimes. Ensuring that best practices are strictly adhered to is key. For instance, banks need to get explicit consent from customers to use their data for analytics purposes. Avoid a big bang transformation When it comes to user experience transformation, one size does not fit all. Given the dynamic nature as well as diversity of customer preferences, taking a big bang approach to user experience transformation rarely works. Instead, a more evolutionary approach of defining detailed user journeys or journey maps for each offering or product, and looking at transforming each of them individually might be the way to go. At a macro level, there are likely to be not more than 15 to 20 of these journeys. What's applicable for wealth management wouldn't be applicable for investment banking or retail banking. The way that consumers interact in each of these segments will be very different. In many cases, the underlying components may be the same, but from a user experience point of view, the treatment needs to be different. In the end, it helps to remember that UX is not all about jazzy screens and fancy features. Any attempt at user experience transformation will be impactful only if you have the underlying data analytics to support it. Therefore, taking a holistic solution-centric approach to user experience that balances customer preferences with regulatory requirements will be the key to success. =====================

The Uber Effect On The Food Industry

Insights Industry Stories Startups with a loyal user base are entering the food delivery business. Digital enterprises such as Uber, Sprig and Good Eggs are combining accessibility and cost-effectiveness with unique offerings, such as healthy meals, organic ingredients and fine-dining experiences. On-demand food delivery companies provide an interesting learning for the operations-intensive food services industry: strike a balance between simple ordering and prompt fulfillment. The pioneers manage orders as well as customer expectations with technology as the main ingredient. Customers have an appetite for quality, but not at the cost of convenience. A digital order management system built on responsive design principles and mobile-friendly frameworks makes it easy to place personal as well as bulk orders via any device. It offers intuitive navigation, anticipates the consumer's tastes, and recommends products. When a customer orders seared fish and salad, the system can suggest a sauce that enhances the meal. A hospitality enterprise placing an order for weekly supply of poultry, vegetables, flour, oil, and cling wrap film, will save time, and maybe even another order, with an alert for drinks, fish and spices. Advanced digital systems combine simulation tools, geospatial analytics, machine learning, and artificial intelligence to curate shopping lists and fill gaps in a shopping cart based on purchase history or macro buying patterns. It can also help chefs plan a menu by presenting themes based on preferences, ingredients or nutritional value. Operations managers can analyze customer sentiments on social media and respond with a revised menu and better service. Robust order management platforms support chatbots and natural language processing to simplify ordering as well as payments. A digital ecosystem delivers more than nutritious meals. An elaborate menu can incorporate distinctive features for each customer segment. A nutrition calculator app can allow health-conscious consumers to select items best suited to a specific diet plan. An interactive display of food colors will appeal to small bakers, who need to focus on presentation as much as taste. Consumers loyal to products sourced responsibly can be offered sustainability information along with product descriptions. Restaurant procurement specialists favor food shopping apps that blend the virtual and physical environment for on-the-move purchases. Digital food ordering systems unify data from the kitchen, suppliers, customer service, accounting, point-of-sale, warehouse, and promotion plans. Seamless data flow across business processes helps food distributors better manage inventory, services and resources. It reduces errors in accounting, while enabling diverse payment methods for online orders. Deliveries can also be planned ahead of actual orders by anticipating demand for specific items, zip codes and time-frames. It helps optimize delivery routes, accelerate turnaround, and rationalize inventory and logistics costs. A centralized order management platform automates performance management and facilitates automation. Visibility into order frequency, demand patterns, cuisine preferences, and abandoned carts helps streamline the menu / product list, and sourcing as well as supply chain

strategies. Restaurants and food services enterprises need to take the lead in data management to make dining choices more accessible. The 'Uber effect' will help restaurants deliver what, when and where diners want to be served. Reinvent, Reimagine, #RethinkRetail with Infosys offerings >> =====================

Get a Complete View of Your Customers

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/uncomplicated-view-customers.html ----- Insights Industry Stories Organizations are constantly trying to know their customers better. Gaining a single view of customers, irrespective of the channel they chose to interact through, can be challenging but can go a long way in helping understand what customers really want. A US bank wanted to utilize the data from their millions of account holders to know how they could improve customer experience. See how Infosys helped and the five key takeaways from the project. =====================

Content is Still King, But User Experience is the Emperor

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/user-experience.html ----- Insights Industry Stories The Media and entertainment industry has seen extraordinary disruption while consumers have been among the biggest beneficiaries of the information technology revolution. With unprecedented access and a seemingly endless plethora of choices of entertainment platforms, today's consumers are spoilt for choice and increasingly forcing content creators and distributors to engage them in immersive experiences anywhere, anytime, and on any device. From Augmented Reality (AR) to Virtual Reality(VR) to live, immersive 4D experiences, and well packaged, personalized bundles of live and on-demand content, consumers are hungry for mind-blowing experiences. Worldwide shipments for AR and VR headsets is expected to grow to 68.9 million units by 2022 as per a leading analyst. The astounding success of Pokemon Go is a great case in point. Within less than a year of its launch, it had 65 million monthly active players. User experience is becoming a key focus area for the industry too, and the imminent 5G connectivity is a huge enabling factor. Customers today already have 24/7 connectivity through personal devices. Globally, there will be 3.5 networked devices per person by 2021, as per a report from a leading US based technology company. Also, the average traffic per person per month is expected to be a whopping 35.5 GB by 2021. And 72 percent of total internet traffic will be from non-PC devices. While quality content is still important, there is a greater emphasis on how the content is created and delivered. The infusion of technology in the creative process is enabling content creators to produce compelling and personalized content. Factors such as context, immersion, immediacy, affordability,

customization, spontaneity, shareability, privacy, security, are extremely relevant towards delivering engaging consumer experiences. So, while content still remains king, user experience has emerged as the supreme emperor in the digital world. The Industry Mantra – Adapt or Die For every organization in the media industry, the writing on the wall (or screen?) is pretty clear - creating new, personalized digital user experiences and finding ways to monetize them are the new priorities. A great example is one of our clients, a leading telecommunications company in Australia, which is launching a new media offering for their consumers, with a drone-based 360-degree capture for live sports streaming to give an immersive experience delivered in real-time over a 5G network. The solution captures live streams from cameras which are delivered to consumers in real-time, personalized to their virtual location in the stands with high quality 8K to 12K resolution (the current best resolution stands at 4K) on optimized bandwidth, via technologies such as foveated rendering and view optimized streaming. Similarly, media tourism is evolving to include 360-degree panoramic immersive views of destinations where the visitor can explore different viewpoints of his choice. Thus, viewers can get a truly immersive experience whether they are watching a sports event or the Great Barrier Reef. Delivering such experiences requires seamless orchestration of an extremely complex media supply chain and an entire 'glass to glass' intelligent media production, servicing, and distribution backbone to support it. In this new reality, success will belong to whoever can effectively own the customer relationship. Therefore, the winners will be those organizations that have Intelligent platforms, with personalized content, personalized ads, and adaptive offers to ultimately engage through differentiated experiences and monetize customer relationships. Enabling this disruption will need consideration of these four aspects: Convergence In the past, most of the content creation and media distribution was largely B2B. Now, everyone right from content owners (e.g. studios, Netflix) to distributors in the entire supply chain are looking to converge on driving the user experience. With a focus on attracting and engaging customers directly, each of them now needs to think about brand engagement, direct-to-consumer platforms, and end-customer experience. Much of this is driven through high quality content delivered on the most popular entertainment platforms while catering to the personalized consumption patterns of the users. Intelligent Media In the age of personalized and contextual media consumption, learning about customer preferences and monetizing them is key. In addition, there is an urgent need to drive efficiencies into the severely fragmented media supply chain. Given the turbulence in the industry, the classic media workflows and technologies are being upended by new age firms which has seen a wider adoption of cloud-based technologies and services by content owners in the last three years. Organizations are now starting to use cloud-based tools offered by AWS, Google, Microsoft, IBM, and many other smaller niche players like Greymeta and Veritone for facial/object recognition, ML, and contextual information for automatic metadata generation. They are also analyzing consumption data across platforms to record consumer preferences in real time. Efficient production With reduced time to market, focus on customization and cost pressures, the ability to produce and distribute content efficiently is critical. Retrieval of existing content for reuse in future projects can be a great way to save costs but retrieval is a challenge for content generators. Adoption of

standards like Interoperable Master Format (IMF) along with cloud adoption, automated intelligent metadata, video analytics, efficient mastering, archival, search and real time smart distribution play an important role in serving this on-demand supply chain. Efficiency in data and management of all the elements in the supply chain are equally important. In the age of day-and-date releases where the same movie is released across the world in 50+ languages on the same day, managing the entire gamut of sub-titles and dubs etc. requires a huge army of freelancers and translators. The cloud has enabled many leaders in the space to create user-friendly and secure platforms for the globally distributed team of contributors to perform their work, which is integrated seamlessly into the production supply chain. Post-Merger Transformation As cost and revenue pressures prompt consolidation in the media industry, there is greater emphasis on minimizing redundancies and ensuring a unified customer journey across all media consumption (theatrical, home entertainment, OTT/ Streaming). A data-driven digital strategy that presents a consolidated view of the customer will dictate the quality of user experiences and will ultimately provide the maximum intelligence to monetize user engagement. The above factors have been the key driving forces behind Infosys' endeavor to develop an end-to-end media pipeline powered with automation via machine learning algorithms and artificial intelligence from our Nia Platform. The platform is designed to address the practical needs of the media industry by streamlining content production, curation, and the delivery process. It encompasses the management of dailies, digitizing, smart encoding (including workflows for 360 content), post production, localization, transcoding, delivery, customer engagement, and monetization technologies; along with storage, networking, and a secure cloud-based infrastructure. With the platform, we hope to help our customers navigate their next steps with ease as they transform their media supply chain in the world of complex and rapid content production and consumption. In short, our platform aims to transform the ordinary into extraordinary via automation and intelligence. In this age of dynamic leaps in customer demands, the biggest opportunities for the media and entertainment industry lie in operational streamlining to reduce cost and free up cash flows while enabling a superior digital engagement experience for consumers. The new age of media is already here. It's time to innovate or get extinct!
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Three Key Questions for Successful Utility Customer Engagement

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/utility-customer-engagement.html ----- Insights Industry Stories The electric utility industry is rather unique. While millions of customers rely on it, most take it for granted that their services will be available uninterrupted and perceive that they have limited control over their electricity bills. Most retail customers engage with their utility only when there is a power outage, for

bill payment, or to effect a change in service. Consequently, the utility sector has lagged behind in digital customer experience and engagement capabilities compared to other industries such as retail or financial services. However, the era of the passive retail customer is ending due to a number of external factors. The increasing adoption of electric vehicles (new demand) and the popularity of rooftop solar installations (new supply) are forcing customers to be more aware - of their electricity usage, available choices on sourcing electricity and the impact on their monthly bills. The availability of innovative devices and smart appliances that provide greater control over energy usage and 'time of use' metering introduce new variables and more choices that have financial implications. The climate change discussion is also making socially conscious customers realize that they need to pay more attention to how their electricity is sourced. As a result, retail customers are demanding more information and interactions with their utility. What Prevents Utilities to be Customer Centric From a utility's perspective, there are significant benefits from increased customer engagement as this is the strongest protection against the commoditization of their services. However, utilities need to address some challenges before they can develop a successful customer experience program. For one, the data set within the utility customer information systems (CIS) regarding each customer is fairly limited. Also, customer engagement is typically around a specific transaction, for example, to learn if it makes financial sense to shift to rooftop solar generation. There are many competing players who are simultaneously engaging with the customer on these topics. Finally, in many cases, the data and insights delivered to the customer result in reduced consumption for the utility which makes it difficult to justify the investment. The Infosys Digital Outlook Report –Utilities (2018) has interesting insights in this regard: Based on the above data, this represents a significant improvement opportunity for utilities and they are looking to invest in customer experience programs. Here are three key questions that utilities need to address to build a successful program: What are the Opportunity Areas for Sustained Customer Engagement? Streamlining customer experience is a very important goal for utilities. Looking at the top reasons for customers to contact a utility and using the Eliminate-Automate-Streamline methods to enable these transactions is fundamental to any customer experience program. Going beyond streamlining these transactions, utilities will need to focus on solutions that improve customer engagement. Solutions will need to target real needs at the intersection of benefits to both consumer and the utility. Blindly imitating "best practices" from high-touch industries such as retail or financial services will not deliver results. Here are some areas of opportunity for ongoing engagement, Demand management: Utilities should make it easier for customers to understand their usage patterns, the choices they have to lower their consumption and their utility bill. This will help the utility to meet peak load management targets and energy efficiency goals. Beyond this obvious use case, there is an opportunity for developing new products and services in partnership with innovative product/service companies and emerge as an 'energy solution provider' with new sources of revenue. Green energy: Creating consumer awareness about their energy sources and giving them an option to control the proportion of green energy in their usage mix. Engaging in a broader conversation with a vocal and conscious customer will help build a positive image for utilities. It presents opportunities to offer

new services such as EV charging stations and promote greener choices for transportation. What Data Sources are Critical in Utilities to Deliver Customer Experience/Analytics Programs? A global research and advisory firm predicts that by 2019, 75 percent of analytics solutions will incorporate ten or more data sources from second-party partners or third-party providers. This is very relevant for utilities given the limitation of the data in the CIS. Rather than ask– "What insights can I gather from the data I have about my customers?" Utilities should ask– "What meaningful insights will benefit my customer as well as the utility?". Once they answer this question, the next one should be, "Where will I find the data to derive those insights?". Enterprises are setting up data marketplaces that help them seamlessly access data/information/ models from data syndicators, government/NGOs, and non-native data service firms through the data lifecycle. Utilities generate significant data through the millions of smart meters and IoT devices across their network. This also represents a monetization opportunity for utilities after they establish robust mechanisms for data privacy and security. What communication channels should utilities utilize? Digital channels have great potential to reach customers with personalized messaging, enable bi-directional conversations and at a fraction of the cost of traditional channels. Digital channels have expanded from a website with basic transactional information and e-mails to a whole host of touch-points that include presence in social media, messaging, chats etc. Social listening is an opportunity to get a pulse of customer sentiment and incorporate their feedback into the product/service/customer experience strategy. However, digital is not the only channel utilities should be focused on. The customer should have the choice, control, and convenience on how they engage with the utility. Utilities should blend in-person community involvement with online interactions to amplify the impact they are having in the local community. As the nature of the service and the choice gets more complex, there is no substitute to voice conversations with expert customer service agents. In fact, it is likely that calls will get longer and need a higher level of expertise in the future. As a result, utilities should look to 'Shift-Left' as many routine conversations (as practical) to digital channels or automation and re-train their agents to be able to deal with complex queries. Transforming customer experience is a multi-year journey. Traditional approaches to customer experience will need to be re-visited to take advantage of technology advances and customer preferences. New digital and analytical capabilities in utilities will need to be developed to address customers' needs and offer energy solutions. This will be an exciting and rewarding journey for utilities if they have the right vision to march forward, and the leadership and partners to take them there.
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Industry Stories

----- Arcticle source ----- https://www.infosys.com/insights/industry-stories/ videos.html ----- Insights The communications industry is getting complex, and Blockchain can play a role What keeps your customers awake - High-Tech & Manufacturing Blockchain: What's In It For The Manufacturing Industry? Blockchain can take the cards and payments industry to the

unbanked Blockchain: What's In It For Communications, Media and Entertainment Video Playlist: Building Operational Resilience for banks with a services-driven strategy Insights Insights Insights Insights Insights Insights =====================

Insights Editions

Insights Pushing the Boundaries Betting Big on Digital New paths in a digital world Navigate Your Next At Home with Technology Modernize the Core Navigating the Digital Disruption A Future With Purposeful AI Services In The Time Of Being Digital Age of Possibilities: Digital Revolution and Problems Worth Solving Renew The Old. Build The New. Embarking On a Human Revolution Infosys Insights has been envisioned as a collaborative hub of innovative and leading edge thinking from thought leaders across industries. Contributions from our subject matter experts, clients, partners, and industry leaders bring this journal to life. We treat every topic as a vibrant dialogue among thought leaders – through analyses, opinions, perspectives, success stories and research findings. Digital transformation is no longer the future. It is table stakes for companies worldwide. Established technologies, from automation to cybersecurity, are embedded deeply in successful organizations. Now, executives are seeking new ways to push those technologies further and potentially reaping rewards they can't imagine today. Infosys Insights Journal volume 12 features efforts to push technology beyond its classical boundaries, rethink how to prevent online threats, and create or take advantage of new business models. One article looks at quantum computing, a futuristic technology that's starting to move from the laboratory into the business world. In another, the author examines threat hunting as a more advanced way to protect organizations from cybercriminals. The journal articles also examine new business opportunities for oil and gas retailers, the coming "automation singularity," and alternative ways that small- and medium-size businesses can finance their futures. Explore No matter which direction organizations turn, the way forward is clear: digital transformation. Computers have revolutionized businesses for decades. But the pace is accelerating. The organizations that will thrive are the ones that embrace their digital future and have the vision to understand where the technology can take them. Infosys Insights Journal volume 11 highlights how industries are finding ways to use digital technology to enhance and even rethink their traditional business models. In one case, Infosys worked with organizers of the iconic French Open to provide tennis players and their fans with new insights into the matches. Another article looks at how a 165-year-old insurance company is thinking like a digital native. A global survey of executives examines where companies are leading and lagging in their digital efforts. Other articles explore how servitization can help manufacturers excel, and the path to 5G monetization for telecom companies. Explore Digital is drawing new paths in different industries. From lab based innovation to first of its kind application of emerging technologies, organizations are changing not just their old legacy systems and infrastructure, they are changing the way they function with new ideas,

approaches and business models. Infosys Insights Volume 10 shares stories about how robots can help with the dirty, dangerous and dirty jobs keeping humans safe, clean and happy. It debates whether AI has arrived as a technology; there is a lot more organizations can do with AI and how? As digital becomes more prevalent there are new thoughts around how the role of the chief risk officer must evolve from being a gatekeeper to being an enabler of business or how CPG companies should start owning the brand on the retail shelf using technology as a tool. Lastly, as innovation becomes mainstream, is there a method to it? Explore A shipping company sets sail for new growth using digital capabilities; catch our client, CMA CGM's story in this edition of the Infosys Insights. The edition is focused on innovation and the future digital world. Soumitra Dutta, Professor, Cornell University, shares his opinion on organizational innovation in the article "Innovation acceleration: Pressure points for change". Is digital all about logical management of data or creative use of it? Wongdoody executives discuss their viewpoint on the need to be "creatively logical" when delivering digital projects. "The success of Innovation Hubs" shares one of Infosys" proven and successful innovation strategies. "(In)security in IoT and what can be done" and "How Legacy Can Overcome Digital Transformation Challenges" answer difficult questions around digitization. Lastly, there are insights on the banking and financial services from our leaders and a leading analyst that touch on the use and impact of technology in the industry. Explore Digital technology has become all pervasive, right from our living rooms, to offices, hospitals, and stores. Catch this edition of Infosys Insights to know more about Ambient Technology that is emerging to make human lives very easy. AI and automation are the other two technologies that will redefine our lives. The edition features articles that answer several questions around how organizations are consuming AI. Lastly, get a view into what the experts think about the changing dynamics of leadership and economy in a digital world. Explore Over the past decade, there has been a wave of digital disruption with new, born-digital challengers compelling traditional incumbents to find and harness new ways of delivering great customer experiences in order to survive the new competition. While superior customer experience is an important marker of successful digital transformation, this approach can only be sustained if the organization's underlying infrastructure is modernized to handle the demands of these customer-centric initiatives. So how can organizations modernize their core? By focusing on digitalizing their monolithic legacy infrastructure and reimagining their business processes. Explore Businesses are getting disrupted not every day but every moment with new ideas, technologies, and business models being born not from big think tanks of the world but from the young digital natives. How do enterprises find their way to success in a digitally enabled world? Through innovation, strategy and the right technology partner. Explore While debates about job automation and ethos of artificial intelligence (AI) continue, technology stalwarts - individuals and organizations - pursue AI advancement, collectively giving it a purpose that can eventually make our lives better and solve some grand challenges facing the planet. Download The era of services, marked by differentiating experiences, is already upon us, and the pace of change is not letting the smartest among us sleep. Recently, the young founder of AirBnB, the start-up that shook the hospitality industry, announced that this company worth US$30 billion will soon transform itself to become a platform that will also

sell offbeat excursions, and different kinds of experiences. Download In this issue of Infosys Insights titled 'Age of Possibilities: Digital Revolution and Problems Worth Solving', we examine a range of problems and challenges that are staring at us, at humankind, and present innovative and some untrodden ways to develop the approach to solving them. Download In this issue, the spotlight is on the organizational mission of Renew-New. As bits reshape atoms in everything around us, starting to irrevocably change the way we live and even think, organizations are confronting a new world order, sometimes even struggling to survive. In order to succeed, they must renew their existing systems, processes, and mindset, and simultaneously explore new, unknown areas of technology, business, and problems. Download In the inaugural edition, we bring you a case for embarking on a 'Human Revolution'. As we move towards an irrevocably digitized world, technology is amplifying our potential, our intellect and our collective imagination and creativity. Download =====================

Betting Big on Digital

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Digital Disruption

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New paths in a digital world

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At Home with Technology

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Modernize The Core

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Navigate Your Next

Pushing the Boundaries

IoT

Powering the humanistic automobile 5G — Empowering the Next Wave of Digital Transformation Amplifying the Internet of Things With 5G Digital Transformation at the Edge Overcoming Challenges in the Implementation of Industry 4.0 solutions Enabling a Connected World with Edge Computing and Sensor Fusion Reimagining the Future with 3D Printing Questions to Consider for a Pragmatic IoT Solution Industry 4.0: The Tipping Point For Manufacturers Revolutionizing the Food Supply Chain with IoT Enhancing Asset Efficiency in the Process Industry A Long-Term Approach to Industrial IoT is Crucial for Success The Future for Industrial Services: The Digital Twin Solving the Product Variation versus Cost Conundrum Unlocking Value with Connected Transportation Apps and IoT can make travel personalized and enjoyable, again The Art of Connecting Man and Machine: The Internet of Things Insights Insights Insights Insights Insights Insights Insights Insights Insights Insights Insights Insights Insights Insights Insights Insights Insights =====================

Amplifying the Internet of Things With 5G

As digital transformation shifts from being a need to an existential requirement, companies across industries are counting on the internet of things (IoT) to support their progress. Companies can better extract data and gain real-time visibility into their operations through integration of IoT devices and sensors throughout the enterprise. Nearly 27 billion IoT devices were in use last year. That is expected to grow to 31 billion by the end of 2020, thanks in part to expanded 5G coverage. In September 2020, there were nearly 15,000 commercially available 5G deployments worldwide by 136 operators, according to the Ookla 5G Map. Enterprises are exploring new use cases that take advantage of enhanced mobile broadband (high data rates across a wide coverage area), ultra-reliable and low-latency communications (low packet loss), and massive machine-type communications (narrowband

internet). Figure 1. 5G offers exponential upgrades over 4G for most wireless features. Source: Infosys The 5G IoT market is expected to grow from $700 million in 2020 to $6.3 billion by 2025, according to MarketsAndMarkets. By then, 5G will account for half or nearly half of the markets in some major economies, although those percentages are expected to vary considerably. The adoption of 5G for IoT is expected to be transformational, offering opportunities to reimagine existing use cases and build innovative new ones. The industries that will benefit include: Digital maturity is one of the biggest differentiators for success across industries, which has led companies to pursue digital transformation with an unprecedented vigor. These efforts require a variety of technologies, but each is built on a foundation of data. IoT devices are a crucial part of that new data collection ecosystem, which will allow companies to adjust products based on usage, gain deeper insights into customer behavior, and customize customer experiences. And to satisfy the demand of the current global recession, IoT devices will allow organizations to improve efficiency through automation, predictive maintenance, and other features. While existing technologies such as Wi-Fi and 4G are valuable, they also have limitations. The positives for 5G include near-zero latency, high reliability, high bandwidth, and a larger density of devices per cell. Telecommunications companies worldwide are quickly expanding their 5G coverage. However, though the need for industry is clear, there are other factors that may constrain how quickly companies adopt this new technology. Adoption will be influenced by cost, spectrum availability, government regulations, and the availability of 5G-capable IoT devices. The good news for industry is that telecom providers see 5G as a powerful business tool and not just a way for smartphone users to stream videos at higher resolutions. The telecom industry, including equipment manufacturers, is creating industry-specific solutions that will make 5G transformative rather than a faster version of existing networks. =======================

Apps and IoT can make travel personalized and enjoyable, again

----- Arcticle source ----- https://www.infosys.com/insights/iot/apps-and-iot-can-make-travel-personalized-and-enjoyable.html ----- Insights IOT According to the Global Business Travel Association (GBTA), global business travel spending "is forecast to reach $1.6 trillion by 2020." And even while a growing number of people pack their bags for leisure and business, the experience of getting to their destination - in particular, flying - remains largely unchanged. Airports can be stressful and frustrating, with cumbersome security checks, long queues, overcrowded lounges, and long waits. Consumer experience in the travel industry has suffered, as airlines have failed to achieve the required personalization. Even though it has been a consistent aspiration of the travel industry, it has fallen short when compared to say, retail. Could apps and the Internet of Things (IoT) be the key to introducing this much needed personalization, and reduce the stress of travel? The univocal answer is yes. ChillTravel, a smart skin company that

is set to launch soon, is working in this direction. It has created a smart skin called ChillWrap which allows users to wrap their luggage with ChillWrap, just as they would do with plastic wrapping, and pair their baggage with their phone using SITA WorldTracer. This enables users to know when their baggage is being manhandled, is on the carousel, or even stolen. And with 1.5 million bags lost or stolen, 3.5 million bags damaged and 16.6 million bags delayed each year, the potential for ChillWrap to play an informative role for travelers is significant. Even as travelers get a grip on their baggage, airports are getting bigger, crowded, and confusing. SATS, the ground-handling and in-flight catering service provider at one of the largest transportation hubs in Southeast Asia, Singapore Changi Airport, recently launched an app that allows users to navigate around key airports, not just in Singapore, but in Thailand, Japan, and Hong Kong as well. Passengers can access real-time information on directions, insurance, and more while at the airport. Data from sensors at an airport can analyze the large number of processes underway and improve them - right from check-in, baggage movement, security, immigration, cabin conditions, arrivals, till post-travel. And airline companies seem to agree on the potential of data. According to the SITA 2015 Airline IT Trends Survey, 86% of airline companies believe IoT would provide "clear benefits over the next three years." It can definitely reduce human intervention in repetitive tasks, simplify security, hasten passenger movement at airports, and thus enhance customer delight. For a schedule-driven location like an airport, IoT can make processes - right from the time the passenger enters the airport to when they depart from the destination airport - much smoother and convenient. For instance, a passenger could receive a notification on his or her smartphone or smart watch on directions to the check-in lounge as soon as he or she enters the airport. Details about the weight and cost of baggage could also be mailed over. Periodic updates could be provided on the movement of his or her baggage and its location. The passenger can also receive directions to the security check at the airport, be informed over a voice alert on things that are allowed or not allowed on the flight, specific products could be named if the passenger has been found with them on a previous trip, and if there are any changes in the airport rules. At security, the passenger could go through a facial recognition scan and receive a notification when it has been successfully cleared. If a concern is raised, the passenger could receive a notification with the name of the personnel they will be interacting with to resolve the issue. After security clearance, a voice notification can guide the passenger to the boarding gate, inform on the number of minutes left for boarding, and if the passenger is early, advice on things that can be done. At the boarding gate, the passenger can swipe smart watch or smartphone to allow the flight attendant to immediately recognize the passenger by name and guide him or her to the designated seat. Passengers could also receive updates in route about the flight, arrival time, weather and time at destination and more. The 2017 SITA Passenger IT Trends Survey cites that passenger satisfaction grew with the introduction of self-service technologies, such as biometrics. Besides keeping passengers informed, I see IoT and apps enabling airport personnel to access extensive information as well, right from updating the flight attendant on a check-in to enabling them to personalize the inflight experience for passengers, manage baggage and to continue interacting with passengers long after their flight. Learn

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The Art of Connecting Man and Machine: The Internet of Things

----- Arcticle source ----- https://www.infosys.com/insights/iot/art-connecting-man-machine.html ----- Insights IOT What does innovation and connectivity actually mean? What is happening behind the scenes? When we think of the word 'innovation' and where it is happening in technology right now, we can't look too far beyond the Internet of things (IoT). According to the ever-reliable Wikipedia, IoT is 'used to denote advanced connectivity of devices, systems, and services that goes beyond machine-to-machine communications (M2M) and covers a variety of protocols, domains, and applications.' Simply put, IoT is a well-connected infrastructure where nearly every type of machine / device has basic inbuilt intelligence, which is used to transfer data and interact with other machines / devices; and through these devices with people. IoT has often been referred to as the industrial Internet and aptly so, as it has the potential to herald a transformation in business and society akin to the First Industrial Revolution. According to Gartner, there will be 26 billion devices on IoT by 2020, while ABI research says the number of devices wirelessly connected to it will be close to 30 billion in the same timescale. Given that the world population is currently seven billion and is expected to be around 7.7 billion by 2020 – that is an astonishing number of devices talking to each other and to us. Numbers are one thing. But what does this innovation and connectivity actually mean? In the near future, we could be living in a world where the temperature in buildings will adjust to weather conditions outside. Fridges could restock themselves based on the dietary regime set by doctors, cars could book in for a service and order the parts they need. These new networked devices would be able to publish data on the Internet and this information could be used in various ways to improve products and services we consume on a daily basis. It will form the basis of smart grids and smart cities, improving energy consumption and usage, traffic flows, and citizen-based services. Indeed, the IoT could help solve multiple problems in two major domains: Energy and healthcare. Buildings waste more energy than they use effectively. With IoT we will be able to cut this waste down to almost nothing. Healthcare is currently delivered in lumps: Most of us visit the doctor a couple of times a year, and get our blood pressure checked every now and then. IoT will allow us to monitor bodily functions at all times. A couple of sensors discreetly attached to the body will keep us constantly informed about our vital functions. IoT is also likely to have a major impact on the logistics industry and supply chain as objects become aware of their environment and can be re-routed more easily in case of disruption. Greater use of sensing technologies and connected devices will be in asset management – the BT LDAT multi-sensor platform, something that Gartner refers to as operational technology (OT), is likely to expand the remit of CIOs from IT to broader asset management. The potential is astonishing. But as with any huge technological change, there is

a lot of hard work to be done behind the scenes to make these transformations to everyday life a reality. And this is where companies like BT are working tirelessly to ensure that the underlying infrastructure and connections are capable of sustaining the IoT. At BT, we are making sure the underlying infrastructure is reliable and that we are able to sustain this huge expansion of the Internet and the demands, both as wired and wireless connections. The more interconnected the world becomes, the more dependent we are on networks. We also need to work on ensuring that the right regulations are in place and that we are abiding by them at all times. And finally, there are privacy and security issues at all levels. The technology will allow companies and governments to collect unprecedented amounts of data and everyone involved will have to be vigilant and adaptable to make sure the data remains safe. For us, IoT is all about the art of connecting in action. This art of connecting is our vision for networking that is not just about technology; but also about imagination, know-how, and insight. It's as much an art as a science, and the recognition of the need to balance technology and creativity. CIOs have become creators who bring their vision for the networked world to life. Whether it is about delivering great network performance, realizing possibilities in the cloud, or working anywhere in harmony, deploying latest mobility and collaboration solutions, the art of connecting is about the unparalleled experience and insight BT brings to a connected world. Innovation is 1 percent inspiration and 99 percent perspiration – or so says a popular adage. In the context of IoT, we could say 99 percent is about machines and the connecting infrastructure that supports them. But having things connected would mean nothing without the intelligence to make those connections matter, to transform the world around us, and make it a better place to live and work. And it is that 1 percent of 'art,' which will help develop the Internet of things into the Internet of something. One fascinating aspect of IoT is that the cars we drive are rapidly becoming 'smart phones on wheels.' Most new models now have a tablet (or tablet-like) device attached to the dashboard to allow you to run a range of apps, download content, find a parking space, or even join an eco-driving game. If you misplace your keys, you can use an app on your phone to unlock the car and drive it away. What could be more convenient? New cars will soon have at least one embedded SIM card and multiple WiFi hot spots, so they are the ultimate connected device. The problem is that cars were never designed to be connected. A connected car has multiple infection points. Many smartphones contain malware – so what happens if you sync it with your car, or you plug in a USB device, which you thought only had music files? Or somebody takes over the WiFi used by your tyre pressure sensors, or you get an over-the-air software fix that has somehow been compromised? So what is BT doing about all this? Well, we are following the hackers' trail. We are using the tools and skills, from the traditional IT world, and engaging them in the brave new world of IoT to defeat the hackers. We are working on an ethical hacking module for car manufacturers, so they can better understand their vulnerabilities. Building on this is a managed service to protect cars as they do not have the resources to protect themselves. If you have a tablet, you will replace it every few years with a more advanced and more secure version, but a car has a lifetime of over 10 years, with fixed computing resources. Finally, we are also working on a secure gateway in the car network that will manage security updates and watch out for those files that shouldn't be there.

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Building a Digital Twin for the Pharma Industry

----- Arcticle source ----- https://www.infosys.com/insights/iot/building-digital-twin.html ----- Insights Internet of Things (IoT) Business Challenge A global pharma company based in Europe wanted to optimize the process of cell culture at their vaccine development plant by predicting the behavior of the cell culture process and monitor it remotely Infosys View Pharma companies can leverage sustainable models of digital twins, to gain real-time view of operations and visualize the data generated, along with significant operational efficiencies and lower costs. Business Outcomes And more... Read about the client benefits and the 5 best practices drawn from this engagement. =====================

Overcoming Challenges in the Implementation of Industry 4.0 solutions

----- Arcticle source ----- https://www.infosys.com/insights/iot/challenges-implementation.html ----- Insights IoT Encouraged by the early benefits realized from Industry 4.0 solutions in operational efficiency on the shop floor and service efficiency with smarter products, companies are now going beyond their pilot implementation for digital manufacturing. Trends indicate that in the smart manufacturing space, early investors in Industry 4.0 initiatives are now striving for the next level of gains with global deployment of use cases and scaling of solutions by implementing an increasing number of use cases on the Internet of Things (IoT) platform framework. While the business benefits and Return on Investments (ROI) from Industry 4.0 solutions is well understood by business leaders, it is important to note that decision making is typically very decentralized at a plant level. This makes it necessary to articulate and document the business benefits for a successful global implementation. Infosys is helping its clients navigate their Industry 4.0 journey by overcoming the challenges for global deployment of solutions to realize large scale benefits. A five dimensional approach to overcome industry 4.0 implementation challenges The challenges we typically encounter during the implementation of a comprehensive solution across production lines and plants, and the approach we take to overcome them, are: A three-tier reference architecture for a seamless IT-OT integration: Given the disparate systems that typically exist across different manufacturing plants, it becomes challenging to implement a solution that takes into consideration the Information Technology (IT)-Operational Technology(OT) integration in a seamless manner right from "sensors to insight". In other words, how can one transform the manufacturing

environment such that the information in the systems residing on the shop floor can flow in real time to the systems in the enterprise allowing business leaders a view into what's happening on the production side at any point of time? Infosys has defined a three-tier reference architecture for such implementations of Industry 4.0 solutions, and the same has been implemented across multiple industry verticals. The reference architecture comprises: This reference architecture acts as a template that can be taken to multiple plants/sites for faster implementation of Industry 4.0 use cases. A framework to gather the right data from shop floor machines/equipment: In a brown-field setup, the legacy equipment on the shop floor rarely has the necessary capacity to transmit all the data that it generates. This leads to a lack of information on the current equipment/production line efficiency and the Overall Equipment Effectiveness (OEE), making it challenging to identify and thereby address problem areas. This is a common issue we encounter at multiple implementations. Infosys has designed a gateway framework software that helps with: Reducing long lead time in global deployment of uses cases/solution: Seamless and faster deployment of solutions across plants with minimal or no disruption to manufacturing operations is a key ask from every plant manager. The deployment of solutions has broadly two dimensions: Infosys has devised a comprehensive deployment toolkit for adoption of Industry 4.0 solutions across plants. The toolkit consists of implementation readiness checklist, elaborate implementation/configuration document, reference framework, tools/accelerators, reference user training material, etc. These tools help in faster and seamless deployment of solution in a plant or production line. A global machine tools company needed to modernize its factories across multiple locations to improve operational efficiency & move to paperless digitized process for various personas in their plant. Infosys IoT solution captures real-time production data from factory floor equipment and systems providing digitized process and journey maps for personas like specialists and operators. This led to an increase in the overall line effectiveness by 20%, reduction in manual paperwork by 90% and zero enterprise data duplication. A leading global food manufacturer did not have visibility of real-time ingredients and batch operating parameters and the energy consumption for their process was not optimal. Infosys solution for real-time batch parameter trend and deviation analysis along with alerts to address specific production line operational issues helped improve visibility of batch operations and reduced manual errors by 60%. The solution also led to reduction in energy consumption in packaging area. Lowering deployment cost: Given the scale of deployment of Industry 4.0 solutions across production lines, geographies and plants, new pricing models "Plant as a service" and "Machine connectivity as a service" are gaining adoption. These pricing models provide clear visibility to the customer on the cost involved in global implementation of use cases and how economies of scale can be leveraged to drive lower implementation cost. The Infosys pricing model takes into consideration the plant floor landscape, support and interface available for collecting equipment data, instrumentation involved for getting use case-centric data, connectivity, availability of manufacturing process data, etc. The complexities involved in the implementation of a use case is a function of these critical parameters. Focusing on user experience: The expectation of the shop floor personnel has changed over time, from a user experience perspective. This has led to newer ways of approaching the user experience dimension during the

solution development process. One critical aspect is Design Thinking-based problem definition along with Agile development. End user feedback is factored in at every step of the solution design and development. With the adoption of the above approach, in our experience, we were able to bring down the deployment cost by close to 60% on an average by bringing in more and more capabilities to the platform framework in addition to reducing the deployment time to weeks rather than months. Given the potential benefits and efficiency gains through the implementation of digital manufacturing solutions, it becomes imperative to provide the necessary governance to these initiatives so that any intervention or course correction can be done in a timely manner to make it a success.
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Unlocking Value with Connected Transportation

----- Arcticle source ----- https://www.infosys.com/insights/iot/connected-transportation.html ----- Insights IOT In an industrial setting, transportation is key to the movement of raw materials, finished goods, and assets from one location to the next. Even though digital technologies are making their way into transportation, this area is still fraught with inefficiencies. Addressing this gap and tying up loose ends between data and insights can enable enterprises to unlock new efficiencies. Digital technologies such as Artifical Intelligence (AI), Blockchain, IoT, Augmented Reality (AR), Virtual Reality (VR), and Robotics offer significant potential, especially in the area of advanced safety and security. In this blog post, read how connected transportation can drive business value beyond the obvious with automotive industry. How digital technologies can unlock value through connected transportation, Sowing the seeds for insights-driven agriculture: The global agriculture and farm machinery market is slated to grow to US$ 281.61 billion by 2022. This industry consists of a wide variety of machinery including tractors, harvesters, and equipment for plowing, planting and fertilizing, and irrigation to name a few. All these machineries can be made smart to collect data as they perform their respective, repetitive task. For instance, plowing and planting machinery can collect information about the soil and actually inform on when and how much of fertilizer is needed. Data can help determine the quantity of water likely to be needed depending on the moisture in the soil, and this, in turn, can enable the farmer to anticipate the quality and quantity of the crop. Drones can additionally substantiate this data collected by agricultural machinery and keep track of pests, growth of the crop, and readiness for harvesting. Sensors informing on the wear and tear of the machinery can facilitate predictive maintenance so that downtime is minimal or nil and insurance providers plus the machine maintenance agency can plan their effort with insight. As data from thousands of agricultural machinery across a region gets consolidated, governments can capitalize on it to locate possible problems, plan on how to address these, and even put in place specific policies and directives. Riding towards efficiency with smart railroad: Railroads are a critical source of freight. Data on capacity of each coach can also be used to maximize freight.

Sensors can play a critical role in collecting data on the real-time functioning of the engine, temperature, vibration, ventilation, and flag anomalies, thus preventing accidents. Sensors can also play a role in regulating the speed of the train depending on external factors such as speed of the wind, weather condition, and behavior of the driver. Over time, all this data can be used to automate functions on the train, improve schedules, simplify management, increase safety and services, ensure higher utilization, mitigate delays, increase mileage, prevent pilferage, and significantly improve profit margins. Projections are that the global smart railways market will reach US$ 27.62 billion by 20231. Sailing towards real-time information with greater autonomy: Shipping may be a cost-effective way to transfer huge quantities of goods across huge distances, but it is also an industry facing challenging headwinds and struggling to offer real-time information especially once goods leave the port. With sensors, the industry can potentially collect huge quantities of data across the transportation cycle from temperature, location, capacity, contents of each container, real-time movement of the ship and goods, and more. Besides data collection of goods aboard the ship and the ship itself, data can also be collected about the ocean - weather conditions such as wind and visibility, water conditions such as the height of the tide, and tidal stream. This data can be stored via Blockchain and fed through advanced routers and gateways into an AI tool that analyzes it for fast decision-making - say the fastest route based on traffic, noting the correct temperature for refrigerating certain goods and correcting the temperature if an anomaly is detected. The push for digital technology in this asset-intensive industry is so strong, that there are plans afoot to launch the first autonomous ocean carrier in the world by as early as 2019. Ports are also turning to digital technology to enable ships to commute through faster, with safety, and greater autonomy, the Port of Rotterdam, which is the busiest port in Europe is one such example. Trucking with improved safety and security: The logistics and supply chain industry is heavily reliant on fleets of trucks to deliver products over land. Here, the weather has a direct impact on transit time, delivery rate, and human error. Sensors on these traveling vehicles can immediately give real-time information on the location of the truck and enable a response, should a delay be imminent. Information on the route taken by the driver can also be altered should roadways be blocked due to bad weather or if an additional consignment needs to be picked up. Digital technologies can play an effective role in optimizing the use of vehicles, health condition monitoring, and offering insights into the use of the vehicle by the driver. This can ensure greater safety of the vehicle and a reduction in accidents. The advantages of connected transportation are multi-fold and the returns on business immense. With autonomous trucks and truck platooning there can be a huge gain in fuel efficiency apart from a well-planned supply chain. With connected logistics, the supply chain can be just-in-time thereby reducing inventory costs and warehousing space. Food wastage causes huge losses in retail, with temperature controlled and monitored trucks with real-time visibility, wastage of perishable goods can be reduced and also enable regulatory compliance. We see that the data generated from connected transportation has tremendous possibilities to impact unrelated industries as well. For instance, imagine an agricultural enterprise creating a hybrid seed for a specific region based on the data collected from plowing machines, or railway track maintenance being fully automated thanks to the

data picked up by trains passing over them, or a ship recording ocean pollution as it is sailing. All these are solutions are very possible and work on them has already begun. With extensive domain expertise, a number of industries including mining, farming, logistics, and automotive have benefited from our offerings. Being an ecosystem integrator, clients can expect end-to- end capabilities which range from sensors to insights. Infosys solutions are crafted to ensure business outcomes around engineering, operational, maintenance, energy, supply chain, information, and service efficiency. Contact us at LiveWorx 2018 to capitalize on our IPs, and begin a conversation. =====================

Solving the Product Variation versus Cost Conundrum

----- Arcticle source ----- https://www.infosys.com/insights/iot/cost-conundrum.html ----- Insights IOT In 1909 Henry Ford famously said about the color of the iconic Ford Model-T car – "You can have any color so long as it is black". Why did Ford say this? In the years between 1914 to 1925, Ford build only one model and in one color. Ford's vision was to build a product that had the simplest and the most reliable design using interchangeable and standard parts, and a product so cheap that almost everyone could afford it. The production data below 1 clearly animates Ford's vision revealing his plans to scale production which he achieved by 2: Ford Motors Production from 1909 to 1926 Henry Ford was compelled to stop building the Model T and had to bring back more colors because his customers wanted more than just a sturdy, affordable car. They wanted style, speed and luxury too. As a more discerning demand placed a burden on Ford to differentiate, the Model T era came to an end. The Ford story demonstrates that customers are more willing to pay for products that match their unique needs. Even at a higher price. Thus product variety lends a competitive edge to companies that are able to offer tailored products and more choices to their customers. Clearly product differentiation, read innovation, is the key to winning in the market. But then Every Innovation Comes at a Cost While product innovation or variety might allow a company to improve its competitive reach, such a change leads to a number of challenges. Challenges with regard to complexity; of products, and of internal processes involving product development, manufacturing, logistics, sales, and after-market services. An increase in complexity leads to higher direct manufacturing costs, manufacturing overhead, quality errors, inventory levels, and delivery times. Arriving at the coupling point, where the demand lead time matches the supply lead time (the point where you do all your inventory and production planning), gets complicated when you try to bring product differentiation. The more choices you offer to your customers, the more complexity it adds to your production and sales processes. Therefore, for every custom order that you accept from your customers, standard processes on the supply side get disrupted, throwing your entire engineering, production and sales cycle off balance. Enterprises use different systems and tools to manage the various processes that fall under engineering, manufacturing and sales. PLM Systems manage the design and

engineering of products; ERP Systems manage planning related lifecycles like order inventory. Product configurators are primarily used as sales tools, to create quotations for a product that the customer requests. But are these systems talking to each other? Do they ensure that what the customer ordered is precisely what the engineer designs and the production team produces? Is your sales tool quoting the right price but not passing on the product specifications to the engineering department? How then do we solve the conundrum of the need to "innovate" and "differentiate" while simultaneously needing to control increasing "complexity" and concomitant "costs"? Creating a Digital thread For successful execution of a customer order, it is essential to do two things – digitize the interactions between sales, engineering, manufacturing, and logistics applications and create a governing body that can arbitrate the rules of these interactions. I would call it an Integration of Things, (a different take on IoT!) where we create a digital thread to assimilate all the relevant activities and position the Product Configurator, which hitherto was not integrated into the value chain, as the key arbitrator on the rules of these interaction. Significant benefits of weaving a digital thread are: Using a simile of a thread holding together a well woven dress, a digital thread plays an instrumental role in holding the seam of an organization and its processes. Join me at Liveworx at BCEC, Breakout Six on June 19, where I will tell you the complete story of the digital thread. 1http://www.mtfca.com/encyclo/fdprod.htm 2https://www.history.com/this-day-in-history/ford-motor-company-unveils-the-model-t ======================

5G — Empowering the Next Wave of Digital Transformation

----- Arcticle source ----- https://www.infosys.com/insights/iot/digital-transformation.html ----- Insights IoT 5G offers ultrafast data rates, massive traffic capacity, and extremely low latency — all of which promises a new era of digital transformation globally. The broadest adoption is seen in developed markets in North America, South Korea, China, Western Europe, and Australia. However, more than 443 telecom operators in 133 countries are accelerating investments in 5G. These organizations are speeding up the development of 5G infrastructure and connectivity, IT and platforms, and applications and services. As a result, new ecosystem partnerships are flourishing. Verizon and Mastercard collaborated to introduce 5G in the global payments industry. Dish and Amazon Web Services are working together to build a cloud-based, 5G Open Radio Access Network (O-RAN). And Lufthansa became one of the first airlines to utilize 5G private networks for aircraft maintenance. Initiatives such as the Facebook-led Telecom Infra Project and TM Forum Open APIs have also shone a spotlight on 5G. 5G devices have expanded from smartphones to dongles, modules, robots, routers, laptops, TVs, and even vending machines. 5G applications are used in autonomous vehicles, telemedicine, smart factories, retail, and entertainment. Since 2018, Infosys has tracked 5G's evolution among industries across three horizons (H1, H2, and H3). Predictably, H3 will take time to harness — depending on the maturity of 5G networks and solutions,

associated device ecosystems, and other aspects related to sustainability and security. Maturity across different markets will be based on spectrum availability, regulations, and other factors. ManufacturingManufacturers are increasingly leveraging advanced technologies, such as automation, artificial intelligence (AI), the internet of things (IoT), and AR. A recent Infosys Knowledge Institute study confirms that manufacturers plan to exploit 5G's mass machine communication capabilities and low latency to create smart factories. The H1 version of 5G plays a key role in these smart factories — a highly digitized and connected environment, where robots, machines, and devices run autonomously with minimal human intervention. The fast speeds, low latency, and expanded connectivity will knit all these elements together. In H2, the technology optimizes production. By capturing real-time machine, inventory, and production data, manufacturers can analyze production patterns in detail to identify a proper sequencing of factory activities and maximize flows. Finally, H3 uses AR for troubleshooting and further benefits. Collaborative robotics and automated guided vehicles will become a reality in a fully autonomous factory. Discrete manufacturing In discrete manufacturing, industry leaders embrace IoT, robotics, and autonomous systems. Here, digital engineering demands accessibility, flexibility, and controllability. This is often led by IT-OT integration, automation, and AI. In H1, the rush to adopt 5G technology is boosted by companies' need for low latency, real-time processing, digital infrastructure, and seamless intra- and inter-enterprise communication. Firms that reach H2 prize the ability of 5G networks to offer real-time data acquisition and analysis. That leads to dynamic scheduling, remote maintenance, AR and VR, digital twins, smart warehousing, collaborative robot-assisted workflows, and machine vision-based quality assessments. In H3, operations are automated and autonomized. This will integrate the manufacturing shop floor with upstream supply chain organizations and downstream customer organizations through a smooth data flow. Connected vehicles: Internet of mobility Connectivity, device, and edge infrastructure will be instrumental in transforming and sustaining the connected vehicle industry — particularly the 5G-led connectivity layer. In H1, the vehicle connects to the cloud and provides important alerts on vehicle location and key parameters that track, monitor, and assess the vehicle's health and safety. The vehicle acts as a Wi-Fi hotspot, which helps it navigate smoothly in confined and controlled environments, such as smart campuses. The H2 vehicle communicates with the network through additional bandwidth and with higher performance. This enables greater amounts of remote data to assist with driving. The vehicle is semiautonomous and guided. In H3, the technology enables fully autonomous vehicles to operate in controlled and natural environments such as densely populated areas. It allows complete cellular vehicle-to-environment communication. These include vehicle-to-vehicle, vehicle-to-pedestrian, and vehicle-to-infrastructure. In addition, advanced diagnostics and prognostics will improve safety and sustainability. 5G in other sectors 5G is finding valuable uses in a growing number of sectors. The popularity of electric vehicles and distributed energy resources and storage is disrupting energy and utility companies. These firms, however, are learning that 5G wireless transmission can make fully automated and reliable smart grids a reality; millions of edge devices can now transmit high-quality data at high speeds. Faster speed, low latency, increased device density, and tighter security offer immense potential in the financial services segment. Also, 5G

empowers exciting technologies, such as AR and VR and interactive digital walls, for retailers. It also enables efficient and intelligent supply chains for consumer goods companies and enhances visibility and tracking in the logistics sector. 5G's footprint is growing exponentially. This new generation of cellular broadband has unlocked applications such as autonomous vehicles, smart factories, immersive retail, safer transportation, precision agriculture, and remote healthcare. Any use case demanding rich data experience, automation, hyperfast analytics, and low latency is an ideal candidate for 5G. Enterprises need to align their roadmap to a 5G-enabled technology evolution to stay competitive. Effectively planned and sequenced use cases will lead to the next horizon. =====================

Digital Transformation at the Edge

----- Arcticle source ----- https://www.infosys.com/insights/iot/edge-computing.html ----- Insights IoT Virtually every major company is racing to transform digitally, with a real sense of urgency. In their rush, they risk overlooking the need to modernize and innovate at the edges, areas expected to generate growth for many industries. Microsoft CEO Satya Nadella predicts the world will have 50 billion connected devices by 2030, changing business thinking and how data is used. Forrester projected that the edge computing market will grow by 50% in 2020. These developments require businesses to look beyond their traditional understanding of the edge. A growing number of companies see that the flood of new data — gathered and managed at the edge — will be crucial. This information will drive efficiency, and it will provide real-time customer analysis that allows companies to make smarter decisions and potentially create new business models. A Gartner survey showed that two-thirds of organizations intend to use 5G networks to bolster their edge computing capabilities. The research and advisory firm predicts that edge computing infrastructure will be completely deployed between 2025 and 2030 to support this digital transformation. The results will help companies create data-driven organizations that operate like a live enterprise, one that adapts to new environments. But without modernizing that critical slice of their network, their digital transformation will be incomplete. Edge challenges Organizations cannot modernize the edge without taking a close look at its network infrastructure. A robust, flexible, and agile backbone is necessary to roll out new applications worldwide to a diverse group. A failure here will lead to poor user experiences and an eventual loss of business. The current edge uses traditional wide area networking (WAN) solutions. This hub-and-spoke model transports traffic from the edges to centralized data centers. This approach worked in the past, but it fails now when it comes to cost, speed, and performance. Our clients have found that WANs are likely to suffer from: Traditionally, edge infrastructure has acted as either a transaction point or a data collection point. For most processing, the edge communicated to the central data center relatively efficiently. Not much was expected or needed from the processing power in these distributed devices. However, as data collection grows exponentially, the previous generation of

technology is showing its age. We have devices that monitor manufacturing equipment on factory floors and internet-connected video cameras sending live footage from retail stores. There is a risk that bandwidth won't keep up with the volume of data transmitted. This will increase latency and, as a result, provide customers a worse experience. Also, this affects the bottom line directly through higher bandwidth costs. The new edge While the old approach to edge computing is no longer feasible, fresh thinking exists and viable solutions are now within reach. Technology is readily available to enable the edge to: Technology transformation at the edge Over the years, both networking and computing technologies have evolved in ways that support the needed edge transformation. Here are some of the technologies our clients are using to make this new approach possible: In tandem, these new approaches to edge computing are not just beneficial but inevitable. Users demand a better experience and more engagement, while businesses need real-time analytics. Companies focused on advancing their business models will look to the edge to see what is possible.
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Enabling a Connected World with Edge Computing and Sensor Fusion

----- Arcticle source ----- https://www.infosys.com/insights/iot/edge-computing-sensor-fusion.html ----- Insights IOT Advances in sensor technologies and computing capabilities coupled with reduction in prices has led to an exponential increase in the number of "things" connected to the internet. As a result of it, there is an increased adoption of sensor fusion and edge computing systems across industries, from autonomous vehicles to agriculture. Manufacturing industries would be an early adopter of sensor fusion and edge computing to enable existing IoT implementations in order to bring speed and agility in production workflows in real-time. Smart industrial robots deployed on factory floors could become more responsive and self-sufficient if they are able to process data at the edge. These could facilitate quicker extraction of insight and increased application of machine learning algorithms. Smart farming could be another area where IoT in combination with sensor fusion and edge computing can bring efficiencies. More often than not, these agricultural farms are located at remote and hostile locations which result in connectivity and bandwidth issues. In such scenarios, edge computing can help smart farms to effectively monitor temperature, equipment health, and overall processes to take preemptive actions. Oil and gas industry is another industry which has a significant number of IoT devices and sensors. Oil and gas rigs deploy over 10,000 sensors and all these data are accumulated and transmitted to a cloud network. Some of the data captured are just meant to signify whether the system is functioning properly or not. In such a scenario, an edge computing system could locally compile and analyze the information and only the overall system report along with the important data could be sent across to a cloud network at the end of the day reducing the data traversing the

network. Autonomous vehicle industry would also be an early adopter due to its need for real-time decision making functionalities in self-driving vehicles. With improvements in AI algorithms, sensor technology and computing capabilities, companies like Waymo, Tesla and Audi among others are investing heavily on autonomous vehicles. These vehicles utilize a wide variety of technology and sensors, such as radar, GPS, LIDAR, odometry etc., to analyze and detect the surroundings, and make decisions on its own, keeping safety a priority, while navigating. Signals from these wide variety of sensors are integrated to estimate the position and type of object (i.e. human beings, animals, other cars etc.), the velocity at which the object is moving and the trajectory of the movements. To merge all these sensor information, companies implement a technique called sensor fusion. What is Sensor Fusion Technology Sensor fusion is defined as the technique to combine multiple physical sensor data to generate accurate ground truth even though each individual sensor might be unreliable on its own. Data from multiple sources help remove errors and combining these data with contextual information makes the data more useful than data from a single sensor source. Sensor fusion techniques help remove temporal, noisy input and generate a probabilistically better estimate of the kinetic state of the object. But currently most of the processing of these sensor fusion data is done on cloud and thus suffers from the inherent speed of light latency. An autonomous vehicle has to respond immediately if it sees a pedestrian jumping onto the path of the vehicle. Its takes around 100 milliseconds for a large dataset to travel back and forth from a cloud and a lapse of a fraction of a second might be the difference between colliding with the pedestrian or avoiding the collision. For autonomous vehicles to achieve situational awareness, they need to process sensor information on the edge. While sending and receiving information from the cloud is required, autonomous vehicles need edge computing capabilities for greater acceptance. Understanding Edge Computing Edge computing is a distributed open IT architecture that enables systems to compute data near or at the source of information rather than relaying the information to the cloud. Edge computing enables real-time data processing without latency. With edge computing capabilities, systems can perform efficient data processing as large amount of data can be processed at or near the source thereby reducing internet bandwidth usage. Apart from reducing the overall cost, it ensures the systems can operate in remote locations as well. Additionally, eliminating the need of relaying all the information to public cloud enables an additional security of sensitive information. The global edge computing market might reach up to $6.72B by 2022 as per CB Insights1. Adoption of edge computing would be based upon: Though edge computing is relatively nascent, major cloud service providers are adding edge computing solutions to their offerings. AWS Greengrass from Amazon enables devices to act locally on the data while still using cloud for management, analytics and durable storage. Azure IoT solution from Microsoft extends cloud analytics to edge devices and can be used offline. Similarly, Cloud IoT Edge from Google extends powerful data processing and machine learning to edge devices. Infosys Believes Edge Computing Will Bring New Solutions to Old Challenges Infosys has released a smart industrial robots' solution based on the open edge computing IoT.. The solution supports the interconnection of industrial robots from multiple vendors as well as helping manufacturers to anticipate faults and improve maintenance efficiency. The solution is able to

reduce the industrial robots' downtime by over 70% and defect rate by 40%. The solution is also able to schedule production rates based on resource utilization as well as optimize these production lines for maximum efficiency. Infosys is also working on drone led inspection system having edge computing capabilities. The solution would enable clients to optimally utilize drone fleets to inspect assets in remote location with intermittent internet connectivity without conceding on the effectiveness of the system. Increased adoption of IoT and reduction in prices have opened up business opportunities not only in the IoT space but also in the edge computing and sensor fusion area. There would be newer business models evolving along the lines of providing sensor fusion platform services besides building computing networks closer to the source of data. Investments in these areas both in terms of money and human resources would enable organizations to stay ahead of the evolution and reap rewards. 1https://www.cbinsights.com/research/what-is-edge-computing/ =====================

The Future for Industrial Services: The Digital Twin

----- Arcticle source ----- https://www.infosys.com/insights/iot/future-industrial-digital-twin.html ----- Insights IOT The next big thing in industrial services will be about accurately forecasting the future of physical assets through their digital twins. Experts from GE take you behind the scene on how GE created an intelligent, IoT-based industrial monitoring and diagnostics platform that's setting new standards. The significant impact of digitization in consumer marketplaces continues to be felt through a myriad business, leadership, and technology transformations across industries such as retail, travel, entertainment, and advertising. Digitization technologies and their rapid adoption rates are at the core of globalization, which has impacted the social and political landscapes of many countries. Now, digitization is poised to exert its tremendous influence in the industrial marketplace, and at an even faster rate than it did in the consumer marketplace. There has been an immense amount of research, alongside multiple opinion-based articles, on the digitization of the industrial marketplace. Although the actual economic value, number of connected assets, and winning ecosystems in this transformation may vary, the large financial and societal impacts that it can have remain and exceed that of the consumer impact. In crafting their digital industrial transformation journey, GE analyzed the best approaches used by consumer marketplace leaders and leveraged the most useful ones to build upon and accelerate the journey. After analyzing key consumer marketplace leaders (such as Amazon, Google, and Apple), it was clear that they used a similar approach to sustain their leadership in their respective marketplaces. The approach was focused on a very effective pattern, which includes three essential parts: Continually collecting a significant amount of data about each individual customer to create a model of that individual's consumption behavior (that is, a 'model of one') Implementing analytics that use the individual models to derive a business outcome and to learn from the consumption actions that are taken (that is, a 'P&L / profit and loss of one') Combining modeling and analytics

techniques into a platform that simplifies and accelerates their use, allowing these capabilities to be easily adapted for new services or other industry applications This approach was used by Amazon, when it moved from selling just books to conducting general retail through Amazon Online, video and music in Amazon Prime, and then to IaaS and PaaS services in Amazon Web Services. GE has started on its digital transformation journey, at the core of which is an approach centered on the Digital Twin. The Digital Twin collects data from its manufacturing, maintenance, operations, and operating environments and uses this data to create a unique model of each specific asset, system, or process, while focusing on a key behavior (such as life, efficiency, or flexibility). This is the 'model of one.' Analytics are then applied to these models to detect anomalies in the system. The twin then determines an optimal set of actions that maximize some key performance metrics, and provides forecasts for long-term planning. These modeling and analytics techniques are embedded in GE's Predix platform and allow the enterprise to rapidly create, tune, or modify business services for customers. This is the 'P&L of one.' The Digital Twin is then used in a specified analytics workflow to enable the delivery of a specific business outcome, using environmental and operational data that is consistently acquired. This consistent data flow permits the Digital Twin model to continually adapt to changes in the environment or operations and deliver the best business outcome. Thus, the Digital Twin essentially becomes a living model of the physical asset or system. These twins can also be rapidly and easily scaled for quick deployment for other, similar applications. GE has built Digital Twins of critical jet engine components that predict the business outcomes associated with the remaining life of those components; for example, of gas turbines to deliver the desired electrical power output at the lowest possible fuel consumption, and of wind turbines that collectively optimize the production of electricity from wind farms. These Digital Twins provide up-to-date and customized information that enables GE's businesses and customers to make timely decisions and intercessions for continued profitability and maximized performance. While the digitization efforts of the industrial marketplace are uncovering a broad span of productivity-related savings and new revenue opportunities, many of the pre-eminent early productivity benefits are being felt through the unlocking of additional value in working assets, systems, and processes. These benefits can be grouped into three broad categories: Early warning / anomaly detection, prediction, and optimization" GE is using Digital Twins in the monitoring and diagnostics (M&D) space to flag irregular behaviors that could be early signs of an emerging issue. Anomaly detection systems have been in use for many decades as a means to detect possible impactful events and have been deployed at many M&D centers. Today, several Digital Twin anomaly detection models have been created that provide early warnings, which enable a potential unscheduled outage to be just a scheduled maintenance event. To begin with, these models underscore the normal or optimal behavior of the assets, systems, or processes using a consistent data flow and associated domain understanding. The domain understanding may be used to create virtual sensors from which additional data is acquired to increase the fidelity of the model. In addition, machine learning workflows are leveraged to detect anomalies as early as possible, in order to understand if they are a precursor to a potential impactful event. GE has created Digital Twin anomaly detection models to identify anomalies in the bearings of rotating machines

up to 60 days in advance, as opposed to the usual 20-30 days. Prediction is at the core of the Digital Twin capability and leverages a combination of physics-based models and data-driven analytics to optimize key business indicators such as uptime and throughput. As an example, the Digital Twin can be used to predict the remaining life of a turbine blade on a specific aircraft engine with great accuracy. This allows the application of condition-based maintenance (CBM) to manage a specific engine, rather than wasting time with the usual periodic approach. It also determines the remaining life of the turbine blade after each flight or a set of flights, by evaluating operational and environmental data and customer needs. With this condition-based approach, the customer can determine exactly when to schedule maintenance and also take action to increase the uptime before maintenance — for example, changing filters or giving the engine a water wash to reduce contamination of key parts, thus increasing the uptime of the asset. Industrial services are being transformed by knowing the likely outcomes of individual assets. GE has also created enterprise-scale Digital Twins that simulate full-scale, complex systems interactions, which simulate several 'what-if' scenarios of the future and determine optimum key performance indicators for situations with highest probability. By leveraging large data sources for weather, performance, and operations, these simulations play out possible scenarios that could impact an enterprise. For example, power generation customers are using Digital Twins to plan fuel-versus efficiency tradeoffs so that the committed electrical power output can be delivered through minimal fuel consumption levels, or so that it can be maximized at the highest possible price. Further, railway customers are using Digital Twins to optimize a locomotive's fuel cost and emissions on a specific trip, by processing the total weight of the train, the car configuration, the topography of the route, and the environmental conditions along the route. Enterprise-scale simulation and optimization requires Digital Twin models of every asset, across the business portfolio. GE created the Digital Twin Framework and a companywide community of thousands of modelers to create asset-level models that become Digital Twins. The Framework hosts a variety of physics-based and analytical machine learning methods to generate models, as well as supporting infrastructure to ingest and curate data sets and to validate and publish the final models. Industrial models and analytics have precision, throughput, and other performance requirements that are substantially different from the consumer internet, and the Digital Twin Framework for GE's Predix is the industrial strength capability for building Digital Twins. The Digital Twin Framework also provides sophisticated capabilities for building and deploying digital services applications that create economic value by optimizing over possible future scenarios. Digital Twins are published into a runtime environment built to handle the daily volume and model updates that run across multiple applications. In this environment, developers can combine the Digital Twin models with data sets and UX and UI widgets, and enable analytics to create industrial-grade applications. These applications are polymorphic, allowing users to 'hot-swap' analytical modules and Digital Twin models for redeployment to new applications and industries. The Digital Twin Framework incorporates artificial intelligence agents that automatically suggest connections and insights among the model and application developers. This capability continually grows by learning from user interactions. Some of the models built in the Framework today are products

of a fully automated process, learned and established from the learnings of the community and network. The developer community is at the core of the Digital Twin. Within GE, domain experts, model developers, data scientists, and business innovators form teams that continually build new Digital Twin capabilities and outcomes. The Digital Twin Framework hosts these teams within the larger community, fostering new connections and insights as well as accidental innovation. As the framework resides on Predix, it is a resource that is available to all customers and partners. Non-GE developers and users are now growing the Digital Twin ecosystem. Infosys is a great example of an early adopter of the Digital Twin approach. In 2015, Infosys partnered with GE to develop the world's first Digital Twin for an airplane's landing gear, enabling early warnings and failure predictions for several key components. This Digital Twin, combined with those of the engine, airframe, and other systems, scale to form a Digital Twin of the entire aircraft. Fuel economy is impacted by operational tradeoffs among these components — and the enterprise simulation balances these interactions to optimize fuel consumption, while also maximizing safety and timeliness. This is the power of the expanding Digital Twin ecosystem, which is transforming industrial services through its ability to forecast the future. We are at the beginning of the Digital Industrial Era and the Digital Twin is in its infancy. However, we are already seeing glimpses of the tremendous changes that lie ahead. As these Digital Twins become the 'living' models of physical entities that they represent, they embody asset 'memories' and even 'group consciousness.' Let us consider the example of The Wind Turbine Farm — a group of wind turbines placed together that generate electricity. In this case, a wind turbines farm is deployed in a field and has been producing electricity for the past four years. A new turbine that has been in production for two months needs to be added to the farm, when suddenly its control system notices some unusual sensor input that is unrecognizable. Subsequently, the sensor in the turbine will communicate with older turbines that have been functioning in the farm and assess if they have experienced this irregular input pattern before and what events are associated with it. It might then receive inputs from these turbines that indicate that they have experienced this pattern and a potential failure event is associated with it. The new turbine then uses its Digital Twin (as it has different parts and configuration) to determine the impact on its own components. Thus, the twins are in communication and constantly learning from each other. This notion of machines talking, reasoning, and making decisions with each other will be transformative for how industrial systems are operated and managed in the future. During the 2020-2030 decade, there may be over 50 billion machines connected together, with over seven billion internet consumers. With the network effect in play, the world will see another, even more sweeping internet transformation. ======================

Powering the humanistic automobile

----- Arcticle source ----- https://www.infosys.com/insights/iot/humanistic-automobile.html ----- Insights IoT Technology is going to be increasingly

devoted to human experience. According to Infosys' Digital Radar 2022 research, organizations that integrate environmental, social, and governance aspects with their technology adoption journey achieve better business outcomes than those that don't emphasize these humanistic factors. The automotive industry is currently witnessing large-scale technology interventions, especially in the areas of artificial intelligence (AI), automation, legacy modernization, and cloud computing. Approximately 35% of the global automotive companies have already achieved scale at cloud adoption. Going forward, with the rise in 5G-enabled vehicles, cloud connectivity will become ubiquitous. Moreover, with powerful data processing capabilities at the edge (i.e., where the processing is done on the vehicle), cars will be able to continuously sense and process information from their surroundings to become more autonomous, immersive, entertaining, safer, and convenient. Further, these developments will drive hyperpersonalization of user experiences. Under the hood, these cars will feature the latest hardware and software, which will mean the vehicles will constantly monitor their own health via the data they gather from sensors. These cars will be characterized by software-defined architectures, upgradable hardware, digital twins, and data-driven continuous learning. Based on high-performance systems-on-a-chip, a software-defined architecture will disassociate applications from the underlying hardware to allow more flexibility in design, and a wider range of updates over the vehicle's lifecycle. Similarly, modular hardware architectures will facilitate easier upgrades, increasing the vehicle's lifespan. Engineers will be able to use digital twins of cars to diagnose faults without having to take them apart. Lastly, analytics based on data from sensors across the vehicle's chassis will drive continuous learning in aspects of diagnosis and software updates. If used in accordance with privacy concerns, such analytics could also help facilitate faster insurance claims. Leading players, including automakers, semiconductor chip manufacturers, and telecom companies, are already taking big strides towards hyperpersonalization through technology and targeted strategic collaborations. That said, how well and effectively the personalized user experience is created and managed will be the key differentiator here. The digital chassis From hand-crafted controls and high-end multi-purpose touch screens, the industry is now expected to move towards much larger, pillar-to-pillar screens. These hyperscreens will automate button-operated processes and enhance infotainment features, such as controlling doors, lights, and entertainment features through touch or voice commands. Moreover, software updates, diagnosis, and fault resolutions will largely happen remotely, as automakers increasingly digitize their vehicle chassis. For example, Qualcomm's Snapdragon Digital Chassis is a set of cloud-connected platforms for telematics, connectivity, digital cockpit, driver assistance, and autonomy that will also include SIM connectivity, content, applications, and services for the vehicle's lifecycle management. This platform enables: These capabilities mean cars can be continuously updated, much like smartphones and personal computers. Snapdragon Digital Chassis is already gaining traction. In February 2022, Ferrari and Qualcomm announced a strategic technology collaboration, under which Qualcomm will deliver advanced digital experiences and will play a part in designing, developing, and integrating Ferrari's digital cockpits. In addition, it will provide safety updates throughout the lifetime of the cars. Soon, more such collaborative partnerships will come up, as

automakers increasingly integrate more-than-ever semiconductor-powered features into their vehicles. Immersive experiences through cloud-connected cars Cloud and 5G connectivity within cars mean that automakers can provide additional subscription-based services, in partnership with telecom and/or cloud computing players. Toyota and KDDI have been building a global, roaming free communications platform for vehicles to communicate with cloud servers since 2016. This platform will not only connect people with their cars, but also with their entire digital ecosystem, comprising homes, civil services within towns, and security networks. In early 2022, the Toyota-KDDI partnership also roped in telecom company Ooredoo as an Internet of Things connectivity enabler for Toyota's connected car services in Qatar. Similarly, BMW and Vodafone have tied up to provide a mobile, eSIM-based 5G connection within the BMW iX model of cars for €5 per month. This will enable BMW owners to use data-based services for automated and assisted driving, entertainment and infotainment, and road safety, and use 5G hotspot for up to 10 devices in the car. These cars will have large screens that act as multi-functional displays rather than having fixed consoles. For example, in its upcoming EQS EV, Mercedes has introduced a ~56-inch AI-powered display that blends multiple screens into a seemingly single pillar-to-pillar screen. As well as the standard information on the instrument cluster, navigation, mobile phone notifications, etc., this display also has an entertainment-oriented display on the passenger side. Its AI-based features include voice assistance and personalization of infotainment, comfort, and other functions, depending on who is driving the car. Hyundai Motor has also partnered with 3D content development engine Unity to create a digital twin of its factory, along with a metaverse platform that will allow workers to solve issues at plants remotely and optimize operations through test runs. It will also create a platform that potential customers can use to try out features in cars they are thinking of buying. Essentially, cars will become digital devices with their own apps and services. They will stay connected with other cars, devices, and facilities such as service centers or hospitals. They will operate entirely via software, which opens up innumerable possibilities. However, automakers must ensure that the longevity of cars doesn't go down due to all the software integration and updates: consumers will not be happy if their cars have to be replaced as often as smartphones because they have stopped getting software updates. What will it take to get there? As more services and applications become available, carmakers will have to create competitive digital offerings to bundle with and sell alongside their vehicles. They will need strong partnerships and associations with media and technology players to deliver such digital services. Another key factor will be how sustainably automakers transition into the electric vehicle space. Sustainability is a tricky aspect to master, and is often cloaked with buzz to pacify customers and stakeholders. Most plans to cut down the environmental effect of automobiles lack the actual impact. For example, mining of some of the key raw materials such as cobalt, lithium, and rare earth elements severely impacts the environment. Moreover, carbon offsets continue to be cheap, disincentivizing companies to make significant changes. Such aspects need more openness and integrity to bring a positive change. Notably, digital twins of supply chains and operations can help here by assessing scenarios with varying actions and predicting their impact on environmental factors. At the end, what matters is how humanistic these

companies can become. Technology without much consideration to what the employees and consumers want has little effect, Infosys' Digital Radar found. A fine balance between technology adoption, its social and environmental impact, and its core utility, is hard to achieve, but those that succeed, do much better. =======================

Internet of Things and Its Opportunity for Enterprises

----- Arcticle source ----- https://www.infosys.com/insights/iot/iot-opportunity-enterprises.html ----- Insights IOT Enterprises are going digital and increasingly adopting the Industrial Internet of Things, this, in turn, gives enterprises unprecedented access to data and enables them to get smart, more efficient, and agile. The Internet of Things is helping enterprises grow their top line and reduce their bottom-line. In this podcast, 'IoT and Its Opportunities for Enterprises', we learn that the Internet of Things is not just one technology but an amalgamation of a host of technologies that are still evolving and are expected to move towards rapid customizations. In this episode of Infosys Podcast, anchor Alex speaks with Dr Ravikumar, Head of the Advanced Engineering Group, on how not just the Internet of Things (IoT) but the Industrial Internet of Things (IIoT) has evolved, the potential they hold for enterprises and consumers, and how they are likely to continue integrating, both into manufacturing and our daily life. Podcast transcript Alex: Hello folks, welcome to Infosys Podcast! This is Alex speaking, your host. Today, we have with us, Dr. Ravi Kumar G. V. V. as our guest. He is Associate Vice President and Head of the Advanced Engineering Group at Infosys. So I'd like to say Hello to Dr Ravi. But before I do so, I'd like to inform the audience of his incredible accolades. He brings together more than 24 years of research and industrial experience and Industry 4.0. Authored more than 45 technical papers and filed two patents. He has worked on various prestigious engineering design and development projects and also in the development of solutions which we'll talk about in depth in a short while from now. He has obtained both a Ph.D. and MTech from IIT Delhi and a BE Honors from BITS Pilani, India. So after such a track record, I'd like to welcome you to the show, Dr Ravi. Let's begin..... The Internet of Things or IoT in short, has changed the technology landscape over the last few years, but how did it actually emerge and evolve to create the Fourth Industrial Revolution or Industry 4.0, as we know it today? Dr Ravi: Thanks Alex. Nice talking to you. Let me step back a bit before we talk about Industry 4.0, let us start with the First Industrial Revolution. Around 250 years ago, the steam engine replaced human-intensive labor operations on the manufacturing shop floor. We call this the First Industrial Revolution. Then electricity came into the picture and most of those machines and the manufacturing shop floor was electrified and the assembly line was conceptualized. We call that the Second Industrial Revolution. Then the Third Industrial Revolution is all about industrial automation and computer penetration into the manufacturing shop floor to automate processes. Now we're into the Fourth Industrial Revolution that is what we're calling Industry 4.0. Here is a world of cyber-physical systems, where information

systems converge with operation technology systems. This essentially means that the machines on the shop floor are getting connected to the top floor that is the highest layer where you get lots of business inferences. So this kind of tight integration, when it happens, allows for deriving a lot of benefits. If you look at the kind of benefits that organizations are having today, it is essentially that they are able to create new business, new avenues, in terms of improving their top line by creating next-generation products and services, and also able to improve their bottom-line by improving efficiencies across the manufacturing shop floor. So that's an immense benefit to the manufacturing industry or the manufacturing enterprise as a whole. Alex: These are almost like subtexts of industrial revolutions. You mentioned electricity and automation. Given the period between the First Industrial Revolution and the next, has the pace quickened now? Dr Ravi: Yes, if you look at the First Industrial Revolution, it happened around 250 years ago, now the Fourth Industrial Revolution has been happening since the last 4-5 years. So, you can see the gap is getting reduced and innovations are happening at a much faster pace compared to earlier. Alex: Personally, my curiosity lies with everyone else's as well, it's like, how we see the future. I'm sure you have a vision for the future yourself. But clearly, today we can see the potential of IoT, we see that it is immense because the possibilities are endless. Well, especially making the world a smarter place for one. What kind of impact do you think we can expect to see in our lifetime? Dr Ravi: If you look at IoT as a whole, most of the impact that is happening today you are able to see with your naked eyes. One simple example is Google Maps itself. If you want to move from one place to the other place, it's very easy now, you can switch to Google Maps and then go all around. The engine behind those Google Maps is essentially IoT. Then the other one is, I mean, in our daily lives, we use so many machines, washing machines, air conditioners, and also, there are many other devices that we use today. All these devices have become smarter and smarter. They are able to send their own data to the cloud, and that data is being analyzed or used by equipment manufacturers to assess the condition of that particular device and be able to send the technician before you even call the technician. IoT has an immense benefit to healthcare and more specifically, monitoring people post- operation, when they're at home. All this data can be sent by IoT devices to the hospital where doctors can diagnose and take necessary action. Alex: Is there room for new inventions? Because the way I see technology of today is, we're fine -tuning the inventions that we have already. That's where I see IoT. So really, the innovation comes with the invention of mind and how do you translate that into technology today, I think. Technology really is at the forefront, isn't it? Dr Ravi: Let me tell you a story that happened around 4-5 years ago and was in the newspaper. A set of washing machines that had been sold in the Northern part of India were failing often compared to the machines that have been sold to the Southern part of India, as well as the Eastern part of India. And the washing machine supplier did not know why this was happening. They set up a high-level committee to understand what was happening. Why these machines were failing. Then, the technical and marketing team went and found a peculiar situation, where these washing machines were being used by big families and small restaurants to make lassi or buttermilk, rather than for washing clothes. If the washing machine was IoT enabled, it would have continuously sent data about their usage and

the manufacturer would have been able to analyse this data, why the loads are coming high, what is happening, and you'll be able to keep track. There are two things that you can observe here. One is there is a need from people, for larger lassi making machines much bigger than what it is now. The second thing is, data could have been used to improve the design of that particular machine so that it could have been made much more reliable. So this essentially translates to a couple of things. One, you can create new products, which can be released to the market, and new services. Data collected can give users lots of information and insights to create next-generation services. Alex: Moving on to this remarkable invention of a lassi-making washing machine, what other kinds of benefits does the Internet of Things offer to large and small scale businesses? Dr Ravi: There are multiple efficiencies that you can look at. The first one is the supply chain, part of it. You can improve the supply chain efficiency through IoT. You can track and trace all the raw materials, components, substances that are coming to the manufacturing shop floor. In the manufacturing shop floor, there are 4 dimensions of efficiency that we have. One is the operations efficiency to improve the operations, what kind of things need to be done and things like that, you have a better visibility of the data that is coming to you, more real-time than ever before. Because of that, you will be able to plug the gaps much faster and much better. The second one is on maintenance efficiency because all these machines are equipped with sensors and they send out lots of data. When you analyse the data, you can predict when that particular machine is going to fail because you know that with that information you can take all kinds of corrective actions so that downtime of that particular machine is less and improve its availability. So that you will not have any kind of productivity loss on the manufacturing shop floor. Third important thing is information efficiency, you will be able to bring information from the device to the shop floor much faster and much better. That's another important thing because information is key for the entire manufacturing operations. The fourth one is energy efficiency. You can reduce energy consumption by measuring it, analyzing it, improving it, and also reducing wastage in the manufacturing shop floor. Help in the sustainability initiative of tomorrow's enterprise. At the end, once the products go out of the manufacturing shop floor, you can track them, how they're being used, or perceived by the end customer. So these are the six dimensions of efficiency that we have been working with and all these efficiency dimensions are being taken to the next level through IoT or Industry 4.0. Alex: Well, you've described the benefits of IoT. But obviously when enterprises are adopting IoT for the first time, what kind of challenges do they face or rather what kind of challenges do you think future enterprises would have to deal with? Dr Ravi: If you look at a typical manufacturing organization, you'll have all kinds of plants. In the sense, plants which are more than 100 years old, and plants which have just been recently commissioned and installed. So when a plant is more than 100 years old, you'll have all kinds of legacy equipment, and legacy control systems on the manufacturing shop floor. First thing is to deal with this legacy environment, we call it brownfield. You need to make those legacy machines, IoT- enabled. Then you have the newer machines which are IoT-enabled even when they are installed itself. You need to handle them separately. In a complex organization like a manufacturing shop floor where you need to deal with all kinds of nuances about the new equipment and old equipment, you'll have issues related to data

transmission, basically data interoperability, data security, data standards, and other things. So, you need to make sure that all that legacy equipment is IoT enabled. Then after that, it's all about capturing that particular data and using that particular data to improve the processes. So one way is, you can't shut down operations. Without shutting down operations, you need to do all this. That means you need to provide a parallel path for capturing additional data that you require and use that data effectively to improve overall operations. Alex: Do you also in tandem, say that because enterprises have archaic systems, you then construct from scratch a new system while they decommission one, you then develop a new system for them? Does that also happen? Dr Ravi: Enterprises need to do both things but you can't decommission a system which is very costly. So what you need to do is to make sure that without decommissioning it, you should figure out ways and means through which you can make the machinery IoT enabled. So one simple example is, put some external sensors on top of that machine, put a gateway kind of component. This gateway will collect data from those sensors, and then send that data to the cloud directly. Without any disruptions, you are able to capture the data that you need. This is one way of doing it. The other one is, as you rightly said, there are certain machines which you may have to decommission, not because of the IoT but because of the inefficiency of that particular machine itself, probably one needs to look at that holistically. Alex: How does Infosys help its customers realize the potential of IoT? Dr Ravi: At Infosys, we have a very strong focus. In fact, we started this IoT journey around five years ago. Then, we felt that we needed to build necessary competency around IoT and we also needed to work with some of the leading global organizations to understand the nature of the business. That's where we partnered with the University of Aachen in Germany to understand what the industry was doing as a whole on Industry 4.0. Coming back to the projects that we are working on for various clients, there are two broad things that we're doing. One is, Industry 4.0 consulting - defining the roadmap for the organization, what they should do, how they should do, and helping them implement the strategy of Industry 4.0. The second one is, helping organizations develop IoT platforms. We help them in developing their own platforms, which are customer focused platforms. So with both the things in mind, both the Industry 4.0 platform development as well as the consulting and roadmap definition, we are able to help our customers immensely across industry segments whether it is in manufacturing, healthcare, pharma, or food and beverages. Alex: I'll just ask you one brief question as I'm listening to you. So, are you consultants or hands -on engineers or both? Dr Ravi: We do both because we need to do consultancy to tell the customer what they need to do. And also, implement what we suggest to help the customers realize the benefits that they are supposed to. So we are consultants/engineers, that's the big difference that Infosys is offering today. We offer more like an end-to-end service to our customers. Alex: Is it a growing sector? Dr Ravi: It is one of the fastest growing service lines in engineering. In fact, now it has become a separate service line. Alex: This leads me to the final question. While you are so close to Industry 4.0, that's reshaping our lives in ways that I think people don't actually imagine. It's kind of creeping up on them, only in hindsight do they see a difference in their lives. Do you ever think about what will cause the next industrial revolution, the way IoT did? Dr Ravi: The way I see it, Industry 4.0 is not one single technology that has given all the benefits. IoT

is a collection of many important technologies. Apart from IoT, there is artificial intelligence and machine learning, virtual reality and augmented reality, robotics and autonomous technologies besides additive manufacturing. All these technologies have come together to create the Fourth Industrial Revolution. If you look at the next industrial revolution, it is going to include some more advanced technological innovations and a lot of this is going to be by way of nanotechnologies, and nano sensors. Then quantum computing is another paradigm that is changing lot of things. Probably lot of these advanced and also communication technologies, networking technologies beyond 5G, are going to come together to deliver the next industrial revolution. And it is difficult to imagine tomorrow, but we are definitely heading towards a much more intelligent world where machines will behave like human beings, and humans and machines will work hand in hand to create the next generation of products and services. Alex: We've had a very interesting discussion. Thank you, Dr Ravi Kumar. Dr Ravi: Thanks a lot, it's a pleasure discussing with you. Alex: And thank you all for listening. If you'd like more information, please visit Infosys.com we look forward to you tuning in the next time. Thank you.
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A Long-Term Approach to Industrial IoT is Crucial for Success

----- Arcticle source ----- https://www.infosys.com/insights/iot/long-term-approach.html ----- Insights IOT The concept of machines communicating with each other is not particularly new. As far back as the early 20th century, Machine-to-Machine (M2M) communication was present, as wired communication machines exchanged information through signaling. Computer networking brought in more sophisticated forms that found applications in SCADA, telemetry etc. As data sensors, networks, storage, processing and integration become more advanced and affordable, IoT adoption in the value chain is set to skyrocket. Our new-world approach to the Industrial IoT is basically an attempt to give it a better structure, so that it is easier to use and more intuitive to understand. The biggest benefit of Industrial IoT adoption is that it provides an end-to-end value chain view, rather than the traditional one in silos. This concept, called the Digital Thread, refers to a communication framework that can provide an integrated view of an asset throughout the manufacturing lifecycle, thereby enabling data-driven interventions and improvisations. Despite its amazing ability to drastically improve operations, the journey to Industrial IoT adoption needs to be well-planned and thought through. Here are a few ways and some considerations to ensure that we get the most from our IoT investment. 1. Provide great experience with end-to-end data visibility Shop floor managers today need to deal with multiple complexities that grow with every new product or innovation – from processing data from multiple sources to handling the demands of designers and engineers. They must screen information across various machine lines and other resources on the

shop floor, and monitor the throughput from their shift. And they must do all this while ensuring minimal waste and downtime, low cost, and high performance on KPIs. What they require is a system or a 'system of systems' that can give them end-to-end visibility into everything that's happening in their department. This includes information on inflows into their work area, the way output is being applied to the next work area, dependency on customers and suppliers, and how their KPIs are getting impacted in real-time. This empowers shop floor managers to drive efficiency and quality while reducing waste for the organization, to lower costs and shorten time-to-market. 2. Insights derived from data for action For any IoT solution, the ability to acquire data is one of the core components. This data is then analyzed to help generate useful insights that translate into actions. IoT solutions can be designed to either recommend an action or initiate corrective action automatically. For example, data collected from chillers or heaters can be analyzed and designed to generate a service request automatically as part of preventive maintenance. Another example is a robotic arm that can not only spot a defective piece on the conveyer belt but also take remedial action by physically removing it. Today's IoT solutions can be designed so that the required action is triggered directly from a platform such as Infosys Nia or any other. 3. Innovation backed by data Innovation is important because every industry constantly seeks to improve its top-line (through new products) and bottom-line (by cutting costs, improving throughput). An effective innovation process needs to be backed by data, rather than intuition. Traditionally, the innovation process went through the following stages – market survey – design – engineer – manufacture. In this process, information on product performance from a design, engineering, quality and cost perspective was disjointed and tentative, and existed in silos, leading to higher rates of failure. A combination of Product Lifecycle Management (PLM), IoT and Mechanics of Materials (MoM) can help improve product predictability and reduce the cost of innovation. We can predict product success and quality more accurately, thereby reducing recalls and quality issues in the market. There are countless use cases for this across the manufacturing and services industries, limited only by imagination. 4. Accelerate processes Whether traditional or digital, every organization wants to do things faster and reduce time to market for its products. The IoT process lends itself best to the Agile approach rather than the Waterfall model. The most effective IoT implementations are those that adopt approaches such as DevOps, Agile and Scrum. They also enable enterprises to work closely with customers and incorporate customer insights. Also, it is important to ensure that the implementation team includes people who are well-acquainted with the industry and have a good contextual understanding of the problem to be solved. This is something that we follow at Infosys as well. 5. Ensure the right outcomes In the past, industrial plant networks were very secure because they only consisted of proprietary protocols and communication technologies to connect various machines. Industrial automation control systems and protocols are now being transformed from proprietary to TCP/IP-based to enable Information Technology – Operations Technology (IT-OT) convergence to facilitate advanced analytics, remote operations, and other capabilities. With the integration of IT-OT networks, plant networks are exposed to the same vulnerabilities and security challenges as the cyber world. Traditional cyber security frameworks cannot be used for the IIoT.

The solution needs to include risk assessment of the overall system, down to the last machine/controller. At Infosys, we have built a framework for this called RAMS (Reliability, Availability, Maintainability and Safety). We need to implement trust networks/trust zones that are as safe as the old plant networks, using new risk assessment models. A good approach is to build in checks during the design and implementation phase to identify and flag risks and mitigate them either through technology or process interventions. Summary The Industrial IoT is set for massive adoption over the next few years. Yet there are some constraints that are holding organizations back. The first is the need for massive change management. The IoT can transform traditional business processes and roles of various people in the value chain. Organizations need to invest in training and show commitment right from the C-level to change mindsets and ensure comfort. The other key concern is technology integration or interoperability, since data will come from different sources, following different standards. Ensuring that data is consumed effectively without getting hacked and without infringing patents is important. Most organizations take a rather shortsighted approach to IoT adoption, looking for ROI quite early in the cycle. But true ROI can be realized only when the IoT is adopted from end-to-end in the supply chain to give visibility across the entire digital thread. Investing time and effort in PoCs and planning for effective change management can help organizations take the leap into the Industrial IoT. Patience and a long-term view can go a long way in improving their chances of success.
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Manufacturing Success with IoT

----- Arcticle source ----- https://www.infosys.com/insights/iot/manufacturing-success-iot.html ----- Insights Internet of Things Business Challenge A leading auto maker wanted to explore the use of industrial IoT (Internet of Things) systems to help predict the life and maintenance needs of spindle machines, as well as predict energy requirements of their plant. Infosys View IoT, when implemented correctly, after assessing Industry 4.0 maturity and charting roadmap for successful implementation, can help clients generate new revenue streams and improve quality of life. Business Outcomes And more... Read about the client benefits and the 5 best practices drawn from this engagement. ======================

IoT

----- Arcticle source ----- https://www.infosys.com/insights/iot/podcasts.html ----- Insights Internet of Things and Its Opportunity for Enterprises Insights ======================

Driving Intelligence in Cars

----- Arcticle source ----- https://www.infosys.com/insights/iot/power-intelligent-cars.html ----- Insights IoT While the human imagination has for

long used intelligent cars to thwart villains in high-speed chases and fly over oceans, automakers are trying to make cars smarter for more everyday purposes, such as predicting driver behavior, gathering route intelligence and overall, providing safer driving experiences. The Internet of Things (IoT) is key for empowering cars with such intelligence. A leading automaker wanted to build their own IoT-powered telematics platform, to provide safety, security, and infotainment services to their customers. See how Infosys helped and the five key takeaways from the project.
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Key Considerations for a Pragmatic IoT Solution and Digital Transformation

----- Arcticle source ----- https://www.infosys.com/insights/iot/pragmatic-iot-solution.html ----- Insights IoT The internet made the world flatter. It allows us to gather and share information from any place in the world and in a real time manner. The Internet of Things (IoT) is the next wave of innovation that will connect the world at a more granular level, connecting every device – from phones, sensors, robots, applications to platforms and systems. Thus, will it get complex? Yes, of course. Imagine the amount of data and interaction happening on billions of devices. Think about the compliance requirements, data storage, security and privacy. Unless we can manage this maze of connectivity and harness the data it will generate, IoT as a strategy could be a disaster. As an organization prepares itself for an IoT led digital transformation, it needs to recognize that the exercise is not limited to adopting new digital technology alone but involves questions around user experience, security and business model that need pragmatic answers. The key questions to ask when considering IoT are: What is your context, objective, roadmap and business case? Do you want to enhance your operational efficiencies? Improve customer experience? Transform your business model from selling products to selling product as a service? Increase topline? What is the overall enterprise digital roadmap and current footprint? What do you want your IoT eco-system to do, for example the number of dollars you aspire to save or the number of productive hours you would like to gain, and by when and how? Your objective will help you identify the different value chain components of the business and technology landscape that need to be IoT enabled. Example: A food and beverage company is looking at IoT to reduce loss of goods in transit due to spoilage owing to lack of ideal temperature in their trucks or due to delivery delays. Where do you start? Brownfield vs Greenfield Do you have existing investments in IOT technology components which you can reuse? Are you setting up new business or assets which need to be IOT enabled from ground zero? There would be different objectives and approaches for different kind of scenarios. Also, identify those processes, devices, people, location or product line that will lend itself the most to the benefits of IoT. You can start small, wait for the ROI to realize before committing to larger IoT ambitions. Example: A leading robotics company engaged Infosys to

develop a remote robot monitoring solution. Infosys implemented a scalable asset management solution with role-based views into real-time cloud-based alerts and key performance indicators (KPIs). This offered visibility into near real-time asset status, thereby improving shop-floor performance. The solution could scale up to accommodate new assets being brought into the business and could scale down for those assets that were being discontinued or written off. How will you develop an IoT Ecosystem? Build, Buy or Partner It is hard to find one provider who can take care of all the different capabilities required to build the IoT ecosystem. You need to identify the platform, build the integration strategy, create a community of partners, build connectivity to disparate networks, to be able to develop the products and services you need. Example: Infosys is part of a consortium led by a leading Automotive OEM that aims to provide safer driving experiences by minimizing road accidents. As part of the driver awareness research project, the consortium co-created a Proof of Concept (PoC) to prevent driver distraction and manage driver workload. Infosys' contribution to the research included custom biometric software and algorithms. We also designed and developed a telematics device prototype that can gather, transmit, score, and analyze driver data for usage-based insurance. Our design sparked off innovation in designing usage-based insurance products and schemes based on driver behavior. What is your security Solution and data protection plan? Have you thought about the privacy and security required for your IoT devices and environments? Example: Automotive Industries are worried about hackers breaching connected cars by remotely gaining control over vehicles. How can they secure their moving end-points, devices, data centers and the cloud? While you find the answers to these questions, you will recognize that IoT remains fragmented and most of the solutions exist in isolation and no single platform provides end to end value chain – around the life cycle of an asset. As a multi-dimensional service provider, Infosys has helped several enterprises navigate their digital journey with a powerful combination of technology, domain and engineering expertise, advisory and consulting services, and a robust partner ecosystem needed to reduce the complexity of IoT implementations and operations. Visit us at PTC LiveWorx 2018, in Boston, where, as the Platinum sponsor, we showcase some of our solutions that can help your enterprise uncover the value of IoT. =====================

Enhancing Asset Efficiency in the Process Industry

----- Arcticle source ----- https://www.infosys.com/insights/iot/process-industry.html ----- Insights IOT Companies in the process industry operate in a complex business landscape. A global survey commissioned by Infosys and the Institute for Industrial Management (FIR) at the RWTH Aachen University reveals that complexity presents opportunities to be more responsive with the right combination of technology and processes, resulting in enhanced production efficiency for process manufacturers. As part of the survey, an Industry 4.0 asset efficiency maturity mapping exercise was conducted. It assessed the process industry and found that

companies in this industry planned more improvements, compared to all other industries, till 2020 to enhance their maturity. This industry snapshot is the outcome of a global survey commissioned by Infosys and the Institute for Industrial Management (FIR) at the RWTH Aachen University, Germany, to gauge the readiness and maturity for Industry 4.0 enabled asset efficiency. 'Industry 4.0' traces its origins to the Industry 4.0 working group set up by the German government in January 2012. It is part of the hi-tech strategy action plan 2020 that provides strategic inputs to sustain Germany's leadership in manufacturing and industrial automation. Industry 4.0, smart manufacturing, or the industrial Internet of Things is the technological evolution from embedded systems to digital manufacturing and production systems powered by big data and advances in technology, such as artificial intelligence, rapid automation, robotics, and additive manufacturing. Industry 4.0 is therefore set to transform production by boosting efficiency and effectiveness across the value chain - productivity, ensuring consistency in quality, reducing costs, and optimizing inventory. The process industry today is among the most mature industries for several reasons: However, looking ahead, this industry is facing numerous and complex challenges that could mean an opportunity or a potential threat, in both the short and the long terms, illustrated as below. While there is going to be no single remedy, a systematic strategy to address these key aspects can help companies outperform their peers. In an Industry 4.0 process manufacturing landscape, cyber-physical systems create a smart network across the extended value chain. Digital manufacturing systems bring together physical assets, processes, and people for seamless interaction. Digital connectivity and sensors enable continuous monitoring of performance parameters and process variables from pressure vessels, mixers, pipelines, valves, and field equipment. Streaming data can be analyzed to harness useful insights on asset utilization, predicting failures, and improving asset lifetime. Machine-to-data technologies and remote monitoring offer real-time visibility on the condition of individual assets. This, when combined with prescriptive analytics, builds a responsive production system. This new way of interaction between field devices and processes enables timely detection of issues, prompt repair and preventive maintenance to improve the safety of assets, and prevent expensive, unplanned outages and enable regulatory compliance. Significantly, insight on the health of assets is useful in increasing asset efficiency and effectiveness. Infosys and FIR, RWTH Aachen, Germany, conducted an empirical study to assess the maturity of asset efficiency in industrial manufacturing. We surveyed more than 400 manufacturers across the aerospace, automotive, electronics, machinery, and process industries in the UK, the USA, China, France, and German-speaking countries. We partnered with Vanson Bourne, a specialist technology market research provider to conduct the survey outside Germany. Our research focused on four key dimensions of asset efficiency – maintenance, operations, information, and energy management. Production managers, plant technical managers, COOs, asset efficiency consultants, and heads of R&D / manufacturing shared their strategies and goals for 2020 via online forums, telephone, and personal interviews. We used the Industry 4.0 framework to assess the effectiveness of asset management processes on a four-point scale, which ranged from 'Not Implemented (lowest maturity)', 'Potential Recognized' and 'Partially Implemented' to 'Systematically Implemented and Benefits

Realized (highest maturity).' Assets included equipment and machinery used for production, machines, and tools. Asset efficiency is a key driver for competiveness in the asset-intensive industries and also with process manufacturing. Although 85 percent of manufacturers recognize the role of digital technologies and the potential of Industry 4.0 in increasing asset efficiency, only 15 percent of companies have dedicated strategies for enhancing asset efficiency. Our survey therefore clearly reveals that there are significant opportunities for the process industries to improve the efficiency of their assets by taking advantage of technologies – in turn leading to increased productivity and profitability. This survey critically analyzed asset efficiency in four dimensions and provided key insights on how industrial enterprises can develop their roadmap for improving asset efficiency and effectiveness. While 87 percent of companies are aware of the potential of preventive maintenance driven by real-time data and analytics, only 15 percent of companies implemented condition monitoring and 17 percent of companies incorporated machine status data in their maintenance workflow. Maintenance is the single largest controllable cost in an asset-intensive enterprise. In fact, up to 90% of maintenance costs could be saved with the right maintenance strategy. The annual maintenance budget exceeds the net profit at several process plants. Asset reliability programs should therefore capitalize on technology advancements in industrial sensors and apply engineering expertise to accurately detect anomalies and predict equipment failure. A robust maintenance strategy focused on predictive and reliability-oriented maintenance through condition monitoring, planning and scheduling, and root-cause analysis can increase the lifetime of equipment by 20 to 40 percent. While 57% of companies optimize assets based on KPIs, only 13% use real-time data. Further, operational efficiency is systematically monitored and optimized at the asset level in only 16% of companies. Among global manufacturers, one-half of equipment availability is lost in maintenance, upgrade, shutdown, and replacement activities. Global manufacturers can therefore significantly maximize asset performance and utilization to improve return on assets with real-time visibility into asset performance, production efficiency, and logistics processes. Performance improvement programs that can gain vital real-time information to enhance performance can boost operational efficiency by 20%–25%. While 82% of enterprises recognize information interoperability, data security, and data standards as preconditions for achieving efficiency, it has been implemented by only 11% of companies. Significantly, 83% of companies plan to use data across the enterprise for a comprehensive analytics beyond specific purposes. The process industry relies heavily on real-time data from sensors and process instruments to make intelligent decisions for efficient operations and uninterrupted production. Therefore, the complex interrelationships between asset life cycle stages, if intelligently integrated with operational data and business intelligence can address the information gap and help optimize asset performance. Poor asset information management increases the risk of safety, health, and environmental incidents, which can imperil an enterprise's very survival. An asset life cycle information management system based on a data quality framework and knowledge-based engineering delivers cost savings of 5%–10%. While 88% of companies identified energy management as a key dimension of asset efficiency, it is planned and managed well only at 15% of companies. Further, while 53% of

companies monitor resource and energy consumption, only 14% have systematically integrated energy efficiency to their overall asset efficiency strategy. While asset-intensive industries are capital intensive, they are also energy intensive. Therefore, a well-maintained asset will consume less energy and improve its asset sustainability index. One of the major reasons for missed energy efficiency opportunities is the lack of data on energy use in asset industries. Energy management and sustainability programs are therefore key to track asset efficiency and can reduce energy consumption by up to 25% in these industries. Inefficiency is a thing of the past for process manufacturers. Process manufacturers who dynamically respond with the right combination of technology, processes, and solutions can capitalize on business opportunities and seize the competitive advantage with Industry 4.0 to become industry leaders of the future. Infosys offers engineering and technology services to support the entire offering lifecycle
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Reimagining the Future with 3D Printing

----- Arcticle source ----- https://www.infosys.com/insights/iot/reimagining-future-3d.html ----- Insights IoT 3D printing opens up a universe of possibilities in manufacturing — from low-cost manufacturing to a lean approach to design and development. This think piece explores the journey of this technology and what it could mean for our future. Around the turn of the 20th century, manufacturing was perceived as the 'old economy.' The new economy seemed like a whole new world, inhabited by enterprises with a digital DNA. However, the onset of the Industrial Internet of Things (IIoT) changed this perception, with binary bits and physical atoms merging to alter the manufacturing landscape, paving the way for a 'maker movement.' And at the epicenter of this movement is three-dimensional printing or 3D printing; transforming manufacturing, engineering, industrial design, and hardware. It has the potential to upend industries and change lives — imagine consumers printing superfoods with a specific calorific value or doctors printing prosthetic limbs to correct deformities! 3D printing is making a dent in niche areas, but not across traditional manufacturing. The trajectory of most technologies follows an uncharted, but predictable journey: The technology becomes mainstream after multiple catalysts encourage its adoption by a critical mass of users. Take for instance, personal computing, whose acceptance was low when it presented itself as an alternative to mainframe computers. Similarly, at the outset of the electric vehicles movement, electric cars appealed only to a small number of consumers, with the majority of vehicles running on gasoline. "For me, the 'tipping point' isn't about how many manufacturers have changed, it is about how many minds have. Thanks to more accessible technology, we are now reaching a critical mass of people who, when they think about how things are made, think in a different way. You could say that they are thinking in 3D," says T. J. McCue in the Harvard Business Review. McCue leads the GoExplore3D project, tracking the growth of 3D printing technology in the US. Also known as additive manufacturing, 3D printing is making rapid

strides with the confluence of the Internet of Things, artificial intelligence, big data analytics, advanced simulation and modeling, industrial biology, and quantum computing. The scope of 3D printing encompasses objects like aircraft components, musical keyboards, interactive posters, human organs, and much more. In fact, 3D printing is even salvaging our heritage: 3,000-year-old Assyrian artworks and Hatra sculptures that were vandalized in the Mosul Museum, Iraq, are being recreated using 3D printing. The impact of 3D printing has surprised Charles (Chuck) Hull, who invented stereolithography printing and cofounded 3D Systems to commercialize the technology. "Although I expected 3D printing to be embraced by manufacturers, I could never have anticipated how widespread 3D printing is today, or the types of things that people are doing with it. For the past 30 years, we have had the distinct pleasure of watching our innovation spur more innovation," said Chuck, on being honored by the American Society of Mechanical Engineers (ASME). 3D printers create moving components and can manage a wide range of substances — from recycled materials and rare earth metals to biological matter. The technology transforms manufacturing by enhancing versatility across various industry segments, including aerospace, automotive, consumer goods, chemical, defense, healthcare, infrastructure, and utilities. Thanks in large measure to an ecosystem — a network of networks — with near real-time interfaces across products, manufacturing systems, assets, and stakeholders, 3D printing is now a part of the mainstream. Today, it redefines the way consumer and industrial products are designed, developed, and delivered. This technology improves product performance dramatically by supporting new materials, novel designs, and innovative functionality. It positions organizations at Zero Distance to customers, by facilitating production at the point of purchase / consumption and diluting the advantage of economies of scale. Distributed manufacturing allows extreme customization and low-volume production of products. 'Normal,' a New York City-based startup, uses 3D printing to make premium earphones. Customers place an order via an app after sharing images of their ears and specifying their preferred color. The earphones are printed, assembled, and shipped from the Normal office-cum-factory-cum-store in less than 48 hours. Global manufacturers are adopting 3D printing to simplify production and enhance the quality of their products. GE established the Center for Additive Technology Advancement (CATA) in Pennsylvania to innovate across business lines, including aviation, healthcare, oil and gas, power, renewable energy, and transportation. Today, it has an 'industrialization lab' to optimize 3D designs and simulate production. Data, simulation techniques, and algorithms lie at the heart of additive manufacturing. A 3D printer processes intricate designs from 3D-scanned images and/or Computer-Aided Design (CAD) files and renders it in different materials. The software can be tweaked to personalize the design for a customer or adapt the product to a specific market / requirement. What is more, the agility of 3D printers rationalizes the cost of production, as a single printer can be used to print different objects as well as parts for diverse applications. Boeing uses 3D printing to make components for different aircraft models. Additive manufacturing accelerates product development by eliminating the dependence on design / product specialists for prototyping. It minimizes the cost for mass customization as well as bespoke offerings. Thus, by leveling the playing field, it minimizes capital investment and mitigates the risks associated with new product launches.

More importantly, it encourages product companies to serve niche market segments. In addition, 3D printing minimizes the complexity in product design and development. A 3D-printed car has roughly 40 parts, as against 20,000 parts in an assembled car. NASA is exploring 3D printing to generate food for manned space missions in partnership with 'Made in Space,' a Silicon Valley startup. It follows the successful launch of Made in Space's zero-gravity 3D printer at the International Space Station to print spare parts and components. The concept of 'open design' — akin to 'open source' in software — will be adopted to collaborate for the manufacture of physical products and components. Designs will be co-created and enhanced, ensuring superior and cost-effective products. In several areas, 'open design' will render independently designed products obsolete, a prime example being how Wikipedia is preferred to the Encyclopedia Britannica by users. Shapeways, a 3D printing factory, depends on 'open design;' wherein customers create their own products, seek inputs from experts for unique designs, or select from a curated list of designs uploaded by users. Shapeways offers over 50 materials, including sandstone and precious metals, to print ordered objects. 3D printing will create new paradigms in manufacturing. It will disrupt traditional methods and provide business opportunities to early adopters. Further, the technology will change the character of the manufacturing landscape and its extended supply chain in the following ways: 3D is taking another big leap towards 4D printing, a term coined by Skylar Tibbits, director of the Self-Assembly Laboratory at the Massachusetts Institute of Technology. It involves printing objects that respond to stimuli such as impact, temperature, and moisture. Research in self-transforming printed products may culminate in the wings of an aircraft adjusting to aerodynamic conditions, or shoes shrinking and soles responding to the wearer's gait. While advances in digital and computing technology have shone a light on 3D printing, the shop floor requires reinvention in order to successfully and efficiently assemble 3D-printed parts. "It takes a long time to get all of the functionality into the system, at a level of robustness and availability that people expect in traditional subtractive equipment; but again, that is just the normal growth and learning phase of any new technology," says Roger England, director of materials science and technology, technical quality, and intellectual property at Cummins Inc., in an interview with the American Society of Mechanical Engineers (ASME). In a landscape of seismic changes, manufacturers need to address some fundamental questions such as: Learn more about the Infosys IIoT offering >> =====================

Revolutionizing the Food Supply Chain with IoT

----- Arcticle source ----- https://www.infosys.com/insights/iot/revolutionizing-the-food-supply-chain-with-iot.html ----- Insights IoT Food for thought: food services enterprises should have elasticity in inventory of produce while minimizing food waste. The business imperative: cater to the demand for processed food while ensuring food safety. The operations dynamic: maintain food quality while rationalizing costs. On-demand distribution of huge

volumes of products across diverse categories requires food services enterprises to capitalize on advanced technologies such as the Internet of Things (IoT) and big data analytics to integrate the supply chain and improve efficiency in packaging, warehousing and logistics. Solutions for real-time asset tracking and mobile workforce management boost productivity and streamline operations; however, they do not adequately raise service levels or minimize order lead times in complex shipping flows. IoT supply chain management tools mine useful data within and beyond the enterprise to maximize asset utilization as well as customer value. Moreover, an IoT-enabled supply chain offers contextual intelligence. Analytical models use big data to predict demand for a certain time of day, recommend product pairing to avoid multiple orders, determine how many drivers are required in a shift, and schedule inbound as well as outbound vehicles to minimize truck rolls. Trimming even a few minutes from the dwell times of a delivery truck leads to substantial savings for the entire fleet. An IoT ecosystem simplifies the business across several dimensions. It automates asset control, statutory compliance, and reconciliation of products and assets. In addition, it addresses the issue of hidden costs associated with loading equipment and returnable packaging. Predictive maintenance of trucks, forklifts and conveyors, and timely repair and maintenance of returnable containers, racks and pallets rationalize warehouse inventory and material handling costs. IoT-driven logistics systems ensure the integrity of the cold chain. It adjusts discrete systems in the network automatically to avoid breach in threshold levels of humidity and temperature in warehouses and trailers. Device-generated data provides real-time audit trails for food safety professionals, and helps supply chain planners identify and analyze the root cause of issues in the cold chain. IoT devices that communicate with each other as well with enterprise systems enable autonomous response across warehousing and logistics processes. An integrated data-sharing framework is the foundation for an intuitive supply chain - smart bins that auto replenish supplies, drones that undertake stock checking, autonomous vehicles that plan loads and schedule routes without human intervention, intelligent storage racks that monitor quality of produce and expiration dates, and robots with 3D vision to remove wilted greens from the shelves. The future of the food services landscape looks bright. IoT and big data analytics will help food services enterprises operate with clockwork precision. =====================

IoT

----- Arcticle source ----- https://www.infosys.com/insights/iot/success-stories.html ----- Insights Building a Digital Twin Driving Intelligence in Cars Manufacturing Success with IoT Insights Insights Insights =====================

Industry 4.0: The Tipping Point For Manufacturers

Insights IoT Inside a seafood processing facility in Norway: Machines, not humans, evaluate the quality of salmon, weigh and grade the fish, and distribute it to the production units. Soon, machines will also calculate the quantity of ice required for transportation of the fish to its respective destination. A thousand miles away, at another manufacturing plant in Germany: Machines produce millions of Programmable Logic Controls (PLCs) that automate machinery – from ships, automobiles, and farm equipment to entire production centers around the world. The output of customized products manufactured at the plant is 99.99885% defect free! A common strand that runs the two facilities is the 'smart factory' ecosystem described above is that the physical infrastructure is powered by information and communications technologies, which draw insights from the data in the landscape. Here, automation is powered by insights, which enable the executing of business processes and deliver programmed output with minimal human intervention. Such a cyber-physical environment, founded on the Industrial Internet of Things (IIoT), is the very basis of the fourth industrial revolution that is bringing never before 'intelligence' to manufacturing. Fully optimized lean production Industry 4.0 transforms how factories operate by creating a conducive environment for Just-In-Time (JIT) practices for production, order management, and shipment. It not only interconnects disparate sub-systems of a shop floor, but also establishes digital links between the assembly line or processing unit, and the product design office, logistics services, supply chain, and stakeholders. A 'connected' plant manufactures high-quality products in shorter production cycles and addresses customer demand for product variety, besides minimizing waste across operations. The interplay of sensors, data, and analytics is the catalyst for this revolution. Sensors Connected factories track the location of labor, materials, machines, and moveable assets in real time. IIoT digitizes the production environment by integrating the Manufacturing Execution System (MES) and ERP system with embedded devices and process instruments for real-time communication. For instance, smart tags can be embedded to transform a spare parts bin at a production facility into an autonomous bin, which digitally records location and content, and communicates when it needs to be replenished. Self-driving vehicles, geo-fencing systems for transportation and materials handling, hazard monitoring solutions used for industrial safety and security, and remote quality control tools to manage air, water, and product quality depend on sensors and communication technology to function optimally. The network of connected components, sensors, and controllers provide large volumes of useful data in a variety of forms and formats. Data Seamless data flow between machines and enterprise systems unify the entire manufacturing process. Big data tools consume data residing anywhere – sometimes even in the environment outside the manufacturing facility – and in structured, unstructured, and semi-structured formats, to provide visibility into the production environment. It facilitates the enhancement of dynamic manufacturing operations. Smart

equipment and Industry 4.0 technology solutions empower manufacturers to defy economies of scale and assemble customized products or handle small-sized production runs, profitably. Flexible operations and real-time data from human, system-to-system and human communication protocols improve quality and reliability through timely interventions before and during manufacturing. IIoT leverages data to drive self-organizing production lines. In the case of the autonomous bin, when sensors trigger a replenishment request, data in the order management system responds to the requirement. Synchronization of production schedules and supply chain activities based on real-time data from IoT devices enable just-in-time arrival of materials in the bin. Cloud computing enables smart factories to generate, process, and store large data sets cost-effectively. The scalable and secure cloud architecture meets requirements of connected ecosystems. However, raw data offers limited benefits. Sophisticated analytical models are needed to monetize big data and predict requirements. Analytics The value of IIoT transcends automated measuring, sensing, and control of operations. Advanced analytical tools and cognitive models intelligently apply big data to create a responsive and self-healing environment for the factory of tomorrow. Predictive analytical tools harness actionable intelligence from the customer, supplier, equipment, and production data. Predictive analytics minimizes downtime for retooling equipment and asset maintenance. Simulation prevents failure of new products. Significantly, analytics helps OEMs grow revenue from after-sales services by accurately forecasting the lifespan and maintenance requirements of finished products. Automated maintenance, ordering, receiving, assembly, shipping, and after-sales services ensure agility, while analytics drives self-optimization. Going back to the example of the autonomous bin, while sensor information and automated order data management enable JIT inventory strategy, analytical frameworks can identify areas for further efficiency and cost reduction – through rearrangement of the sequence in the production line, re-configuring the product that uses the part, or replacement with a more economical component. Industry 4.0 helps the manufacturing ecosystem to autonomously sense the context, adapt to constraints, and react/organize preemptive action to achieve business goals. Even with this digital monitoring of physical processes through sensor-based technologies, the industrial application of the Internet of Things (IoT) and data analytics will lead to fact-based decision-making that will, in turn, be executed as a matter of routine by automatons, people will still drive the future of manufacturing. People, freed from routine by technology, will find ways to direct their new-found productivity into tasks that can only be executed with human imagination and intelligence – like the creation of useful new products that must be manufactured to solve the problems of our times.
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Infosys Living Labs

----- Arcticle source ----- https://www.infosys.com/insights/living-labs.html ----- Insights Innovation Converting an Idea into a New Business Solution is a Lot of Work Ideas are Portable Too Much Planning is Not Helpful Core Flex Teams Work Better Technology is Only a Small Part of the Solution The

Actual Problem may be Different from What We Assume it to be Are you Creating Solutions in Search of a Problem? Avoiding any Extreme Approach is More Conducive to Innovation Fail Fast, Iterate and Succeed Strategy is Not the Same as Problem Statement Organizations are struggling to keep pace with the intense pace at which technology is evolving. Every day, new technologies and innovative business models are disrupting status quo and acting as game changers. The highly competitive ecosystem, changing business paradigms and demanding consumers are forcing organizations to invest in innovation that can transform their business and make them future ready. While everyone agrees that innovation is the only way for organizations to differentiate and disrupt; and while most organizations today have some form of innovation program in place; there is little consensus on what makes an innovation program successful. It is evident from the collective experience of the industry that for successful innovation, it is critical to not just adopt new technology but to contextualize it to the problems of the business and ensure its successful implementation on the ground. There is more to this than simply hiring a lot of technology experts or throwing money at the innovation program. This X factor is about the vision, approach, processes and the practices adopted by the innovation program! At Infosys Living Labs, our focus has been on enabling our clients to unleash the full potential of their business. Using Design Thinking, technology, and design capabilities of the Infosys innovation ecosystem, Infosys Living Labs helps clients to incubate and deploy innovative solutions at scale by contextualizing emerging technologies. Sushrut Vaidya - Associate vice president and head, Business Innovation, Infosys Center for Emerging Technology Solutions (iCETS) Insights garnered from working with clients on their innovation journeys: =======================

The Actual Problem may be Different from What We Assume it to be

----- Arcticle source ----- https://www.infosys.com/insights/living-labs/actual-problem-innovation.html ----- Insights A famous quote – often attributed to Mark Twain – says, "It ain't what you don't know that gets you into trouble. It's what you know for sure that just ain't so!" Most software projects fail because what they produce is not what the end user actually needs. In a conventional waterfall approach, the requirements of the project are gathered, reviewed, signed-off and frozen at the beginning with no revalidation made during the later stages of the project. Unfortunately, very often, the requirements change over a period of time! This results in a solution that may be well-engineered and feature-rich but which fails to address the issue at hand. In order to create an effective solution, it is critical to first get a good grasp of the actual problem. Nuances of the problem often come to light only upon close investigation as the project makes progress. In more agile design methodologies like Design Thinking, the team continuously validates the problem statement with regular feedback from the end user. The feedback helps in refining not only the

solution but also the problem statement at every iteration. This means that only when the end user confirms that a particular iteration solves the problem, the project moves to the next stage.
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Converting an Idea into a New Business Solution is a Lot of Work

----- Arcticle source ----- https://www.infosys.com/insights/living-labs/business-solution.html ----- Insights Innovation culture places a very high premium on the 'great idea' as an enabler for innovation. Popular culture is cluttered with the idea of the genius innovator who has one great idea after another. In truth, innovation is a systematic discipline that can be learned and practiced. In fact, as Peter Drucker, the management guru pointed out, "An innovation program based on the hopes of producing some bright ideas is the riskiest." Not all complexities on the ground can be imagined and anticipated in a lab. These complexities often get underestimated and organizations end up biting a lot more than they can chew. A lot of good innovative ideas fail because this last-mile connectivity is not achieved. An idea is just a starting point for innovation rather than the end goal. An innovation can be classified as one only when it becomes useful to someone. A lot of work is required before a bright idea or invention can become an innovation. This is the art of systematic innovation. Technologists who are in awe of technology often fail to apply the critical thinking needed to make a technical invention into a successful innovation. Scientists and inventors are frequently guilty of giving undue importance to technical feasibility, while underestimating other factors that go into creating an innovative product, such as economic viability, ease of use, aesthetic appeal, process changes and availability of talent. In reality, the idea accounts for only a small percentage of the final product. It is the other factors that pre-dominantly determine whether an innovation is successful or not. When evaluating an idea, and while iterating on a solution, it is important that each iteration covers the entire solution – and not just the core idea. Innovation programs must take into account that creating a proof of concept or iterating on a prototype means testing out as many of these other factors as possible, in addition to testing the core concept. ========================

Are you Creating Solutions in Search of a Problem?

----- Arcticle source ----- https://www.infosys.com/insights/living-labs/creating-solutions.html ----- Insights Inventors and scientists are often so enamoured by their technological breakthroughs that there is a tendency to force-fit the idea in the form of a solution without putting in the requisite effort to validate its relevancy to the problem. The thinking is, "It is such a cool technology, we must apply it somewhere!" This is a classic technologist's dilemma. They say, 'When you have a hammer, everything looks like a nail.'

There are a few technologies such as analytics and blockchain that are very broad and might find application across industries and situations. However, even there, and in most other cases, it makes sense to lead from the business case rather than from the technology. The primary difference between a technologist and an innovator is that while a technologist is focused on a solution, an innovator is focused on the problem. It is this focus on the problem, the 'outside-in' approach, that is critical for a successful innovation program. Technology is usually one of the many components that make a successful innovation. Often, it is a small part of the overall effort and aspects like business model, processes, communication, supply chain, marketing, talent procurement can be much harder to achieve. That is why starting with technology is not a great idea. Secondly, even when showcasing the solution, the value of technology-led innovation is not visible to business owners unless it is put in the business context and is articulated as such. An outside-in perspective that works by showcasing innovation from a business angle is key. This is particularly important as the business leader's approval is critical before a lab innovation can be scaled up. It is the business that usually pays for any large-scale deployment. It is therefore critical for any successful innovation program to approach it with an outside-in business viewpoint. =====================

Avoiding any Extreme Approach is More Conducive to Innovation

----- Arcticle source ----- https://www.infosys.com/insights/living-labs/extreme-approach.html ----- Insights What operation model should an innovation program adopt? The two common models observed in the industry are centralized and de-centralized. The centralized models usually consist of a small 'innovation cell' tasked to come up with innovative solutions. In a de-centralized model, the focus is on crowd sourcing, innovation at every level, open ideation, etc. Both these approaches have their merits and demerits. We have observed that both completely centralized and completely decentralized approaches are not very effective. A completely centralized program is limited by the intellectual firepower and imagination of the small team tasked to innovate. Such teams can also be dogmatic in their approach or their sense of priorities. Therefore, any such team, no matter how brilliant, is likely to be limited in comparison with the entire workforce of the organization. On the other hand, a completely de-centralized approach is likely to be chaotic and will often lose any alignment with the strategic objectives and direction of the organization. As a result, they tend to be ineffective and may end up spending time and money on projects that may not be the priority. Therefore, neither of the approaches is effective when it comes to driving successful innovation. It is more effective to have a small core team that ensures the projects taken up for incubation are in line with the organizational objectives, while every member of the organization is encouraged and given the opportunity to innovate. =====================

Ideas are Portable

----- Arcticle source ----- https://www.infosys.com/insights/living-labs/ideas-portable.html ----- Insights We always ask our clients to be prepared for existential threats to their business from unexpected quarters, and not just worry about known competitors, because ideas and innovation patterns are portable across industries. On the positive side, businesses can also learn a great deal by observing how other industries are innovating. Interdisciplinary learning is critical to innovation. One of the key insights, and one that is not so intuitive, is that the way innovation happens in business, is often portable across industries even if the specific use cases are not. This includes how emerging technologies are employed to power innovation. For example, Apple's iTunes business model revolutionized the music industry. All of its offerings, including the iPod, the iTunes store, appeared to have been crafted precisely for the music industry. But underlying these music-industry specific offerings, was the real innovation – deconstructing the package (in this case a CD with 8 or more songs) into its constituents (songs) and allowing consumers to buy individual components, instead of forcing them to buy the entire package! This pattern was portable across multiple industries – and has indeed led to a lot of innovation there. Smaller recharge plans for cellphones, small cold drink bottles, are examples of the same pattern applied to different industries. Other examples of this portability include 'Uberization', and the 'Pre-paid services' models. These examples prove that interdisciplinary learning and understanding of applications is critical for any innovation program. Efforts should be spent on setting up teams that are actively scanning the business environment to identify such patterns, and more importantly what they could mean to your own business and industry. =====================

Fail Fast, Iterate and Succeed

----- Arcticle source ----- https://www.infosys.com/insights/living-labs/iterate-succeed.html ----- Insights The speed at which the market is evolving today compels organizations to be rapid and agile in their responses. The ability to quickly create new products and offerings, to fail fast and to adopt an iterative approach to design are an important part of the innovation process. However, most technologists who lead these innovation programs, including those who subscribe to Agile methodologies today, once used to follow the waterfall model of software development. The model may have been replaced from practice, but it takes longer to take it out of our thinking process. This is why it is important to maintain smaller incubation cycles in the innovation programs. The longer development cycles have a tendency of making the teams revert into waterfall mode of thinking and planning; often without even realizing. A good thumb rule to follow is to ensure that any incubation does not go beyond a maximum of 12 weeks. Shorter cycles of less than 12 weeks (ideally 8 to 10 weeks) make it easier to stay with the agile, iterative model. In case there is a need for longer cycles, it may be advisable to break the scope into smaller chunks. Smaller incubation cycles

are more effective and allow for solutions that work better and are more in tune with the problem statement. ======================

Too Much Planning is Not Helpful

----- Arcticle source ----- https://www.infosys.com/insights/living-labs/ planning.html ----- Insights The World War II leader and U.S. President Dwight D. Eisenhower used to say, "Plans Are Worthless, But planning Is Everything!" This seemingly paradoxical quote holds true in innovation programs as it does in wars. Planning is good and useful but planning for an event that has not happened before – be it a war or innovation, is limited by definition – and for obvious reasons. Only a limited part of what the actual situation could feel like, can be anticipated. The rest has to be figured out on the fly. There is no alternative. Spending vast amount of time and effort in planning exposes us to the same risks that emphasizing on signing off on requirements does. They give us a false sense of confidence about our knowledge of the actual problem leading to a lack of initiative in investigating it further or planning how to build the solution. Both assumptions are premature and often inaccurate. It is often unrealistic to expect that the first iteration of your solution will be a runaway success, because most often there are new insights and new complications that we may have missed . Instead, it is always better to fail fast and iterate. Learnings from failures help get a better understanding of the problem and increase effectiveness the next time around. Planning the known aspects, however, is always useful. These could include logistics, software and hardware procurement, etc. But even here, it is better to anticipate that some on-the-fly changes might be necessary. They usually are. It is important that the innovation programs try to fail fast and be iterative. It is important to have a bias in favor of action. ======================

Strategy is Not the Same as Problem Statement

----- Arcticle source ----- https://www.infosys.com/insights/living-labs/ strategy.html ----- Insights Innovation teams are more effective when given a clearly defined problem to solve. The solution to the problem may not be known - but it is important to define the problem to a degree of specificity where solution is definitely possible. Typical statements depicting the strategic objectives of organizations are often very high level and broad based in nature. The mistake many innovation programs do, however, is to confuse these strategic statements with problem statements. For example, a bank had given 'expanding market footprint in Africa' as a brief for the innovation program. This clearly was their strategic objective and a perfectly legitimate one at that. However, it is difficult to hand this to an innovation team and ask them to ideate on it. It is too nebulous and high level for them. It was necessary to go through an intermediate step of 'framing' the innovation space. In this particular case, we deconstructed this

high-level objective into three areas – small local businesses as key members of the financial activities, the impact of advice from local community leaders and elders on banking decisions of individuals, and the safety concerns in some areas, in carrying cash on person. At this stage, it became possible to innovate on them. For example, an innovation team could be given a problem statement – how to expand banking without requiring people to carry cash with them? This is a clearly defined problem statement, which may have multiple solutions – but there is certainty that solution(s) are possible. Innovation teams are more effective when they are given such clearly defined problems to solve, rather than being asked to innovate against a strategy. Adding 'Framing' as a step to the innovation process is therefore a good idea for most innovation programs.
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Core Flex Teams Work Better

----- Arcticle source ----- https://www.infosys.com/insights/living-labs/teams-work.html ----- Insights Innovation never comes from a single technology – it always happens when multiple technologies come together – along with a number of non-technological factors. In addition, a typical successful innovation requires a variety of skill sets to come together. These skill requirements, especially for working with niche technologies can vary from idea to idea. Ensuring that the right skills are brought together, in a timely, rapid manner is key to a successful innovation program and one great way to ensure this is to work with a small core team and supplement this with larger flex teams. The small core team need only facilitate the innovation program and not be burdened to come up with new ideas. The small core team also ensures the continuity of learning from one innovation project to another. A larger, flexible team allows the innovation programs to tap into any skillset available within the organization, as needed, and only for the duration needed. This allows for a nimble and agile bench management while providing the technology teams a wide variety of real-world projects. Since the flex team members work on multiple projects, they bring diverse experience and advanced problem-solving skills. While dedicated teams may bring in a depth of understanding about the particular problem, they also tend to have a fixed point of view. Besides, having to maintain a bench of people often becomes very expensive. Given the scarcity of emerging technology skills, it is often not even possible. Instead, a mix of a core team coupled with a gig-style model for flex teams works better. It offers businesses the flexibility to build the teams as and when they want. We can think of it as the 'Uberization' of talent providing a more effective staffing model for long-term innovation programs.
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Technology is Only a Small Part of the Solution

The problem with a technology-centric view to innovation is that it becomes bound by the technology. Rather than taking a broad, holistic view to understand the problem, it often rushes to solve the problem with the solution at hand. The reason why Design Thinking puts the customer at the centre of the innovation is precisely to avoid this weakness in the innovation process. This approach is likely to work much better. Also, some of the biggest innovations of our time have not been the result of inventing or creating a new technology. Rather, they came about through the contextualization of existing technology in an innovative manner, to solve the problem. This implies that business owners and customer-facing teams must be part of any innovation process. This was demonstrated in a project by the students of Stanford's Institute of Design. They had set out to create an innovative medical incubator (a device that keeps new-born babies warm at optimal temperature) for impoverished communities. They started by imagining a state of the art, hi-tech incubator as seen in the hospitals in rich countries. However as they studied the reality on the ground, the final product they came up with, called 'Embrace', was based on high-school physics and used a phase-change material (PCM) that was capable of maintaining a certain temperature for up to six hours as it cools from melted liquid to solid. Not only did it cost less, but also required no electricity. While the technology itself was simple, it worked very well because it was tailored to the context and needs of the end-user community it was meant for. Innovation programs need to resist the temptation of applying cool technologies when they may not be needed. Creating an unnecessarily hi-tech and complicated product may reduce the overall value of the innovation by making it less desirable or viable. =======================

The evolving state of 5G strategy

We live in a hyperconnected era, where technology is pervasive and data is generated and consumed at an ever-increasing rate. A digital business needs to invest strategically in order to reap maximum benefits from emerging technologies. 5G can be a key tool in that quest. While there is significant hype around this technology, there is also a healthy curiosity about the ground-level reality of 5G. In which stage are enterprises in their 5G adoption strategy? What are some of the important challenges and barriers in the pursuit of 5G? How is the ecosystem of technology providers, regulators, governments and enterprises shaping up globally? What industries are ahead of the rest in figuring out their approach toward 5G? The 5G reality To answer those questions and generate additional insights, Infosys commissioned a research survey about the current state of 5G adoption. The survey included 850 industry

practitioners and leaders across the U.S., Europe, Australia and New Zealand. Each of these firms had annual revenue of at least $1 billion. While you can read the complete study, "State of 5G — The Road Ahead," for a deeper understanding, I would like to share a few interesting and noteworthy takeaways from that report. It is extremely encouraging to note that 90% of survey respondents are actively investigating business cases, defining service portfolios or defining use cases with their ecosystem partners. Our survey also shows which industries are surging ahead in their 5G strategies. The retail sector excelled in 5G adoption through its focus on in-store experiences, while utilities used the technology to accelerate the move to smart grids. Organizations are also gaining traction with smart spaces, remote health care and interactive experiences around media delivery. About 60% of respondents mentioned either cost or effectiveness as the primary criteria for use case adoption, while 57% are looking toward 5G for new revenue streams. We believe these numbers will eventually reverse as organizations focus more on the top line. This transition also creates opportunities for network service providers and system integrators to play larger roles in 5G's evolution. The study found that nearly 50% of survey respondents expect that their 5G deployment will require greater assistance from system integrators such as Infosys. Collaborative initiatives will bring together 5G equipment suppliers, standards bodies, infrastructure providers, cloud service providers and end users to maximize the technology's potential. Innovation will be further accelerated through open source communities, which are already playing an active role in this transition. The promise of 5G Even as enterprises invest time and resources into 5G technology, there are still significant concerns. Our study found that 59% of respondents consider security to be the biggest barrier to 5G adoption, while 57% see device readiness as a key concern. Nearly 60% of respondents said that finding the right talent is a major challenge. We believe this skills gap is going to be a significant issue going forward as system integrators play an increasingly important role in the 5G ecosystem. There is tremendous potential for enterprise 5G adoption, but success will require overcoming significant hurdles, not all of them financial. To succeed, organizations need well-defined regulations, standards, infrastructure, devices and a 5G-ready workforce. State of 5G – The Road Ahead >> ======================

The Impact of Aerosols on the Environment

----- Arcticle source ----- https://www.infosys.com/insights/other-insights/ aerosols-environment.html ----- Insights Other Insights We recently sat down with Professor S.K. Satheesh to discuss his work on the impact of aerosols on the environment. S.K. Satheesh is a professor at the Centre for Atmospheric and Oceanic Sciences, Indian Institute of Science, and the director of the Divecha Centre for Climate Change. He is the executive director of the South Asia regional office of the Future Earth initiative and editor of Current Science. He was awarded the Infosys Prize in physical sciences in 2018 for his pioneering scientific work in the field of climate

change. His studies on black carbon (BC) aerosols have helped scientists understand the impact of these particles on climate, precipitation and human health across the Indian subcontinent. Here are a few excerpts from our conversation with Professor Satheesh: 1. Can you tell us a little bit about your research on the impact of black carbon aerosol particles? What does it mean for the environment, industry and society at large? In the past several decades, scientists have pursued the science of aerosols and their impact on the environment. As an example, we have undertaken numerous field experiments over the Indian landmass and remote oceanic regions using research ships and instrumented aircraft in addition to a network of ground-based observatories. We've found strong meridional gradients in elevated aerosol-induced atmospheric warming, which impacts regional climate, including the Indian monsoon. We used high-altitude balloons to measure black carbon aerosols in the upper troposphere. These studies have shown how BC particles reach higher atmospheric levels via absorption-warming-convection cycles. This is important since the presence of BC particles can aggravate stratospheric ozone loss and delay the recovery of the stratospheric ozone hole by several decades. Many industries and disciplines play a role in furthering our research. For instance, we use climate models that incorporate data on atmosphere, land surface, ocean and sea ice, aerosols, carbon cycle, dynamic vegetation, and atmospheric chemistry. These models require complex simulations with high spatial resolution (such as 3.5 km) and are computationally intensive. This is a non-linear computational relationship, as an increase of two times in horizontal dimension will lead to an increase of 16 times in CPU time. Major challenges include the computing horsepower, computational science and mathematics, and software required to manage the model runs and programming models and parallelization. We require teraflop and petaflop computing as well as high grid resolution corresponding to 10 billion grid cells, which needs exascale computing. In addition, there is a need for low-cost sensors to monitor air pollution. Air quality degradation is a major reason for the increased instances of pulmonary diseases including asthma. Particulate matter pollution can also be carcinogenic. To improve air quality, the first step is to monitor it at many locations in each city using low-cost sensors. Another area that needs attention is the absence of a local climate model. The Indian climate science community relies on climate models developed abroad for climate predictions. Since these are based on measurements made elsewhere, they are not necessarily applicable to the Indian environment. To develop a climate model in India, we need a sustained effort over years, with many climate modelers and software specialists working together. 2. Your work requires you to measure, quantify and analyze a whole lot of data, in real time. Please comment. Light-absorbing aerosols such as black carbon particles can impact climate, agriculture, satellite remote sensing and public health. They can alter cloud properties and precipitation patterns affecting the hydrological balance of the Earth-atmosphere system. Therefore, accurate measurement of aerosols in the environment is important for answering crucial questions related to climate change. These measurements can be done from the ground, from space or from instrumented aircraft. We established an aerosol-climate observatory at the Indian Institute of Science, Bengaluru, in 2001, with an aim to characterize aerosols and assess their radiative impacts. This lab has a number of sophisticated instruments to measure climate-sensitive

parameters of aerosols along with surface radiation. The lab is now renowned for its aerosol research and is currently involved in conducting large-scale field campaigns over the Indian region as well as for designing and developing satellite sensors such as the multi-angle polarization imager. Similar observatories are also maintained at Minicoy (Lakshadweep), Port Blair (Andaman and Nicobar), and Challakere, IISc's second campus in northern Karnataka. The network now has about 40 to 45 observatories across India. In addition, field experiments are being conducted by our research group on board research ships and instrumented aircraft. Since all this data is not available to us in real time, it can be quite challenging. We can only access the data when it is couriered or otherwise physically delivered to us. This is an area that we are looking to address. 3. How do you see the sophistication of technology with artificial intelligence, impacting not just your work but the greater call to environmental awareness and sustainability? Artificial intelligence plays a very important role in disaster management involving weather and climate, irrigation, satellite remote sensing (including image processing), air quality prediction and so on. AI-based weather forecast models can be effectively utilized to alert and provide early warning about disasters and/or extreme weather conditions. Soil moisture sensors, when used in conjunction with AI systems, can help optimize irrigation systems, especially in locations facing water shortages. Also, air quality model simulations and predictions, if linked with Google Maps, can provide location-based air quality alerts to citizens. Technology industries can play an important role here. 4. Given the potential impact of your studies on public health, it is clear that there needs to be close alignment among scientific, social and government communities. Do you see this happening efficiently and at larger scales? Can you use technology as an efficient conduit? We have been making efforts toward this goal. We organize interactive sessions with members of parliament to create awareness on issues relevant to the society. The most recent one was on the impact of melting Himalayan glaciers on water security of the Indo-Gangetic basin. The next one being planned is on air quality and health, since the mitigation of air pollution requires involvement of policymakers. We have established the South Asia regional office of the Future Earth, an international science-cum-policy initiative supported by United Nations agencies in Bengaluru. The aim is to (a) promote the implementation of specific activities over this region, (b) ensure that regional priorities are made part of the strategic development, (c) operate as the primary point of contact between researchers, research institutions, investors and other interested parties, and (d) provide up-to-date and timely information actively reaching out to researchers and stakeholders across this region. Our research has helped drive a better understanding of the impact of aerosols on the Indian monsoon. A study published by the journal of the European Geophysical Union has demonstrated that aerosols actually increase the monsoon rains in contrast to the earlier belief that they decrease it. Such simulation was possible due to our description of light-absorbing aerosols in global climate models. Using instrumented aircraft helps us provide observational evidence for the first time on the strong aerosol-induced warming close to the Himalayan region. We found that unless aerosol abundance over the Indo-Gangetic basin is urgently and substantially reduced, the result could affect water supply to the more than a billion people who live downstream. 5. And finally, what is next in line for your

research? How will your findings map to the next set of studies? One of our focus areas going forward will be to study the role of aerosols in free-space optical communication. FSO communication is a technology in which data is transmitted by propagation of light in free space allowing optical connectivity and is used in many areas, such as military applications, data services for mobile users, and for point-to-point or point-to-multipoint links from aircraft to ground or satellite to ground.[1] The presence of black carbon particles is generally seen as a hindrance for FSO communication systems. However, our investigations show that a strong, elevated BC layer at an altitude around 4.5 km enhances the atmospheric stability locally and leads to a large reduction in the atmospheric refractive index structure parameter (Cn2). Therefore, BC particles could actually be a boon in aerial FSO communication systems. We also intend to further our research on the impact on the ozone layer of black carbon emissions from aircraft. Aircraft emissions during flights cause sharp and confined high-altitude layers of soot. Under certain conditions, this soot can be self-lofted and enter the lower stratosphere, where these particles can reside for a long duration in the absence of precipitation. One of the possible implications of the presence of BC in the stratosphere is a chemical reaction that results in the depletion of ozone. More observational studies using satellites, stratospheric balloons and modeling are required to address this important phenomenon, especially over regions with high aircraft traffic. The most important question that we are trying to address in the near future is the role of aerosols in influencing cloud microphysical and radiative properties. We plan to establish a number of surface climate observatories and a series of field campaigns utilizing instrumented aircraft and ships. Monsoons are one of the largest organized atmospheric motions with well-defined periodicity and spatial characteristics, making them an ideal case study for evaluating models and testing their performance in simulating regional-scale phenomena. At present, there is significant uncertainty in modeling these systems and better data and improved parameterization are needed to close this gap. Our experiments will be useful both in understanding the processes at work and providing answers regarding the effects of aerosols on climate in a region where the perturbation is probably the highest. [1]https://www.hindawi.com/journals/ijo/2015/945483/

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Blockchain for 5G

----- Arcticle source ----- https://www.infosys.com/insights/other-insights/blockchain-5g.html ----- Insights Other Insights Business Challenge While Blockchain is expected to offer multiple benefits to the telecom and CSP industry, the discussions on the best use cases and where these can be first applied are still nascent. Infosys View We at Infosys believe that the value of blockchain for telecom lies in the security, transparency, data immutability, and control it provides across the ecosystem at every point of a transaction. Business Outcomes And more... Read about the client benefits and the 5 takeaways. =====================

Coronavirus Tapped the Brakes on the Internet

----- Arcticle source ----- https://www.infosys.com/insights/other-insights/brakes-internet.html ----- Insights Other Insights Coronavirus lockdowns have caused a huge surge in worldwide home internet usage. This has caused average internet speeds to decrease. Internet traffic that was going to office buildings is now going to residences. The increase in residential internet demand is likely larger than the decrease in enterprise demand as high bandwidth traffic to Netflix and other streaming sites is up 15%. In the U.S., wireline internet service has shown a small slowdown nationally. Median download speeds remain statistically unchanged in more than half of the 200 most populous cities. Uploads speeds are more affected. Those are already typically lower for residential internet service because that is how cable companies structure their offerings. Only about 30% of those metropolitan areas have upload speeds similar to those experienced before governments enacted lockdowns in response to COVID-19. In rural areas, the upload and download speeds have declined by less than 20% (Figure 1). Figure 1. U.S. rural internet speeds are only down slightly. Source: BroadbandNow This slowdown may not affect how many households previously used the internet, but it does change the dynamics. Video conferencing requires about 4 Mbps for both upload and download. Online gaming needs about 3 Mbps in both directions. Streaming HD video requires about 8 Mbps in download bandwidth and negligible upload speed. In rural areas, having more than one person participating in these activities will likely result in some quality loss. In the most affected cities, such as Baltimore, upload speed is down by almost 50% and download speed has slowed by 20%. However, they still have faster connections than in rural areas before the COVID-19 lockdowns. Some of the largest declines in speed appear to be in places with older infrastructure like the northeastern states. Even with these speed reductions, most Americans have not noticed a difference in their service. However, some individual networks are showing significant increases in use. Facebook, Netflix, and YouTube have all experienced increases of more than 15% in their web traffic. Mobile app traffic for those same companies is relatively flat. Internet usage in Europe has grown as much in the last few weeks as it was projected to grow for all of 2020. Wireline internet traffic in Europe has increased by more than 30%. Online gaming and video conferencing traffic more than doubled while messages over WhatsApp have increased by more than 300%. In Italy, home internet usage is up more than 90%. The increased traffic in Europe seems to be producing a noticeable slowdown. Like in the northeastern United States, this European slowdown likely relates to old infrastructure. Installing networking cables and equipment in existing buildings is more expensive than in new construction. It is also likely that high-density areas received broadband technology first. Now much of that is outdated and is costly to upgrade or replace. To combat these limitations, high bandwidth services, Netflix and YouTube, were asked to reduce their video quality in Europe. The request was made to ensure there is enough bandwidth for video conferencing and other business needs. Disney delayed the start of its Disney Plus streaming service in France by two weeks, and Microsoft is

asking developers to push updates during off-peak hours according to the New York Times. In India, the nationwide lockdown has put a great deal of pressure on the existing internet infrastructure. The president of the Broadband India Forum expressed concern that the industry does not have the resources to handle the spike in residential internet consumption. Indian internet was already not uniformly reliable, partially due to wireline services being less common than wireless access. Wireless connections are more likely to experience interference, which reduces reliability. In addition, average monthly data use is extremely low when compared to the U.S. and Europe (just 10.4 GB per month, compared to roughly 200GB in the U.S.). For each of these countries, telecoms need to increase network capacity in residential areas, yet this can be problematic. Residential areas are more spread out than business centers, and this lack of density increases logistical support as well as the amount of infrastructure required, which together reduce return on investment. To boost wireless capacity, telecom companies need to install additional equipment so each tower can receive more wireless connections. This is in addition to the other routing and switching equipment required to expand the capacity of their wireline networks. Another solution is to allow wireless internet providers more frequencies across available spectrum. Additionally, 5G wireless technologies will likely ease future network strains as demand continues to increase. The massive multiple-input and multiple-output (MIMO) and beam forming technologies will especially help in places like India where mobile connectivity is more likely to be the only source of internet service. Massive MIMO is a configuration of wireless antennas that allow for more connections to a single tower. Beam forming is a technology that improves connection reliability by forming signal beams to go around objects rather than attempting to pass through them. These specific 5G technologies can be implemented using current 4G infrastructure and tower spacing, without requiring slices of the 25 GHz spectrum, which have much shorter ranges. Each of these solutions requires time to implement, suggesting that network strains will persist in the short term. The most widespread declines seemed to occur the week of March 22, according to data from BroadbandNow (Figure 2). Figure 2. Download speed slowdowns peaked during the week of March 22. Source: BroadbandNow Fortunately, for now networks are handling the new traffic loads with only moderate slowdowns. Now is the time to invest in upgrades to prepare networks for future demand spikes. It is likely that this is not the last time COVID-19, or another pandemic, will drive the imperative for remote, residence-based work.
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Solving the Data Sync Problem for Business Handheld Solutions

----- Arcticle source ----- https://www.infosys.com/insights/other-insights/ business-handheld-solutions.html ----- Insights Other Insights Hand-held electronics were essential for businesses long before the rise of smartphones. Sales reps used them to take orders. Store employees used them to help customers find merchandise. And hospitality workers used

them to check in guests before they even entered the building. Even in a world shaped by powerful mobile phones, these old-fashioned, single-purpose devices are still critical for many businesses. In some cases, a company's entire bottom line flows through these aging handhelds. However, a large number of these devices are nearing the end of their life spans. Nokia, Motorola, and other manufacturers have stopped making this hardware or, in some cases, gone out of business. Companies pay a premium on the secondary market for replacements, if they are even available. The devices often run Windows CE or proprietary operating systems that are no longer supported, meaning no security patches and no new features. These outdated devices — frozen in time — hold back companies from providing better customer service, managing complex workflows, and adapting to new market demands. This seems like an obvious place for companies to upgrade. Still, organizations have often balked at these changes for several reasons, including: In recent years, however, these barriers have started to fall. Powerful mobile phones and tablets are cheaper, while networks of single-use business devices are more expensive to patch. Off-the-shelf software packages now have a wide range of features required by businesses. Also, a common technological hurdle — how to manage data without a good wireless signal — has been cleared. Data sync challenges Companies have finally concluded that the new generation of consumer devices can be suitable replacements for the older generation of business handhelds. The smartphone and tablet operating systems now have better security and mature frameworks for writing custom apps that can replace the functionality of many business devices. IOS and Android, which together run 99% of the world's mobile phones, are adding more enterprise features, such as remote device management and data protection. Yet, even as mobile devices became commonplace and more versatile, companies resisted switching, in part due to data management. It is easy to lose wireless signals in large stores, warehouses, airports, or office buildings. Many of the old devices didn't rely on wireless signals; those handhelds typically transferred data via a physical dock. Modern consumer devices, however, typically rely on always-on connectivity. When there isn't reliable connectivity, apps need a local version of the data on mobile devices to enable customers or representatives to work offline. Later that work can be synced with the servers, when connectivity is finally available. Organizations expect apps to provide a seamless user experience irrespective of the network's state and the availability of the server. A robust mobile solution can effectively sync hand-held devices and servers and also provide a conflict resolution mechanism to ensure data integrity. Previously, companies had to build expensive and time-consuming custom solutions to handle the data sync problem when they upgraded to consumer devices. Until about five years ago, there were few mature solutions that effectively managed data synchronization and problems associated with inconsistent network connectivity. Data sync solutions Solutions that manage data between apps and storage now provide out-of-the-box capabilities for bidirectional data sync, data routing and access control, collision detection, and delta sync. These allow companies to better control what data is synced to the devices, which can save money by reducing bandwidth use. Most sync solutions provide out-of-the box security support for at-rest and in-transit encryption. They securely transfer data over secured socket layers and support authentication and authorization using OAuth 2.0, OIDC, and other popular

security protocols. Additionally, most sync solutions have a robust framework for handling failures and retries, and ensure fast and reliable performance through data compression and syncing only delta changes. Those solutions include: For years, adding these features required a dedicated IT team, years of software development and testing, and constant support. Today these are standard features that free staff to work on solving business problems rather than IT problems. It is also much easier for developers to integrate their apps with services. Despite the advances in devices and software, handheld modernization can be a daunting task. Fortunately, enterprises do not have to go it alone. Technology services firms such as Infosys have developed modernization practices that serve clients across industry sectors — from manufacturing to health care to energy — and orchestrate a large partner ecosystem to solve these kinds of problems. The benefits are often significant. One leading snacks and beverages company replaced its aging hand-held devices with a new platform for 30,000 field sales reps. Infosys worked with this firm to create a next-generation handheld platform using Couchbase Mobile. This took a fraction of the effort required to build a new system from scratch. The new platform — planned for release in early 2021 — will improve the productivity of field reps and offset the increasing costs of the existing platform. The modernized platform is projected to pay for itself in the first 18 to 24 months and provide better market trend insights that allow companies to add new features and grow their businesses. With previous Couchbase implementations, Infosys has found impressive results for the most important numbers. Those include: These newer developments in sync software technology, combined with affordable consumer hardware and rich support for app development, are helping enterprises become more agile. In turn, this is reducing both development and operational costs, which are important considerations as the COVID-19 pandemic slows the global economy, thus creating demands for greater efficiency. For companies that haven't switched, the tipping point is likely coming soon as competitors adopt new technology and the old devices become obsolete. =====================

Paying the Price — Disruption in the Cards and Payments Industry

----- Arcticle source ----- https://www.infosys.com/insights/other-insights/cards-payments-industry.html ----- Insights Other Insights Tech giants from Apple to Alibaba have upended the financial world by defining the digital payments experience. Seeing such lucrative opportunities, even governments have jumped into the fray, with India and China creating new forms of payments. The industry dynamics, now threatening incumbents, extend far beyond the traditional ecosystem of banks, payments networks, standards bodies and merchants. Today, fintechs, technology firms, startups and regulators play increasingly important roles in the payments ecosystem. Traditionally, banks make up nearly one-third of payments revenue and enjoy a healthy growth rate. Payments revenue principally comes from three avenues, namely: Each revenue stream is under pressure from outside forces. This disruption is region-specific based on regulations and historical

context. In China, Alibaba (often called China's Amazon) and WeChat (China's Facebook) upended the payments system in their own unique ways as each created a platform of nearly one billion users. In 2014, WeChat Pay started a person-to-person digital gift card service that took off and evolved into a wallet provider.1 Besides using QR code payments, the company made it easier for merchants to accept and process payments with phones instead of dedicated point-of-sale equipment. Alibaba pioneered easy internet-based payments for e-commerce consumers and merchants. Alipay linked bank accounts to its wallet and incentivized merchants by eliminating transaction fees. Fees are levied only when merchants move money back into their bank accounts. With an ever-expanding ecosystem, merchants can buy from their suppliers on this ecosystem without paying transaction fees. Through cheaper rates, higher acceptance and ease of use, these companies have essentially removed financial institutions from the payments flow. The competition within the credit card industry has been heating up too, with Apple's venture into cards one significant example. Incumbent financial institutions are upping the ante with better rewards, more attractive physical cards and a better digital experience for consumers. All big issuers, including American Express, JPMorgan Chase and Capital One, have launched or refreshed their credit card products. There is also intense activity in the cobranded cards space as Walmart, Costco, Hilton, Marriott and others have updated their offerings. As a result, acquiring new business is getting costly or even uneconomical if not structured correctly. This segment, at least in North America, is still dominated by incumbents even though competition is increasing. There has been a flurry of activity on the payments acceptance side with megamergers such as Fiserv and First Data, FIS and Worldpay, and Global Payment and TSYS. Meanwhile, Square has steadily grown into a top 10 processor by focusing on small merchants while also signing a few large corporate deals. And Stripe has attracted developers with the company's payments application programming interfaces (APIs). Will Gaybrick, chief product officer and head of payments for Stripe, said his company envisions working with banks rather than trying to supplant them. "The way we think about it is sort of like disruption via partnership," he said at October's Money 20/20 USA conference in Las Vegas. "It's not disruption of the partners — it's disruption of the status quo, of a world in which it is hard to get a loan, of a world in which it is really difficult to just pay money out to a bank account in Sri Lanka." Also, companies like Klarna and Affirm are changing the dynamics with point-of-sale lending. This reduces the burden on merchants and helps consumers avail themselves of lower fees — at least lower than expensive credit card interest rates. Overall, we are seeing each financial function getting unbundled and facing a new type of challenge from strong technology platforms. Meanwhile, governments and regulators are eager to intervene and determine how payments systems can become more inclusive. Credit cards work only for consumers with credit history. Debit cards require bank accounts. In many parts of the world, these simple conditions are serious hurdles. The Indian government, for example, has brought millions of citizens into the financial system by incentivizing them to open direct deposit accounts linked to life insurance coverage. Further building on the progress already achieved through its unique identity Aadhar project, the government has rolled out its Unified Payments Interface (UPI), which enables cheaper and faster payments with simple APIs for service providers

to move money. This also facilitates interbank transactions through mobile platforms with a secure two-factor authentication protocol.2 At this point, providers like Google Pay, PhonePe and Paytm have amassed 93% of the UPI market.3 Users benefit from a single application to conduct various transactions such as money transfers, bill payments, mobile recharges, and retail and other everyday purchases. Even in the wealthiest nations, the number of people classified as "unbanked" measures in the millions. An estimated 14.1 million U.S. adults did not have bank accounts in 2017, according to a survey from the Federal Deposit Insurance Corporation.4 And a 2015 federal study found that about 45 million U.S. adults had no credit history or a credit history so limited that it was unscorable.5 Governments are also passing stricter laws — such as Europe's General Data Protection Regulation — to recognize citizens' rights and provide greater transparency and control to consumers. Data residency restrictions will further affect how payments information is handled. As transactions become channel-agnostic, companies are under increasing pressure from regulators to ensure data security across all modes of transaction. Moreover, the explosive growth of payments channels increases vulnerability to payments fraud. Thus, providers must find smarter ways to stay vigilant against cyberthreats. The emergence of cryptocurrencies also promises to bring in a new wave of change that's difficult to predict. To survive these challenges — let alone prosper — organizations must quickly find their own paths through this new environment. Businesses need to: These are times of great change. In the coming years, we can expect a confluence of consumers' digital experience expectations, regulatory interventions, rapid innovation and a changing security landscape to spark even greater transformation within this industry. 1Brookings Institution report 2Economic Times India, Google Pay 3FDIC Household Survey 2017 4FDIC Unbanked-Underbanked Survey 2017 5CFPB Report: Credit Invisibles =====================

Coronavirus Pandemic: Who has Responded Best?

----- Arcticle source ----- https://www.infosys.com/insights/other-insights/ coronavirus-pandemic.html ----- Insights Other Insights Determining the success of a country's response to COVID-19 is a complicated calculation. Headline metrics like the total number of infections are nearly meaningless without context. Not all countries are created equally. Some are sparsely populated, others have higher incomes, and a few are remote islands away from population centers. Even if governments reacted in the same way, these other factors would conspire to create different outcomes. Because of the unique nature of each country, the best way to measure a government's actions is to examine how headline metrics relate to each other. Total number of infections are typically the measure of a nation's effectiveness against the virus but only if testing provides sufficient coverage of the population. A shortage of needed reagents and the just-in-time supply chain have contributed to limited the availability of tests. Where there has not been enough testing, the reported cases suffer from severity bias and distort the mortality rate. Those admitted to hospitals are far more likely to be

tested and to die from COVID-19. Since almost every death is investigated, the reported number of COVID-19 deaths tend to be more accurate than confirmed case counts. As individual numbers fail to provide a full picture, a better approach is to combine measures, starting with the ratio of active to recovered cases. Both exhibit severity bias but presumably to the same degree. A high ratio of active to recovered indicates that a country is early in the infection cycle; health experts are still determining exactly what a high ratio is. Meanwhile, a clear milestone to attain is a ratio below one, indicating there are fewer active cases than recovered cases. Once an infection cycle is mature and stable, the mortality rate will be more accurate and indicate how well a country has managed this pandemic. While many countries were caught off-guard, 12 have been singled out for having either prepared for or mitigated the coronavirus pandemic to date: Australia, Belgium, China, Denmark, Finland, Germany, Iceland, Japan, New Zealand, South Korea, Singapore, and Taiwan. Conversely, Italy and the United States have struggled, especially in terms of the number of cases and fatalities. Which countries are most likely succeeding? (We have not included countries, such as the UK, which have not published statistics for recovered cases.) Figure 1. Individual metrics can paint different stories when viewed separately. Source: Worldometer The ratios for the United States and Italy indicate they have not reached the late stages of the infection cycle, so it is too early to determine the efficacy of their responses. Japan and Singapore seem to be in a similar situation. Thus far, they have maintained lower reported infection rates for longer than "unsuccessful" countries, but infections are increasing. These two countries were quick to restrict travel and require social distancing and masks in public. However, they appear to have been too slow in closing public spaces and businesses. Belgium has an active-to-recovered case ratio and a mortality rate higher than that of Italy, which for a time led the world in COVID-19 deaths. Of these 14 countries examined, Belgium also has the highest confirmed-case-to-test ratio (Figure 2). This suggests that it is testing only patients with the most obvious symptoms. For each of these countries, the measures indicate that it is too early to determine the successes or failures of their response. Figure 2. High confirmed infection rates indicate a lack of testing and higher severity bias. Source: Worldometer(China does not have data on the number of tests conducted.) China essentially declared victory and is reopening many regions. However, there is growing suspicion about the accuracy of their reported coronavirus infections and deaths. In fact, China recently released new figures that increase the number of COVID-19 deaths in Wuhan by 50%. South Korea is a success story having started massive testing and tracking programs early in the outbreak. Also, previous administrations stockpiled reagents needed for testing. This allowed them to test and contact trace nearly every infected person and their contacts. Additionally, South Korea made it easy to obey quarantine orders for high-risk individuals by supplying kits with food, water, masks, and hygiene items. Iceland, similarly, has a very low active-case-to-recovery ratio and low mortality rate. It also has a higher test rate (11%) than any of the countries examined. Taiwan has slightly more active cases than recovered cases, but their rate of new cases is less than one per day. Germany, Denmark, and Finland are experiencing similar results with slowing infection rates and moderate mortality rates. New Zealand has also had success in keeping their mortality rate low and testing a significant portion of their population. It is too early to determine the

success of some countries' responses. Not every nation can emulate factors that favor more fortunate countries. Among replicable actions, the most common thread is early testing of all suspected cases and requiring a quarantine for everyone likely to be infected. Re-opening society and the economy will go more smoothly — and have a better chance of sticking — with widespread testing and thorough contact tracing.
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Flatten the curve, flatten the recession

----- Arcticle source ----- https://www.infosys.com/insights/other-insights/curve-recession.html ----- Insights Other Insights The economic impact of the coronavirus pandemic will be colossal. For comparison, during the 2007-09 global financial crisis, the U.S. economy lost hundreds of thousands of jobs per month. Now, U.S. employers are shedding millions of jobs per week (Figure 1), driven in part to government mandated (and appropriate) shutdowns. These measures are necessary to reduce the burden on healthcare services, or "flatten the curve," a term a billion people have learned in the last few weeks. This shutdown scenario is playing out in countries across the world, which could develop into the largest global economic disruption since World War II. Governments and central banks are organizing responses to help ease the impacts of this disruption, but it is too early to know what is sufficient. Figure 1. Over 3.2 million first-time unemployment claims in the U.S last week. Source: St. Louis Federal Reserve In macroeconomics, one person's spending is another person's income. During the global financial crisis, the macroeconomic solution was to find ways to get people to spend more. Central banks attempted to increase the money supply by reducing interest rates so that companies and individuals would have more to spend. The financial sector rebounded but workers grappled with stagnant wages and underwater mortgages. Additionally, there is evidence that prolonged low interest rates from the global financial crisis created a small stock price bubble. In contrast to those monetary policies to encourage spending, governments generally opted to cut government spending which is the opposite of the recommended action for these scenarios by prominent economists. This time, governments of 17 of the world's top 20 economies have indicated that they will increase their debts by $3.4 trillion in response to the coronavirus. The major central banks (e.g. U.S. Federal Reserve, European Central Bank, Bank of Japan, and Bank of England) have again attempted to lower interest rates, but rates were already very low (Figure 2). In most cases, government spending will take the form of direct payments to individuals instead of tax changes. This is important because tax changes tend to have a smaller impact on the economy since they only affect those working or drawing income. Figure 2. Plenty of room then, nowhere to cut now. Source: BIS policy rate statistics Although lowering interest rates and increasing government spending are the correct responses, it will not be enough. Efforts to put more money into the economy will have a limited effect if shoppers have fewer places to spend it. Meanwhile, demand for many services is also declining. So, unless

stimulus packages also pay for things like unfinished audits, canceled attorney's visits, and unpurchased hotel rooms, there will still be a drastic downturn in overall income. Unlike other downturns, government action to mitigate one crisis (COVID-19) will create another (recession). In addition to governments and central banks, companies and individuals need to take action to mitigate the recession's impact. Companies should continue paying wages where possible during the lockdowns. This will encourage employees to spend more money once the lockdowns are lifted. Additionally, companies should advocate for policies that ensure their customers will have money to spend at the end of the lockdowns. Those beneficial government actions can include extended and larger unemployment benefits, or direct cash payments. If an organization's customers are businesses, then enterprises should advocate for policies that enable their clients to purchase their goods and services. Once the lockdowns are lifted, companies should make an earnest effort to return to business at a pre-COVID-19 pace, even if operating at a loss for a short time. Individuals should continue to spend on some items that are outside of essentials and have them delivered during the lockdown. Of course, this is dependent upon income and emergency savings, which is a significant risk for an uncomfortably high percentage of the population. Once authorities deem congregating safe again, individuals need to spend at establishments that could not be open during the lockdown. This demonstrates to companies that demand for their product still exists. This demand will make the companies more likely to be willing to operate normally at a loss for a short time. If everyone continues with the more cautious behavior of spending less, then everyone's income falls. While individually prudent, it is collectively disastrous. Low income leads to lower spending, and the economy enters a vicious cycle that prolongs the recession. Combatting the new coronavirus requires a coordinated global response, with tailored economic policies at the national level. The concept of social distancing gained credence as the compelling "Flatten the Curve" graphic circulated ahead of widespread COVID-19 outbreaks in the U.S. In the same way that health care systems will see their capacities tested, the economic impact of combatting the virus will test the capacities of governments and central banks. Enterprises and individuals around the world will be called upon once more to change their behaviors in order to flatten the recession. =====================

Defining the 'Why', 'What' and 'How' of Digital Transformation for Success

----- Arcticle source ----- https://www.infosys.com/insights/other-insights/digital-transformation-success.html ----- Insights Other Insights It feels like every organisation in the world is trying to figure out their digital transformation journey. Irrespective of whether this change is the result of an internal realization or driven by customers, stakeholders or employees, companies are busy charting their path to the digital world, whether proactively or reactively. New age start-ups such as app-based taxi services,

food delivery apps, e-commerce companies and payment wallets are enabling people to explore new, exciting and convenient ways to leverage digital technologies to make their lives easier. Therefore, people are increasingly seeing and expecting a fast, digital world where transactions are easy, simple and intuitive and can be completed in one click. Enterprises, on the other hand, are moving far too slowly. Therefore, employees often find that while they are exposed to the best of technologies in their personal lives, they still need to deal with cumbersome antiquated processes even for something simple such as getting a document approved. While employees may sometimes be willing to overlook the inconveniences, customers are far less tolerant. For example, let's say that a customer has relationships with three banks. Given that there is very little differentiation between the offerings, the customer will pick the bank that makes the experience most pleasant. Customer experience can make or break a successful transaction for the bank. All things being equal, the digitally savvy are most likely to win. This is true across various service-led industries, whether utilities, retail or others. Given the stakes, it is not at all surprising that every organisation wants to desperately get ahead in the digital race. However, while companies undoubtedly need to invest in digital experiences, doing it right is important. Digital experiences need to be backed by solid strategy for them to really make an impact. Often companies take a quick-fix approach trying to address a specific issue instead of looking at the underlying cause. This leads to disillusionment with the results of the digitalization efforts, causing the company to step back, thereby exacerbating the issues at hand. A strategic outcome-centric approach Before an organization embarks on a digital transformation journey, it is important to take a step back and think about the ultimate objective of the exercise. What is the problem that you are trying to solve? What are the outcomes expected? Accurately identifying the 'why' is fundamental to the success of any digital transformation exercise. Also, the expected outcome needs to be defined not in the form of a fancy narrative of what success looks like, but in terms of hard metrics that are quantifiable and measurable. For example, if your stated goal is to improve customer satisfaction, then you need to first think about how to measure it. What would be a real, quantifiable metric that is a good indicator of customer satisfaction? For instance, one retailer may choose Net Promoter Score, another one may rely on an elaborate customer satisfaction survey. The measure of success may be Net Promoter Score, top line growth, bottom line growth etc. Once we identify the right set of metrics we need to base line and then drill down on the what are the drivers of the metrics. Let's say that a retailer's goal is to improve the in-store experience. The question that needs to be asked is, what are the components that make up the in-store experience? Is it defined by the time that it takes for the customer to find the products that they are looking for? Or is it about the time taken for the checkout process? Once you zero down on it, you then need to figure out a way to measure it, so that you have an accurate measure of the current baseline number as well as the goal that you want to accomplish. Defining goal posts Identifying the goal posts needs to be a well-considered exercise involving plenty of relevant research. Again, it needs to tie back with the overall strategy. For instance, one approach might be to study the competitor landscape and see where you stand against your competitors. If you find that you are at number five in your category, and want to go to number one, you will need to find how

much you need to improve on certain scores to match or beat the competition. An important consideration to make is when it comes to digital, you might not want to necessarily benchmark yourself against your competition. You might instead choose to benchmark against a completely different industry. For example, if you are a car dealer who is exploring an online sales model, you don't have to look just at other car dealers for digital inspiration. Instead, it might be much more fruitful to benchmark yourself against an online retailer from a diametrically different product category, provided you can find the right parallels and contextualize for your industry. If your goal is to provide the best online experience, it is important to be cognizant of the fact that the best online experience that your customers have experienced might not be from your industry. Once you determine the expected outcomes, these outcomes need to define the strategy. Going back to the previous example, if customer satisfaction is the parameter, then you need to intervene on all points of interaction between the customer and the brand. These could be online ad campaigns, visits to the online store, online transactions, walking into a physical store, calls to the call centre etc. If you want to improve customer satisfaction, you need to look at the entire spectrum of customer touchpoints across all channels. Process precedes technology Any large transformational change involves two factors – process and technology. It is important to step back and determine if the solution lies in technology or in process enhancement. Often, it is a combination of process and technology. In fact, the process should precede the technology, because if the process is flawed, no amount of technology can help fix it. Processes are often flawed since they tend to evolve over time in response to specific needs or challenges that the organisation was facing at that point. Organizations rarely have the bandwidth or the will to evaluate processes deeply and determine their efficacy. It is desirable for the leadership team to step back and ask itself: Now that we have common definition of what success looks like, how do the underlying processes look like? What do we need to change to drive the outcomes? Given the amount of complexity involved, it may seem easier to solve a business issue by building a shiny new app or a nice new tool or a wow looking store. But unless you do a deep dive and identify where the real issue lies, such Band-Aid measures are likely to yield very limited benefits and that too in the short-term. Reimagining the processes become a very critical part of driving digital experience. Nobody knows what the future holds and how AI, quantum computing, blockchain etc. will revolutionize our world in the long term. While everyone wants to get on the digital bandwagon and find ways to leapfrog the technology revolution, it is important to first have clarity on your objectives and long-term goals. If you are not clear about the outcomes you are trying to drive, irrespective of which new technology you decide to use, success will be difficult to come by. =====================

What Makes Digital Visionaries Shine?

----- Arcticle source ----- https://www.infosys.com/insights/other-insights/digital-visionaries-shine.html ----- Insights Other Insights With technology

moving at a frenetic pace, organizations are experiencing dramatic change and in some cases, existential fear. Today, technology has emerged as the biggest enabler, and companies that have embraced it are the ones poised to explore new paths and scale new heights. Newer, digital native organizations have inherent advantages by virtue of their modern technology frameworks and agile mindsets. Incumbents will survive and flourish only if they embrace digital transformation at an unprecedented scale. They must find ways to transform their products, processes and business models using digitally-enabled approaches and technologies. Organizations across industries are already rushing to embrace technology as a key component of their business strategies. Gartner expects the worldwide public cloud services market to grow 17.3% in 2019 and reach $206.2 billion. According to another Gartner report, spending on cognitive and artificial intelligence (AI) systems could increase to $77.6 billion in 2022, growing at a compound annual growth rate (CAGR) of 37.3% from 2017-22. We can expect similar growth for other big-ticket technology purchases too, whether it's internet of things, blockchain or cybersecurity. Yet, simply adopting digital technologies does not guarantee a successful digital transformation. Our recent Infosys Digital Radar 2019 report offered valuable insights into how to proceed. In the report, we classified organizations into watchers, explorers and visionaries based on their approaches to digital transformation. While every company today acknowledges the need to adopt more advanced technology, there are some remarkable differences in how they embrace change. Having worked with some of the most dynamic, visionary organizations across the globe, here are approaches we have seen that are worth emulating. Technology adoption at scale A major takeaway from our Digital Radar study was that companies need substantial and consistent effort when adopting digital technologies, as opposed to one-off bursts of enthusiasm. What set the visionaries apart was that they demonstrated remarkable consistency across all digital initiatives. It suggests that a comprehensive approach is needed to achieve digital leadership. It also implies synergies across initiatives. Success in one area, such as big data, may provide a fertile ground for progress in another technology, such as IoT. Visionary companies operate at scale on far more digital initiatives than trailing organizations. In the Digital Radar research, we measured organizations' technology prowess against a list of 22 major initiatives, including cybersecurity, drones, AI, automation, enterprise cloud, 3D printing and IoT. We found that visionaries consistently and significantly outperformed both explorers and watchers across all categories. Watchers and explorers showed most progress in areas such as digital marketing, cybersecurity, legacy modernization and enterprise cloud. However, the scale was much smaller than that of visionaries. Even in forefront categories, such as drones, 3D printing, augmented reality (AR) and virtual reality (VR), where progress is considerably less advanced, visionaries showed consistency across initiatives. This "lean forward" approach illustrates an understanding that today's advanced technologies are poised to become mainstream in tomorrow's operations. We identified five pillars, or accelerators, for digital transformation that help companies take that large step to visionary status. These include Agile and DevOps, AI and automation, design, learning, and proximity. These accelerators in isolation have limited impact, while multiple accelerators aligned with overall strategy drive significant performance improvement. Being Agile and doing

Agile There are two primary challenges that prevent companies from adopting Agile and DevOps practices. The first is the cultural dimension. Most organizations struggle to ensure that business operations cooperate with the IT team from the start. Our studies have shown that 80% of development projects are IT-led and IT-sponsored, without early involvement from business stakeholders. Visionary organizations steer away from the tradition of viewing IT as an isolated department and instead see it as a business enabler. Also, visionaries set themselves apart by not only being agile but doing Agile. This means retraining employees and familiarizing them with newer ways of working. It also requires developing a "lean" mindset focused on end-to-end visualization of the value chain. Preparing for change – employees, customers, partners While embracing technology, visionaries still have a strong focus on the people within their organizations. These leading companies tend to look at automation and AI as strategies to amplify human capabilities rather than ways to cut costs and reduce headcount. As new tools emerge and companies educate their teams, we can expect to see greater adoption across companies and industries. But a considerable gap still exists between existing skill sets and digital skills needed as technologies evolve. Our study found that visionary companies were more likely to bridge the talent gap by investing in digital tools and infrastructure needed to support robust, always-on, continuous learning and reskilling programs for employees. Continuous learning programs particularly help employees with skills such as Agile and DevOps, which require a mindset shift as much as a skill set change. Employees also appreciate these efforts to keep their skills current. Despite the variety of collaboration and communication tools at our disposal, physical proximity generally simplifies product and IT development projects. Balancing global low-cost delivery with regional innovation hubs is critical. Visionaries typically implement finely-tuned strategies to locate employees in places that balance cost with proximity to customers and partners. Visionaries are also poised to overcome the serious challenges in talent recruitment and reskilling, and retooling for new digital capabilities. Our research has shown that the winners take a visionary approach that recognizes the scale of change required and taking decisive steps to achieve it. For long-term success, companies must embrace new technology but not simply to have the latest and greatest tools. The goal – and ultimate value – of technology is staying relevant to customers, who are digitally savvy and demand more from businesses. As incumbents fight off lean, hungry, digital disruptors, they need to find ways to develop products faster, create superior customer experiences and deliver more efficiently. While embracing digital technologies has become a matter of survival for incumbents, it is also an opportunity to thrive and serve customers and employees better than ever.
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Data Abundance, Disruption, and Innovation

----- Arcticle source ----- https://www.infosys.com/insights/other-insights/ disruption-innovation.html ----- Insights Other Insights The pace of change is

staggering in and of itself, but try measuring it. Getting your arms around progress or even predicting it can be like embracing smoke. This difficulty leads many to overestimate the rate of change in the short term and underestimate it in the long term. This sentiment has been repeated in some form by the likes of Bill Gates and Arthur C. Clarke. But the lesson is timeless in the business world: Executives focused on the next quarter, or the next year, may completely miss the disruption heading their way. To underscore just how much the world can change, examine a few examples from the past 20 years in which huge transformations created disruption and opportunity in different industries. Even companies now perceived as the smartest on the block once looked shortsighted. Ghosts of the Past In 2000, Netflix was a money-losing DVD rental-by-mail service with just 300,000 subscribers. Initially unable to see the riches ahead, its founders tried and failed to sell the company to the now defunct Blockbuster Video for $50 million. Since then, Netflix has evolved into a tech giant and content studio with more than 150 million subscribers worldwide. The $150 billion company, now on its third business model, has been both the disruptor and the disrupted.1 Or there's the case of internet search in the dial-up years. Remember pioneering search engine AltaVista? Or Inktomi, which briefly dominated search and once had a market cap of about $25 billion? Most internet sessions started in those places. Meanwhile, in 1999, Google's founders unsuccessfully tried to sell the company to owners of the search engine Excite for as little as $750,000. The deal never happened, and Google has since become both a verb and a $1 trillion company.2 Mobile internet? Before that was a thing, the Nokia 3310 was cutting-edge cellphone tech, and the game Snake was what passed for a killer app. Those monochrome screens and lack of browser and camera are barely remembered today. Eventually, the iPhone and the Android, and the smartphone revolution, for which the internet was the real killer app, pushed Nokia out of the device business.3 Looking Ahead What will the next 20 years bring? The expected jetpacks and flying cars haven't arrived, at least not in a mainstream way. But people and companies won't stop making predictions. The only way to move closer to the Netflix, Google, and Apple tiers of industry is by tapping into the new data abundance and using it to peek in to the future. The advent of 5G, internet of things (IoT) and the household ecosystems of Apple, Facebook, Google, and Amazon will lead to the creation of more data than most people can comprehend. If you think those companies know you now, think again — they are only getting started. IDC forecasts there will be over 41.6 billion IoT devices generating over 79.4 billion terabytes by 2025.4 The exchange of this much data will be enabled by 5G and subsequent technologies delivering near-zero latency and high-bandwidth connectivity. The combination of these technologies will turn databases of personalized information into truly "live" networks — collecting, processing, and sharing data and insights to drive decisions in real time. That will lead to an evolutionary leap for leading brands, thanks to the wealth of bandwidth and data. Today's clumsy, programmatic delivery of personalized ads will be replaced with brand interactions that are informed by an individual's personal branding, geography, and demographics. Television, online, and outdoor advertising will become increasingly targeted to audiences of one. And brand experiences across channels, including online, in-store, call center, and chatbot, will become seamless. Consumers will accept no excuse for the delivery of an offer or message that is not timely,

relevant, and of value. This will require all brands to gain expertise in understanding data and experience very quickly. Salesforce's 2019 State of the Connected Customer report found that 66% of Australian customers expect connected experiences. Globally, 50% of millennials say they ignore communications that aren't personalized for them.5 This is supported by other worldwide studies, such as The Harris Poll, which last year found that 63% of consumers expect personalization as a standard of service.6 And Vonage reports that 49% of consumers have switched brands due to a bad experience in the past year, costing businesses $62 billion in the U.S. alone.7 If a brand doesn't understand this, it risks becoming irrelevant, abandoned for better, frictionless experiences elsewhere. It will be surprising if entire sectors and economies aren't disrupted and new ones aren't created as different parts of our lives fundamentally change. Money Even something as basic as money is already being disrupted. For many people, their money will live with those who know the most about them or where they spend most of it. Why keep money in a bank if all your bills are paid and managed through a Facebook artificial intelligence (AI) chatbot? Why own a credit card if Apple or Amazon manages all your purchases? Even those who use more traditional brick-and-mortar retailers will increasingly find that payment methods are more connected to their phone or other wearables (NFC Ring, Apple Watch, or Fitbit) than to their ATM card. The payment and credit sections of banks no longer need to be linked. This has enabled the shift to alternative payment platforms such as Alipay and WeChat Pay in China. The future could be dominated by a handful of global payment platforms connected to media and retail businesses, with only a few offerings that started out as banks. How does the financial services industry respond to this potential threat? One solution is joining these new payment ecosystems rather than fighting them. For example, banks have access to data and AI that could indicate that a customer was moving. That bank could then assist with dozens of decisions and manage new services, such as helping the customer set up new utilities accounts, finding relevant government services, and locating nearby retailers and schools. Providing a checking or credit customer with that level of personalized service can keep that customer returning. Retail Shopping will become a utility, at least for many of the basics. People won't spend much time thinking about brands or the wide variety of products available. Instead, digital assistants, such as Siri, Alexa, and Home, will know when someone needs milk or batteries or a new utility provider, and can find the best deals. In some cases, orders will be placed without human input and brand decisions will be made by AI, changing the game for companies when they launch new products. Even now there is little brand loyalty, which makes that automated shopping future more likely. Salesforce reported that 65% of millennials will take their business to Amazon if a company can't match their shipping speed or cost. And 67% said it takes more for a company to impress them with a new product or service.8 It's difficult for a brand to penetrate a relationship between consumers and their purchasing assistant where expense and convenience are paramount. Wholesale categories will have to learn how to effectively market themselves as direct advertisers on Amazon, Facebook, and other platforms. Amazon and Facebook are enhancing their existing advertising models with other signals, such as price, reviews, and social recommendation. And why not? Consumers already accept curation of trained content through Netflix, social feeds, and other channels.

Government Now, people typically have disconnected accounts with local, state, and federal departments for licensing, taxes, health, welfare, passports, visas, home ownership, and other services. Governments will need to change to reflect a greater understanding of the individual as a citizen, a customer, and sometimes an employee. People will expect to be seen as individuals who need to manage government interactions through user-friendly apps, and retail and concierge experiences. To deliver these experiences effectively, there will be more public-private partnerships, creating even more data challenges and opportunities. **Telecommunications** Telecom companies already fear that their services will become little more than commodities, as over-the-air providers piggyback on that existing infrastructure. Although revenue models have been under pressure for a while, the high barrier to entry has been seen as protection. The astronomical investment in wires, cables, and spectrum was constructed over decades, or in some cases, more than a century. But at some point, the very companies that have eroded telecom value (Netflix, Hulu, Facebook, Amazon) may decide to create their own infrastructure, subsidized by retail and ad revenue. That competition might be starting already with Elon Musk's SpaceX, which is planning its Starlink network of 12,000 small satellites. This project, which would relay internet signals globally, is expected to launch in the U.S. this year and have coverage worldwide by 2021. With Starlink said to be costing around $10 billion, a private global ISP is well within the budgets of all the FAANG (Facebook, Amazon, Apple, Netflix, Google) companies.9 These corporate efforts will likely meet with controversy and antitrust concerns. Indeed, Facebook's Free Basics service was accused of "digital colonialism" and faced a backlash over what some considered net neutrality violations.10 But the benefits likely overcome the barriers. **Privacy** Data abundance creates privacy and security challenges and will continue to be the subject of much regulatory discussion and action. The 2018 Facebook U.S. Senate hearings demonstrated that lawmakers were in no danger of understanding how modern data and media work.11 Europe's General Data Protection Regulation, or GDPR, has highlighted the desire to protect individual privacy and regulate the use of that data, but also has shown the limited power of small markets. Australia also enacted several amendments to its Privacy Act in 2019, but the maximum fine of AU$10 million is a rounding error even for the local businesses of Facebook and Google.12 Yet all of this is in a world where many users, particularly younger audiences, are more comfortable trading their private data for the convenience and relevance it can bring when used well by retailers, advertisers, and service providers. Salesforce research found that 62% of millennials are comfortable with relevant personal information being used in a transparent and beneficial manner.13 **What's next?** Survival of the fittest became a household term through its use in Charles Darwin's theory of evolution. However, there is a nuance to this phrase. It isn't necessarily about fitness in terms of strength or speed; it is about suitability to the environment. Nature evolves to adapt to its environment, and those who are best suited to that particular environment will survive. In business, the same nuance applies — it is not the largest, the fastest, or the richest that will survive. In both business and nature, it is about adaptation to your surroundings. This is what Infosys means when we talk about live enterprise, one that is sensing and responding like a living being. It has the agility of a startup, behaves like a digital native, accepts that change is

constant, and is prepared to disrupt itself if that's what is needed. So how can businesses keep an eye on the transformation the next decade will bring, while meeting the quarterly and annual needs of shareholders? How can we build for technologies and whole industries that do not yet exist? Here is a practical guide to what companies can do now. These are a few simple changes. But truly embracing and making innovation a priority for your company will be a small investment in preparing for a future that will, most likely, not be in your control. As the poker and finance adage goes, if you can't tell who the sucker at the table is, then it's you. If you are not driving the disruption of your market, your sector, and yourself, then you may very well wake up one day to find that someone beat you to it. Look at the most valuable brands in the world, according to Interbrand. In 2000, that list was topped by a number of brands that have since slid downward, including Coca-Cola, Ford, IBM, Intel, Nokia, and Marlboro. The current top 10 includes only three companies from that earlier list: Microsoft, McDonald's, and AT&T. The other seven are new entrants, including Amazon, Apple, Google, Facebook, Alibaba, and Tencent. What will the top 10 global brands look like in another 10 or 20 years? Will your company or brand still be relevant? 1Netflix co-founder: 'Blockbuster laughed at us ... Now there's one left', Sam Levin, Sept. 14, 2019, The Guardian. 2When Google Wanted To Sell To Excite For Under $1 Million — And They Passed, M.G. Siegler, Sept. 29, 2010, TechCrunch. 3Where Nokia Went Wrong, James Surowiecki, Sept. 3, 2013, The New Yorker. 4The Growth in Connected IoT Devices Is Expected to Generate 79.4ZB of Data in 2025, According to a New IDC Forecast, June 18, 2019, IDC. 5Salesforce State of the Connected Customer Report 2019, Conor Donegan, June 12, 2019, Salesforce. 6Marketers Struggle to Deliver Omnichannel Personalization that Consumers Crave, Blake Droesch, May 11, 2019, eMarketer. 7The $62 Billion Customer Service Scared Away, Chris Bucholtz, Vonage. 8Salesforce State of the Connected Customer Report 2019, Conor Donegan, June 12, 2019, Salesforce. 9SpaceX may spin out internet-from-space business and make it public, Loren Grush, Feb. 6, 2020, The Verge. 10'It's digital colonialism': how Facebook's free internet service has failed its users, Olivia Solon, July 27, 2017, The Guardian. 11Lawmakers seem confused about what Facebook does — and how to fix it, Emily Stewart, April 10, 2018, Vox. 12Australian privacy law amendments to cover data collection and use by digital platforms, Asha Barbaschow, July 26, 2019, ZDNet. 13Salesforce State of the Connected Customer Report 2019, Conor Donegan, June 12, 2019, Salesforce. 14Interbrand Best Global Brands 2019 Rankings, 2019, Interbrand. =====================

LGBTQ+ 2020 Pride Month Talk with Infosys Diversity & Inclusion Leaders

----- Arcticle source ----- https://www.infosys.com/insights/other-insights/ diversity-inclusion.html ----- Insights Other Insights In honor of LGBTQ+ Pride Month, Dan Page of iPride Americas Employee Resource Group sat

down with Aruna Newton, Global Head (Infosys Global Head of Diversity & Inclusion), and Anurag Sinha (SVP – Infosys Industry Head of Communications, Media & Entertainment, and Head of Diversity & Inclusion Council N. America) to discuss important topics to LGBTQ+ employees, allies, the company, and our community. Both leaders spoke as the team prepares for the Infosys iPride LGBTQ+ Industry Spotlight Panel featuring leaders and allies from companies from United, Verizon, Infosys and others, with a special address from Infosys President Ravi Kumar. The iPride Webinar is moderated by Rebellious Magazine founder, Chicago Reader Co-Editor-in-Chief, and former Infosys Consultant Karen Hawkins on Fri. June 26th from 1-2p.m. Eastern. All are invited to attend! Aruna, in your experience, what specific practices foster cultures of inclusion in organizations like ours? Aruna: At Infosys, our D&I charter draws inspiration from our values and is contained in the first tenet of our Code of Conduct and Ethics, namely "Respecting Each Other." Acting on the Code, policies and practices, and leadership behavior are important facets of an inclusive ecosystem. We have also incorporated our diversity metrics into the corporate scorecard. But, cultures get built and cemented in the micro ecosystems we each work in--our teams. The culture is what brings each of us back to work the next day. Because 'culture' is a social experience, it is sometimes difficult to really pin it down to a specific set of actions. The world now recognizes D&I as a business strategy. Like all business strategy, it needs a vision, alignment to the strategic goals and scorecards, leadership, and policies and practices. We've even created a special category for D&I in our Annual Awards for Excellence. But it's at the individual experience where employee resource groups play a key role in cascading a real cultures of inclusion. Anurag, you've long been a believer that a focus on diversity and inclusion provides a competitive advantage in the market. Can you elaborate? Anurag: Dan, I'm of the firm belief that progressive policies have a direct impact on Enterprise profitability and long-term sustainability. In today's digitally connected world, clientele of any enterprise is not limited to a small geographic boundary or a specific socio-economic or demographic profile. Enterprises need to understand this heterogeneous clientele. A workforce diverse in race, ethnicity, age, color, gender, socio-economic characteristics, sexual orientation, religion, faith systems and physical conditions bring diverse experiences, perspectives and backgrounds in an Organization. This fosters creativity, enables better decision making and makes organizations resilient and effective. In a nutshell, I'm convinced that a diverse and inclusive workforce unlocks innovation and facilitates market growth. What are some initiatives that Infosys is leading in the US around LGBTIQ+ inclusion? Aruna: We have a number of efforts focused on strengthening awareness and learning to facilitate inclusion, including the iPride ERG Leadership Council, unconscious bias training, blogs, panel discussions, and more. However, our roadmap should be strengthening the score received from the Corporate Equality Index (CEI) from 85 to 100 percent. By using the CEI as a guide, Infosys can help ensure that our existing policies, benefits, and infrastructure is strengthened and inclusive of the LGBTQ+ workforce and their families. We believe this results in greater recruitment and retention of a talented and diverse workforce, but it cannot stop there. We need to continue to embed diversity and inclusion into all of our key processes and procedures and equip leaders to manage and retain a diverse workforce. We

are especially proud to be sponsoring the forthcoming Infosys iPride LGBTQ+ Industry Spotlight Panel on Fri. June 26th from 1-2p.m. Eastern. In your opinion, what is the role of our leaders in fostering a diverse and inclusive work environment? Anurag: A diverse workforce is today's reality, however very few organizations take advantage of this "diversity dividend." Organizations have an inherent tendency for conformity and only those organizations which can go against this natural tendency and create an inclusive environment, can reap benefits of the diversity dividend. Leaders have a significant role to play in making an enterprise inclusive. Diversity and inclusion has to be championed from the top and has to become a business priority. This must be reflected at every stage of an employee life-cycle right from the time of hiring. Leaders have to create an open environment and safe environment for employees to express their ideas and feel heard; ideas should be judged on their merits with everyone on the team owning a role in decision making. Leaders increasingly recognize that our ERGs, like iPride, play a significant role in the organization's inclusion strategies by building broad-based alliances. ERGs play an important role in changing organizational palimpsest. They help in creating broad based understanding of multiple religious / faith /cultural practices. They help their organizations rethink workplace policies, rethink the physical office set-up to ensure inclusive facilities (such as the availability of non-gendered restrooms), eliminate bias in the career evaluation and progression opportunities, or even provide flexibility or agency over how, where, and when to execute the work. As a member of our iPride Americas ERG at Infosys, what does your dream look like for a workplace that is truly inclusive of the LGBTQIA+ community? Aruna: I know we will get the proper policies and practices in place in time. But as a member of the iPRIDE ERG, my dream is to create a workplace that is open, respectful, and considerate of the LGBTIQA+ community inside every team and every social group in the organization – every single micro culture. It requires everyone's participation and that is my endeavor. Imagine if everyone could just be a little kinder and more forgiving. The world would be a much better place. How do you see iPRIDE collaborating with other ERGs at Infosys? Anurag: iPRIDE has a huge opportunity to build strong alliances with other ERGs at Infosys, as well as with employees across all levels in the organization. That will be a true measure of success. An Employee Resource Group, by definition, contains members of a community and their allies. Building 'allyship' across the Infosys community worldwide will be key to iPRIDe's success What's your message to Infoscions on the occasion of Pride month? Aruna: Today, more than ever, the world needs understanding. If there is one thing everyone can do to make the world a better place is 'seek to understand and act with awareness.' The good news is that everyone counts - every voice, every action – so go ahead. What's stopping you? Dan: Thank you for your time today and Happy Pride to you both!
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Empowering the Patient Journey in Clinical Trials

Insights Other Insights With cross-industry technological advances supporting consumer engagement, there is a wealth of new data becoming available that can provide direct insights into the patient's journey from sickness to health. Combined with the life sciences and health care industry's embrace of digital transformation, it is becoming increasingly possible to gain an in-depth understanding of both disease progression at the individual patient level and the patient's journey through the life sciences and health care process ecosystems. From the International Data Corporation (IDC) perspective, digital transformation is defined as the development of integrated platforms infused with data with a focus on delivering actionable insights. Within the life sciences, two key areas highlight the role of patients and digital transformation in advancing new therapeutics to market in the industry today. These areas are: Clinical trial hurdles One of the largest hurdles that must be overcome in the development of a new therapeutic is the recruitment and retention of patients for clinical trials. Failure to recruit enough patients to conduct a trial stops a trial in its tracks and prevents key data collection required for regulatory approval. Historically, patients have been undervalued for their role in clinical trials, disrespected for their contributions, and neglected once their contributions to the trial have ended. It is not surprising that patient recruitment for trials remains a primary hurdle, an issue further exacerbated by the continued segmentation of diseases that further shrinks the pools of patients available to participate. Patient engagement has become a major focus for leading innovators in the life sciences industry. From a data perspective, life sciences companies are finding several opportunities to improve, including: Expanding clinical trials In the short term, digital technology has the potential to transform the clinical trials process. Digital patient registries and electronic medical records are simplifying the identification and recruitment of patients eligible for trials. Using electronic communications, smartphones, local doctors, local labs and remote sensors, virtual clinical trials are becoming reality. That inevitably expands the number of patients eligible to participate in trials. Wearables and other remote sensor technologies are expanding the potential data that can be collected from patients as part of clinical trials. And finally, available patient data can be mined in real time during the trial to more efficiently determine trial performance, enhance patient impacts and ensure regulatory compliance. Infosys sees a greater number of organizations using digital tools to enhance the patient journey and understand treatment patterns across therapeutic areas. Real-world evidence and data are gained by analyzing line of progression, treatment and timeline to identify intervention points and enhance efficacy and patient experience. In the long term, digital transformation promises to significantly improve the patient journey from both the patient and the trial sponsor perspectives. With some pilots in place already, patients should be able to personally monitor their own progress in trials and directly communicate with trial sponsors (and vice versa). Advances in the internet of things and remote sensor technologies will

enable new patient-generated insights above and beyond data currently being collected. And, of course, ongoing growth of knowledge of human and disease biology promises to enable and empower personalized medicine through practical understanding of diseases at a molecular level.
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From Gatekeeper to Enabler - The Evolution of the Chief Risk Officer

----- Arcticle source ----- https://www.infosys.com/insights/other-insights/evolution.html ----- Insights Other Insights Strategy management is key to the success of an organization. It prioritizes where the organization chooses to play, and how it will play, so it can achieve its mission. These choices are almost always accompanied by risks that challenge the successful execution of strategy, making it inevitable that the enterprise needs to identify and manage these risks closely. The choices made by an enterprise whilst defining its strategy are in themselves actions that mitigate risks from macro trends, market dynamics, business model threats or competitive differentiation. Indeed, in these times of massive disruption and rapid transformation, enterprises are compelled to take calculated risks to survive and create value for stakeholders. Strategy without risk management is seldom effective and organizations need to recognize that they are really just two sides of the same coin. Today, there is a greater risk of value erosion from an unsuccessful execution of strategy, than from pure operational inefficiencies or from incidents related to compliance. And so, over time, the responsibilities of the chief risk officer or CRO and his enterprise risk management team have evolved from being gatekeepers to becoming enablers of strategy - to shift the conversation from "How do we restrict the enterprise from doing things that will expose it to risks?" to "How can we work towards achieving the company's goals while managing or mitigating the risks involved?". This evolution from being a pure controlling authority to that of an enabler of risk-based decision making requires the CRO's role to be redefined along several fronts. The modern CRO must: Enterprise Risk Management at Infosys At Infosys, the roles of the chief risk officer and the strategy officer are merged, offering a unique vantage point. The same scorecards are used by both the strategy team and the risk team ensuring alignment of mitigation actions with strategic outcomes. Risks are evaluated even as strategic actions are being planned, rather than being assessed after the plan. The exhaustive risk register of the company is completely aligned to three strategic outcomes for the company – in the areas of increasing client relevance, optimizing operational processes and in maintaining the hygiene of secure, compliant and ethical, value-based operations. Further, the charter of the enterprise risk management office needs to be revisited to include more progressive responsibilities such as: Enabling Innovation A key transformation objective of a process oriented company was to enable innovation at scale. A strategic program was unleashed, urging all employees to "think outside the box". Employees reacted asking for open internet access so they could freely search for information that could help them innovate. Being a large organization with

high data leakage risks, tight controls were in place on internet access from within the enterprise. The risk office stepped in to analyze the requirement and to bring together cross functional teams to evaluate potential solutions. With the right governance and risk management systems in place, a technology solution was rolled out that could both protect the enterprise and at the same time enable employees achieve their objective. Traditionally, CROs have usually focused on skills such as those that enable institution of processes, implementation of operational controls, rigor in quantitative assessment, knowledge of regulatory requirements and efficiency. The evolution of the role of the CRO now requires him to add new skills and traits to his repertoire: Internationally accepted risk framework standards like The Committee of Sponsoring Organizations of the Treadway Commission (COSO), a joint initiative of a group of organizations to combat corporate fraud, have proposed bringing strategy and risk together. But they are yet to specify the approach that companies must take to achieve this. Meanwhile, the complexities of business are transforming at rapid pace and organizations are forced to step into unfamiliar territories. It is an opportune time for CROs to take the initiative and provide their organizations the guiderails to navigate their next.
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A Pathway to Addressing the Innovation Challenge

----- Arcticle source ----- https://www.infosys.com/insights/other-insights/innovation-challenge.html ----- Insights Other Insights Over the past 20 years, enterprises in most major economies have grown their markets and revenues through innovation, using increasingly available (and increasingly low-cost) technologies to add digitally enabled services to their product lines. However, most businesses (with a few digital-native exceptions) find it hard to innovate in this way; they were organized to produce and sell products and services with high levels of operational excellence. And in an execution-focused organization, especially one that's functioning well, and in which processes have been optimized, it can be difficult to change and innovate at a speed and scale that keeps pace with emerging technologies and an ever-changing business environment. That failure carries a cost. The 2018 Global Innovation 1000 study found that high-leverage innovators outperform competitors over a sustained period on most performance metrics. Clearly, scaling and sustaining technology-enabled innovation has become a business imperative. Today, competition can arise suddenly, and from unexpected quarters. These new competitors, largely software-driven operations, are disrupting business after business. Airbnb turned the hospitality industry topsy-turvy; Uber transformed transportation. And both did so within a relatively small time frame — essentially by becoming digital platforms within their sectors. It is now clear that every business today is first and foremost a technology/software business. Consequently, businesses that fail to develop future-ready, digitally enabled products, services, platforms and customer experiences expose themselves to a cascade of business risks. But many organizations do not understand innovation. Two

common misconceptions are as follows: This is where Infosys' Living Labs come in. A pathway to help clients address the innovation challenge Infosys' Living Labs — a systematic and scalable "Innovation as a Service" offering — works with businesses to accelerate and de-risk the innovation process, strategically and sustainably, by bringing together emerging technologies and design capabilities and focusing on business context. Living Labs creates real and virtual spaces where clients can ideate using design thinking based on emerging technologies and experiments (iterating innovations rapidly, failing fast and learning from those failures via input from end users). Living Labs engagements create real experiences with technology-led innovation in situ and not merely on paper. This helps clients reduce technology and business uncertainty and, perhaps most importantly, plant the seed for a new organizational culture of innovation. Three businesses getting on the innovation pathway Accelerating innovation based on business needs The Living Labs process begins by understanding the goals of the client's business strategy and transformation plan for the next one to three years. This is followed by a framing exercise that deconstructs the high-level strategy, thereby identifying actionable areas — a critical stage often missed by innovation programs. Each of these areas then form the focus for the ideation and incubation activities. The next step is to incubate differentiating ideas for these problems or opportunities. In this process, we help our clients focus not just on the urgent (its immediate tactical needs) but also on the important (relevance for the future-readiness). For instance, a national postal carrier in Europe wanted to reimagine its postal warehouse for the future in a highly competitive European market. We collaborated with the company to find technologies to create a solution that would greatly reduce human error in the manual sorting process, helping improve the on-time delivery of hundreds of packages every day. This engagement quickly accelerated to a pilot — Sorting Operator Guidance — that uses context-based visual information through low-cost digital projectors to guide warehouse operators in placing parcels more accurately during the final stages of sorting. In this way, a nebulous idea (reimagining the warehouse of the future) became a pilot program in a Living Lab by identifying reduction of human error as a key focus area and then employing the emerging technologies best suited to the job and iterating solutions rapidly in response to a pressing business challenge and need. The Living Labs concept is to help clients not only reimagine their role in the business, but also to reimagine the business itself. Incubating ideas Today, sports fans are hungry for experiences beyond the game. In September 2018, Infosys was onboarded as the digital innovation partner for the Australian Open (one of the four major championships in tennis). Right at the beginning, both organizations aligned on the fact that tennis as a sport, with millions of data points, was in an ideal position to leverage data science and digital to enrich the fan experience. This was in line with Australian Open's strategic vision to transform from a sports event into an all-encompassing entertainment event. At Living Labs, we realized that live viewing solutions for tennis did not have any visualization modalities that could allow fans to feel the pulse of the game and be immersed in the action. To identify the most desirable, feasible and differentiating solutions for the 2019 tournament, Tennis Australia and Infosys worked with Living Labs to develop solutions that leveraged virtual reality (VR) technology. This encompassed various solutions: a VR gaming

platform that would allow fans to "step into" a virtual Rod Laver Arena, a live broadcast platform with 360-degree game views that would give fans an immersive view of the game as it's being played, and to visit AO's official merchandise store, creating a unique shopping experience in VR. Creating an innovation ecosystem and culture This year, a Netherland based energy distribution company, invited Infosys to demonstrate the potential of emerging technologies such as VR, Personalized Smart Video (PSV), AR, gamification, digital assistants (such as chatbots) and others to help its customers become more aware of their carbon footprint and allow them reduce it. These technologies could provide customers with personalized recommendations based on their energy consumption patterns. The energy distribution company chose to pursue PSV — making its customers a more active part of its stakeholder ecosystem — and is now expanding the initiative by combining it with a marketing campaign emphasizing the company's role as a provider of sustainable energy. In this way, a culture of innovation is growing inside the company even as its identity is reshaped as a technology company as well as an energy provider. Now, the energy company is working with Infosys to create an innovative program for boiler maintenance that will be supported by AR, VR and mixed reality technologies. The culture in the company now welcomes innovation. Measuring innovation Peter Drucker once said that you can't manage what you don't measure. Companies attempting not just to innovate sustainably but also to do so at scale must measure the number of ideas they generate, their effectiveness and their impact. By themselves, ideas don't affect businesses. Firms must ask themselves whether those ideas are turning into prototypes and pilots, how fast that is happening and whether the ideas are being scaled? Are they having an impact on customers and stakeholders? And, critically, are they providing value as determined by the total cost of innovation versus the business benefits expected and retrieved? No one should be investing in innovation merely to boast that they are innovative. Living Labs employs multidimensional metrics to assess the success of innovation. This is critical for a systematic, repeatable discipline, not one dependent on the hope of stumbling across a bright idea. Innovation: The hurdles and barriers The Living Labs process helps organizations overcome barriers to innovation. Pressing business needs often make it difficult to take the long view. Time and again, the urgent takes precedence over the important when defining an organization's priorities. These urgent challenges demand resources that can starve innovation initiatives, especially when they are ad hoc. Developing a process for validating new ideas quickly requires innovation experience and maturity, which many organizations lack. In addition, organizations often have a narrow understanding of what innovation means, limiting it to technology. This prevents them from grasping the holistic business potential of new ideas. Failing to learn from others is a common innovation failing. Innovation patterns are portable across industries. Therefore, organizations should be able to look beyond business-and-sector-specific use cases to identify adoptable strategies. This requires both imagination and curiosity, both too often in short supply, especially in execution-focused enterprises. The unpredictable nature of competitive threats is a new feature of the landscape, making it imperative that businesses benchmark themselves not only against their competition but also against businesses from other domains that one day might become competition. Apple disrupted the music

industry even though no one from that industry saw Apple as a competitor. For most companies, this is an unfamiliar concept. Finding the right emerging technologies and the required skills to use them requires time and resources — both often in short supply. Even rarer is the ability to see through the hype to find the technologies that will truly help companies achieve their objectives. Meanwhile, employees skilled in emerging technologies are hard to find and the competition for them is intense. Building a pipeline of ideas that can sustain the innovation agenda in an organization is not an easy task. Organizations need to implement a sustainable innovation program that encourages innovative thinking, facilitates the incubation of fresh ideas and scales the ideas on a continuous basis. Establishing such a program requires experience and a holistic understanding of the technology-led innovation process. Disconnects between innovation units and business sponsors can lead to orphaned projects that are not integrated into the business planning process. Aligning technology-led innovation programs with business units is a critical success factor for any successful innovation program. The innovation future Innovation is not a one-time investment. It must become part of the organization's culture. The most successful and disruptive businesses today have realized this. Through Living Labs, Infosys offers innovation as a service to its clients. This service consists of an end-to-end innovation partnership for creating, capturing, evaluating, incubating and scaling ideas. This service helps clients create their own innovation cultures, leveraging the new technologies that are changing our world.
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IT Service Management in the Living Enterprise

----- Arcticle source ----- https://www.infosys.com/insights/other-insights/ living-enterprise.html ----- Insights Other Insights Meaningful customer service matters — even if that customer is internal. In fact, our research has shown that moving from efficiency to external customer experience is necessary but not sufficient. Companies also need to consider employee experience, and find ways to empower their workers to maximize productivity. To succeed, enterprises are adopting the characteristics of a living enterprise, inspired by the flexibility and agility of living organisms. An important ingredient in this journey is the role of IT service management (ITSM). Let's discuss the characteristics of a Live Enterprise and its relationship to Agile and ITSM practices. A Live Enterprise is an organization that is continuously evolving and learning. These organizations are built around the following elements: Although each area is important in isolation, the real value comes from the interplay of all these factors, particularly agility and hyperproductivity. Understanding Agile service management Hyperproductivity, a critical Live Enterprise building block, requires companies to reimagine their processes so they become simple, self-serving and automated. It also focuses on the use of Agile and DevOps practices, eventually creating the need for Agile service management. Agile service management requires instilling Agile values into scaled ITSM

processes in order to increase end-to-end consistency and speed. It is designed with adequate controls and structure in order to effectively and efficiently deliver services that benefit the customers. Below are some key things to keep in mind while making service management more Agile: What does Agile service management need to be successful? A cultural shift, commitment from management and a strong desire to undergo long-term transformation is required when building Agile service management. The building blocks are: In one successful implementation, Infosys worked with leading Australian telecom firm Telstra to deliver its IT strategy, which increased speed to market, reduced costs and created new business opportunities by digitizing and transforming the company's retail assurance process. To summarize, ITIL and DevOps can work together to allow us to achieve this cultural shift to Agile service management. ITIL will provide the much needed framework for stable and quality service delivery. DevOps will ensure there is a continuous stream of working improvements. And finally Agile service management can provide guidance for service delivery and respond to challenges and demands in an agile way. For our clients to stay on their mission, they must embrace the above principles. Only then will they be able to embark on a true digital journey powered through proven processes and Agile ways of working. =====================

Making Open Source a Part of the Enterprise Culture

----- Arcticle source ----- https://www.infosys.com/insights/other-insights/making-open-source.html ----- Insights Other Insights The open source movement was launched way back in the 1990s, since then, Open Source Software (OSS) has gained considerable legitimacy. Today, several experts agree that the future of IT infrastructure is driving towards open source. As per the 2018 IDC TechScape, "most of the important emerging technologies are partially or fully made up of open source components, which makes a bold statement about where the industry goes in the future".1 The role of open source technologies in the enterprise business is highlighted by major acquisitions and partnerships, including Microsoft's interest in GitHub for $7.5 billion, IBM's $34 billion acquisition of Red Hat and Salesforce's $6.5 billion acquisition of Mulesoft.2 Enterprises see a lot of value in it, especially from the point of view of innovation, future-proof architecture, lower TCO, speed to business and lower vendor dependency. Adoption is still low However, adoption across industries, services and geographies have been inconsistent. For example, communication service providers, manufacturing, healthcare and life sciences and retail sectors have given open source a lot of strategic importance, while banking, financial services and insurance are adopting open source to reduce IT investments.3 There is still a lot of scope in industries like utilities, media and entertainment, mining, travel and transport. The adoption of open source by the enterprises face challenges primarily due to three reasons Key learnings for successful implementation of open source across industries I have several key learnings to share with you based on our experience of implementing OSS for our clients: It makes sense to choose the right architecture as it means you choose the right

technology to meet your enterprise's needs. If you go by the product, it may not suit your requirement. For example, if you choose NoSQL database without due consideration for actual workload, the project may fail. When one or more technologies are at par, it is important to evaluate commercial aspect of the product as well. It is important to decide where enterprise support will be required and where they may not be needed. For example, in certain environments it may suffice to take a low tier subscription or no subscription at all. The decision whether to go ahead with subscription or not also depends on what features of the product are we interested in. The good thing about open source is that in most of the cases, it is easier to migrate to the enterprise supported version without making much changes to the existing application. It is important to have the right support for a stable production. Sometimes, contracts can be very complex requiring support and insight from experts in order to avoid risks and maximize the value of the OSS. It is important to consider a pilot or a Proof of Concept (PoC) to validate the architecture before embarking on a full-fledged implementation. The pilot provides a good architectural base on which the application foundation can be built upon. A governance model is essential to manage risk and compliance associated with a proliferation of open source licenses. In fact, having a well-rounded OSS Policy can help mitigate the risks while bringing all the benefits to the organization. It is advisable to create a technology center of excellence to incubate new technologies before democratizing their usage in the enterprise. Organizations need to build credibility by contributing to open source communities as it not only helps them but also enables their employees to hone their skills and build their brand by getting recognition in external forums and communities. We, at Infosys, encourage our employees to make contributions to OSS communities. We are building a culture within the organization where participation and contribution to open source is encouraged and facilitated. Infosys has signed partnerships with several open source partners like RedHat, MongoDB, Couchbase, Redis, Confluent and other leading OSS vendors across the open source stack to drive joint solutions. We also recently launched the Infosys Modernization Platform that helps accelerate application modernization leveraging open source technologies. Many organizations make the mistake of relying on a tactical, developer driven approach to adopting open source, which results in fragmentation, inefficiencies, and exposure to risks. It is not only important to have an organizational strategy and framework for open source adoption but to also focus on driving awareness across the organization, including business consumers where we break the traditional mindset of always getting things right the first time. 1https://www.idc.com/getdoc.jsp?containerId=US42656618 2https://www.wired.com/story/why-2018-breakout-year-open-source-deals/ 3https://www.researchandmarkets.com/research/2qfxbz/global_open?w=4 =====================

Modernizing Applications with Minimum Disruption to Business

----- Arcticle source ----- https://www.infosys.com/insights/other-insights/modernizing-applications.html ----- Insights Other Insights Digital disruption is the biggest concern that CXOs have today. Modernizing core systems is the most daunting aspect of any digital transformation as applications often run on outdated technologies. Old systems like IBM Mainframes or AS/400 are not only difficult to change but often enough it is hard to find the relevant skill sets to manage them. However, the biggest question troubling customers is how do they change their large monolithic systems with minimum impact to their businesses. From my experience, I feel that the problem can be solved by looking at the frequency of change that a monolithic application or a cluster of applications/functionalities undergoes over a period of time as a result of changes in the business. Enter the Gartner Pace-Layered Application Strategy, which categorizes applications according to the rate at which they need to change For a detailed understanding of the categories , refer to the GARTNER PACE layer strategy. Now let us see how does this solve the problem for our customers when they want to modernize monolithic applications with minimum disruption to business. Let us consider the example of a policy administration system from the insurance industry: Given the above mix of functionalities, it would be prudent for the CXO of an insurance company to identify the SOIs and SODs and move them out of the mainframes in a phased manner and let the SORs such as back end databases and data access logic remain. The SOD and the SOI can be moved to a more configurable layer that integrates with the back end SOR through APIs. Here are the advantages of this approach: The next challenge for the CXO is to identify the SODs. Here are some characteristics of SODs. There could be other characteristics of SOD applications that are tied to the business domain of the customer. However, this framework helps customers migrate out of monoliths with ease and without undue disruption.
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Modernizing AS/400 Systems for Business Resilience

----- Arcticle source ----- https://www.infosys.com/insights/other-insights/modernizing-business-resilience.html ----- Insights Other Insights As COVID-19 changes the world, organizations have been forced to look inward — at least to ensure business continuity and optimize IT systems, which are increasingly important for survival. These mission critical workloads often operate on 30-year-old systems not designed for the current business environment. Large organizations often rely on AS/400s, now generally known as IBM iSeries, to operate essential processes like general ledger, customer maintenance, point of sales, pharmacy benefits, and inventory management. These critical applications served companies well for years, so

there have been few incentives to change what was working. However, AS/400 maintenance is getting more difficult. These monolithic systems take a long time to roll out changes. And to complicate matters, there is also a shortage of talent available to maintain the systems, which poses significant continuity risk to important processes. Complete replacement of an AS/400 can take three to five years and requires additional IT budget. A different game plan is needed to modernize, optimize, and preserve years of investments. Through work and discussions with many clients, Infosys developed a three-step approach to modernize AS/400 systems: Beyond making applications future ready, this methodology was also designed to deploy much more quickly than a complete system replacement. These AS/400 systems are cost effective, but they have limited ability to handle changing business needs. While modernization is necessary, that process can be a difficult sell during the financial crisis triggered by this pandemic. However, a phased approach is an ideal strategy to make IT systems future ready. =====================

Engineering a Next-Gen Sales Platform

----- Arcticle source ----- https://www.infosys.com/insights/other-insights/next-gen-sales-platform.html ----- Insights 5 Takeaways Business Challenge A leading software maker wanted a partner for developing a next-generation sales platform to improve user experience, performance, scalability, and business agility. Infosys View Delivering exceptional user experience at scale to an increasingly global customer base requires re-engineering at the enterprise level. Embracing highly scalable, multi-tenant, metadata-driven enterprise platforms is key to this re-engineering. Business Outcomes And more... Read about the client benefits and the 5 best practices drawn from this engagement. =====================

Coronavirus drills oil industry

----- Arcticle source ----- https://www.infosys.com/insights/other-insights/oil-industry.html ----- Insights Other Insights The COVID-19 pandemic has pushed the world in yet another unexpected direction. The price of a barrel of oil went negative (below -$35 per barrel) for the first time ever. Oil prices are often used as a rough gauge of total economic output since energy drives the global economy. But even the worst recessions didn't create a crash this severe. A negative price should indicate that demand is historically low, however, there is a less obvious explanation. The negative price in April was the result of several factors colliding at the worst possible moment. First, Saudi Arabia and Russia both increased oil production while feuding over planned cuts for OPEC and its allies. That led to overproduction just as the coronavirus pandemic was escalating. Second, production continued to be high even as countries started severely restricting travel. This combination led to a shortage in storage space for oil. Finally, as May contracts came due for West Texas Intermediate (WTI) crude,

futures traders realized they had nowhere to store their oil. As a result, the price of the U.S. benchmark plummeted as they tried to sell — and eventually dump —their contracts. It is important to note that this was a single benchmark price for just one month's contract on the second-to-last day of trading. Also, due to the nature of commodity trading, the negative price is likely related to hedging and represents a small volume. Oil analysts said those negative May prices were not representative of the true value of a barrel of oil. Instead, they said to look at the June prices, which were then trading between $21 and $22 per barrel. A couple of days later, the price had fallen to $14 per barrel. Brent crude, the world's other benchmark oil price, also saw a modest decline after Monday but was still trading near $20 per barrel (Figure 1). Figure 1. Oil prices have been declining since January. Source: www.marcotrends.net Although the negative prices were a fluke and there have been some production cuts, oil producers are still in a grim spot. The coronavirus lockdowns have strangled demand for many crude oil-based products, and supply has not fallen nearly enough to relieve the surplus. Global demand for oil last year was roughly 100 million barrels per day. Some analysts expect that demand is now just 70 million barrels. The agreement between Saudi Arabia and most of the world's other major oil producers was to reduce supply by only 10%, which still leaves a massive glut for a long time. Low oil prices have global consequences. Most directly, there are job losses at companies that extract and refine the oil. Also, governments that rely on oil revenue often produce more to keep the same level of funding. In turn, this drives down oil prices and creates a vicious cycle. Eventually, these governments find it difficult to provide their citizens with basic needs, and that economic suffering ripples outward to the rest of the world. We know all of this from previous economic crashes. And in a normal recession, economists could look at oil prices now and make educated guesses about a recovery. What can oil prices today tell us? In the short term, not much. The low price reflects a lack of demand. But this current shock is unlike those in other recessions because it is self-imposed and ultimately linked to infection and mortality rates. In the long run, the best that we can say is that oil traders seem to think that a modest recovery of oil consumption is likely two years away, or more (Figure 2). This coincides with a medical study that found social distancing may need to be in effect until 2022. That trader sentiment could change as we learn more about the coronavirus and its impact on society. Figure 2. Oil prices are not expected to rise above breakeven prices for at least 3 years. Source: CME Group It is not all bad news in the oil and gas industry. In some places, such as in India, the demand for liquefied petroleum gas (propane or butane) has increased by almost 20% from this same period last year. The increase is due to so many people using these gases for cooking at home during the lockdowns. Also, the supply of liquid petroleum gas and natural gas is expected to decrease when producers finally cut back on crude oil drilling, according to Tom Hunt, senior consultant at oil and gas consulting firm capSpire. Demand for these crude oil byproducts has been relatively unchanged by the decrease in travel worldwide. In two years, the price of natural gas may reach $4, and liquid petroleum gas prices may also double due to falling supply. And in that time transportation may recover. In the meantime, oil traders will continue making bets short term and long term on the true value of a barrel. Unfortunately, this involves making guesses far outside their realms of expertise, like when governments will reopen or

when and where future lockdowns will happen.
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Why Enterprises Must Commit to Open Source

----- Arcticle source ----- https://www.infosys.com/insights/other-insights/open-source.html ----- Insights Other Insights "Who would have thought even five years ago (1991) that a world-class operating system could coalesce as if by magic out of part-time hacking by several thousand developers scattered all over the planet, connected only by the tenuous strands of the internet?" - Eric Raymond on Linux in 1997 There lies the power of open source. Open source software has come a long way since the term was coined in February 1998. Today open source technologies are powering mission critical applications across the globe. Let's take a look at the largest biometric ID system in the world – Aadhaar, India's sophisticated identification system, that effectively digitized a mammoth population into one database and it has been built completely on an open source stack.1 Similarly, the Goods and Services Tax Network in India was built on open source to process as many as 3.5 billion invoices each month. 2,3 There is no doubt that open source has given us immense power through the 'bazaar style' of development where anyone can participate and contribute. Unlike the 'cathedral style', which is defined by a completely centralized effort, the open source way of development brings together the best minds across the globe. It helps accelerate innovation while keeping down the cost of software consumption. At Infosys, we have a strong open source practice which helps our clients accelerate their adoption of open source. We have deep expertise on consuming open source technologies to develop the best of breed applications for our clients. However, as a consumer of open source it is as much our responsibility to give back to the community. It helps develop more mature solutions but this is not the only reason why we should contribute to open source - as an organization, there are several compelling reasons to contribute. According to Harvard Business School Research companies that contribute and give back, learn how to better use the open source software in their own environment – boosting productivity by as much as 100%.4 In addition to the organizational benefits, individuals have a lot to gain as well: As an organization, Infosys is committed to contributing to and nurturing open source communities. A recent example is the 'InfyKubeCon' event which we conducted in early 2019, to encourage contribution to Kubernetes, one of the top open source projects. An enterprise can contribute in many ways, from sharing challenges that need to be solved, to offering ideas, participating in existing open projects and starting their own big projects. Whichever way you choose to contribute, supporting open source will benefit both employees and clients. 1 https://time.com 2 https://yourstory.com 3 https://economictimes.indiatimes.com/news 4 https://hbswk.hbs.edu =====================

Understanding the hurdles to Open Source Adoption

----- Arcticle source ----- https://www.infosys.com/insights/other-insights/open-source-adoption.html ----- Insights Other Insights Over the last decade and half, open source adoption has seen unprecedented growth. For example, since 2005, over 13,500 developers from over 1,300 different companies have contributed to the Linux kernel, a single open source project.1 As more and more businesses adopted it, they gained agility, scalability, cost savings and accelerated business innovation. However, we have observed that our customers consistently face challenges when adopting open source across all business segments. In this blog, I will talk about the key adoption challenges which are as below: Let us deep dive into each of these challenges with some examples Bewildering technology choices Learning to choose is hard. Learning to choose well is harder. And learning to choose well in a world of unlimited possibilities is harder still, perhaps too hard. — Barry Schwartz, The Paradox of Choice: Why More Is Less Every modernization program has a lot of technology products to choose from. Be it the API, integration, BPM, database or the microservices layer, there are many products, both open and proprietary, in the market. The challenge is to identify the right product based on what you need. The most common mistake that people make is to first choose the technology product and then decide how to use it for their need. In reality it should be the other way round, where you must first understand the need and then see which product will be able to address it. I found two main reasons for choosing the product first. One of them is an excellent sales pitch from the product vendor and the other one is love for the technology. It is good to be enthusiastic about a promising technology but not at the cost of the architecture. In one of our engagements, it took us a lot of time and effort to explain to the client why the product they wanted to use was an unnecessary addition to their technology stack. Taking such decisions require good knowledge of a wide variety of solutions. Scarcity of end-to-end experts Full-stack architects are experts who have experience in designing solutions for enterprises across business domains. They bring best practices and experiences from different industry segments. Some of the industries like retail, energy and banking are far ahead in adopting open source technologies and they bring innovations and techniques to build excellent architectures, which can be gathered and leveraged by other industry segments. To be a full-stack architect, it is essential to be involved from the design phase of projects. Unfortunately, there are only a handful of such full-stack architects. Complex vendor ecosystems Thanks to the bewildering range of technology choices, any modernization program has a minimum of five products to choose from. This number is based on a recent survey that we did internally with our client base. We have seen this number go as high as eight to 10. In such a scenario where the interfaces are many, how does one ensure the development of a modern architecture at a good price? Building a secure open source solution It is a myth that open source solutions cannot be built in a secure way. In many of my client discussions, I come across people who believe that a certain database or an integration product is not secure. In such instances it is important to ask your clients,

questions such as, how are they securing the database connection? Have they enabled SSL on the server? Most of the open source products that we work with have excellent security features but there is lack of knowledge and awareness on how to make these work. If you are using Kafka, you can SSL enable both the broker and the zookeeper. You can setup trust stores, key stores and Access Control Lists (ACLs) to ensure only the authenticated user is allowed access. You can restrict access at a very granular level. In some scenarios, we need to adopt the enterprise version of the product to be able to use the security features. Ignorance on the capability of the product Most of the new age open source products have been built to solve the problems of architecture which is distributed, requires scale and which might need to ingest high volume of data at an accelerated speed. The problem is that one needs to know how to use a product optimally to get maximum benefit out of it. Many old school practices are no longer best practices. We need to unlearn the old and learn the new. For example, I cannot apply relational concepts while building a non-relational model. One needs to know the various event-driven architectural patterns like event sourcing, event notification, CQRS and when to use which pattern. Whenever an element of doubt exists, it is recommended to do a pilot implementation of a portion of the architecture before embarking on a full-fledged implementation. In many of our engagements, we have done pilot implementations which usually last six to eight weeks, to convince non-believers. Each of these hurdles can be solved with the right approach and best practices. Read my blog "5 Steps to crossing Open Source adoption hurdles" to know more. 1https://www.linuxfoundation.org/resources/open-source-guides/participating-open-source-communities/
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5 Steps to Crossing Open Source Adoption Hurdles

----- Arcticle source ----- https://www.infosys.com/insights/other-insights/open-source-adoption-hurdles.html ----- Insights Other Insights Despite its advantages, open source has its own challenges. Read my blog "Understanding the hurdles to Open Source Adoption" to get an in-depth insight on these challenges that include difficulty in identifying the right open source technology, dearth and high cost of talent and managing a partner ecosystem (specially in a large transformation program) to get the best of breed solution. There are primarily five areas where organizations must focus to address the challenges for seamless adoption. Follow an architecture-first approach We should always start with the architecture and understand the requirement of the architecture. The product selection comes later. To cite an example, in a recent engagement, we decided to go with community DROOLs instead of an enterprise product because the requirement was to have minimal and simple rules. There was no need for decision modelling notations or case management. In another engagement, we decided not to go with a commercial business process management product because the business requirement could be easily satisfied and managed with an open source orchestration solution. In another example,

we made a decision to go with Redis because the requirement was for session management. Avoid technology proliferation The shared-nothing, distributed architecture has allowed us to go polyglot in each layer of the application. This gives freedom to the developer and helps accelerate development. But we should also be aware of the consequences of technology proliferation. It will lead to challenges in support and the need to maintain a polyglot skill set in the organization. In most cases, it is comfortable to have two choices in each layer of the application. Start with a pilot implementation A pilot is the best way to prove the resilience, scalability and performance of the architecture. The pilot needs to be chosen such that it covers a good sample of the complex application requirement. The benefit of using open source is that we can always start with community software at no cost. That helps not only to fail fast but also reduce the cost of failure. To conclude, in order to take advantage of open source products and solutions, it is very important to draw out an open source strategy at the organization level. There must be strong governance in place to incubate new products and solutions before approving them for mass implementation. Engage full-stack architects at the initial design phase Most modernization projects run into issues due to incorrect design. Each of the components are looked at in isolation. There is very little deliberation on how the components will integrate with each other. Sometimes the compatibility between components is also not taken into consideration. A full-stack architect can play an important role here by engaging from the very beginning to ensure that the design takes care of the whole, as opposed to certain parts. For example, if it is a distributed architecture, the design should take care of resiliency through implementation of retry framework. Observability needs to be a key design consideration since distribution reduces the visibility of the end-to-end process. The choice of the persistence layer needs to be aligned with the application data retrieval and access patterns. At Infosys, we have created tools like product evaluation framework, NoSQL Data modeler to accelerate such design decisions. Opt for a bundled service offering To reduce the burden of coordinating with multiple vendors, Infosys has partnered with leading open source product vendors to be able to offer a 'software + services' solution to our clients. Product subscriptions are pre-negotiated at a competitive rate.
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The Path to 5G Monetization

----- Arcticle source ----- https://www.infosys.com/insights/other-insights/path-monetization.html ----- Insights Other Insights March 2019 - China claimed that Shanghai has the world's first district with 5G coverage.1 May 2019 - Telstra launched limited 5G services in Australia with plans to expand the network almost five-fold, covering at least 35 cities during the next 12 months. 2 June 2019 - South Korea recorded 1 million 5G subscribers within 69 days of the launch of its commercial 5G services.3 June 2019 - The Indian government announced plans to begin 5G trials in the next 100 days. 4 By early 2020 - AT&T plans to have nationwide coverage of 5G in the US. 5 Let's look at some of the 5G trials — driverless cars that are safe, remote medical access, super-efficient machineries that never fail because we

detect trouble before it occurs. The writing on the wall is clear — 5G is poised to make a big bang, but are we prepared for it? Most carriers understand 5G will bring extreme speed and near zero latency, but do they have a business plan to make it a commercial success? Enterprises are excited by the 5G trials. But are they able to identify those use cases that are specific to their industries and will revolutionize the ways they do business? In other words, how can providers and enterprises monetize 5G and find a positive return on investment? Network Providers: Expensive 5G infrastructure and a new B2B market The shift to 5G is an expensive one. A 2018 market study estimates that U.S. telecom operators will invest as much as $275 billion nationwide over seven years as they build out 5G.6 In another estimate by Greensill, a company providing working capital to industries, the total cost of 5G infrastructure rollouts throughout the global supply chain will top $2.7 trillion by 2020.7 Telco carriers also need to pay for 5G bandwidth. As of 2018, the value of all 5G bandwidth bids made during government-run auctions in the U.S. totaled nearly $690 million.8 Carriers are moving slowly, steadily and sequentially with 5G, making initial investments in infrastructure and rolling out services before signing up customers and collecting a return on their enormous investments. This makes the ROI seem far out and adds financial stress. Secondly, telecom operators have traditionally done business directly with consumers, providing them with services that allow them to do most of what they want with today's 4G networks, such as watching the "Game of Thrones" TV series on a smartphone, updating their Facebook page from their laptop while in a coffee shop, or joining multiplayer games on tablets. With consumers being highly price sensitive, it is unlikely that an expensive 5G service will appeal to them, particularly if the technology gain is barely noticeable for the average user in their day-to-day operations. The big opportunity lies in the B2B or enterprise segment, particularly with most uses cases coming from challenges that are more industry-focused than consumer-centric. 5G offers several business advantages that both telecom carriers and enterprises should be able to monetize. These include: Unfortunately, telecom carriers neither have the experience nor the relationship working in the B2B space. And since 5G isn't commercially available across the globe, enterprises, while being cognizant of the promise of the new technology, are unsure of how it's going to help them in their businesses. Enterprises: Excited but unsure about the possibilities of 5G How Things Are Set to Change with 5G Mine monitoring: Natural resources mines can be equipped with their own private 5G wireless networks, giving their operators real-time feedback from devices and tools, as well as the ability to monitor the safety of workers and watch for emergencies. 5G can also help operators automate up to 80% of mining machines by making them either autonomous or subject to remote control. Remote medical care: 5G's combination of high bandwidth and low latency will enable physicians to treat patients in remote locations, without leaving their own clinics. Patients can be examined, even operated on, by physicians using medical instruments they remotely control over 5G networks. Autonomous vehicles: Self-driving cars and trucks will collect huge quantities of data, and to stay safe, they'll need to process this data very, very quickly. All this can be handled by 5G. Data can be collected and computed in real time, then shared instantly with other vehicles and in-vehicle components. That can help cars navigate through traffic, get from point A to point B directly and

efficiently, staying clear of accidents and traffic jams. Industrial IoT: Factory devices can be equipped with sensors that allow them to be monitored and, if necessary, repaired in real time. For example, 5G's speed could allow managers of a food-processing factory to detect when a part in a canning machine is wearing out, before it causes a malfunction. This will save time and money, keep workers productive and ensure happier customers. Discovering potential machinery failures even before they occur is a manufacturer's delight. Communication between vehicles, vehicle to infrastructure, vehicle to person, and person to person can change the dynamics of traffic management, making it easy for the regulatory bodies. Universities will rejoice at the opportunity to teach remotely. 5G network slicing will allow a music teacher to demonstrate his or her skill using sound, visual data and tactile objects, which will not be any different from the interaction possible in a brick-and-mortar classroom. These are dramatic trial stories, but are they relevant to a retailer or hospital or insurance company? Enterprises will need a clearer sense of the technology's benefits to their businesses. The 5G gains are huge, even industry-changing. Wireless networks based on the 5G standard should create opportunities for a wide range of applications, devices and even business models. For now, businesses are mostly watching from the sidelines. Some, jaded by past technology overhype, figure it's safer to wait and see. Even 5G enthusiasts do not have much to choose from as the technology is not yet available in many parts of the world. In these regions, businesses can run 5G trials of their own but until the big telecom providers actually offer 5G services commercially, enterprises can't be certain of what will be possible in the "real world." Lastly, enterprises have a great deal of experience working with networking hardware vendors, such as Cisco, Dell and HPE, but they have hardly worked with consumer telecom providers. Yet, that's where much of the B2B action will be, especially with the rise of software-defined networks. Victory lies in cooperation: Telecom and enterprises must join hands to win with 5G Given the above challenges, neither carriers nor enterprises are likely to succeed as individual players in the field of 5G. Partnering early to identify the right problems to solve can prove to be pivotal in driving profitable implementations. Operators need to understand the business they will be supporting so that they can provide the right services. Businesses need to understand the intricacies of 5G to know how best they can leverage it. It is a tall ask for both the participants since neither has the experience nor the expertise in areas outside their own domains. A trusted third party, who not only understands technology but is well conversant with the nuances of different industries and their business needs, can essentially act as the glue, binding together their collaborative efforts. This third party is usually the system integrator, as they bring deep expertise with vast experience listening to client needs and creating industry-specific, affordable and efficient solutions. A "living lab" that provides telecom operators with an ecosystem of technologies and enterprises and allows them to come together and create the specific use cases that will enable monetization for all the participating entities is one good way of leapfrogging the wait. There will be other viable approaches too, and different organizations will adopt different means. But one thing is clear: The path to 5G monetization lies in co-operation between the telecom providers, enabling hardware and software ecosystems, and enterprises with system integrators acting as the facilitators. 1 http://

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CMO-CIO: Paths Converge, Not Compete

----- Arcticle source ----- https://www.infosys.com/insights/other-insights/
paths-converge.html ----- Insights Other Insights Historically, the chief
marketing officer and chief information officer have viewed their missions
differently, even while working toward the same company goals. Each had
separate priorities that inevitably led to distinct approaches. Their two
functions often operated in silos, on different time lines and with different
priorities. Typically, their conflicts concerned balancing the short runway of
time for the CMO to create change, while the CIO tried to reduce technology
debt. This balancing act poses structural and political problems for
organizations. However, the changing business landscape has brought these
executives together and shows that the CMO and CIO may need each other
more than they realize. Evolving CMO-CIO roles Transformation and
operations spending power has been firmly in the hands of the CIO or CTO
for the past decade. Organizations concentrated on cutting recurring costs
while modernizing legacy systems. As audits and digital transformation
initiatives matured, the focus began to shift toward balancing delivery of
their own outcomes with creating an improved consumer experience.
Simultaneously, the interests of the CMO elevated while allowing the CIO to
take on a more strategic role aligned with the business plan. In the 2019
State of the CIO report, the International Data Group found that 88% of
CIOs said they are more involved in leading digital transformation initiatives
compared to their business counterparts. They are "focusing more and more
on business strategist tasks, helping to identify new revenue opportunities
and operational innovations," according to the report. Meanwhile, the
CMO's blueprint has evolved in ways that don't conflict with the CIO. The
first digital CMOs led the charge for digitization and digital marketing. Now,
the new wave is interested in transforming experiences, ones that are
affected by each interaction with products, advertising and services. This
means creating a differentiated and authentic experience for customers,
employees, partners and suppliers. Experience and design Experience is the
new brand, while design is the new creative. Companies where the CIO and
CMO cooperate effectively can better embrace these trends and leapfrog
traditional competitors. Artificial intelligence-driven personalization makes
marketing to an audience of one possible. Internet of things devices deliver
real-time data on foot traffic and retail experience with greater accuracy
than surveys. And digital enterprise resource planning systems can manage

supply chains, personnel and maintenance by using mobile apps. All these new initiatives require a strong, unified sense of mission and collaboration among leaders. To facilitate this, organizations should embrace: Data and technology will continue to converge with design and experience as companies reinvent themselves. A focus on experience, such as storytelling and personalization, can create the differentiation that organizations seek. However, those elements require the combined focus of the CMO and CIO, both moving purposefully toward similar goals. From an era of fighting over resources, a partnership has emerged at high-performing companies: If the CMO can dream it, the CIO can build it. ======================

Why the Time Is Ripe for Digital Transformation in the Professional Services Industry

----- Arcticle source ----- https://www.infosys.com/insights/other-insights/professional-services-industry.html ----- Insights Other Insights The professional services industry is shaped by its traditional approach to business: Place a high premium on individual expertise, build strong personal client relationships and stay focused on billable hours. Now technology and new competition are forcing the industry to change how it operates. Organizations are shifting toward a more outcome-based billing model rather than an effort-centric one. Technology has the potential to move the industry from an approach based solely on people to one that values people plus technology. And as digital natives enter the market, their new perspectives threaten traditional organizations and compel them to rethink their business strategies. Auvenir, an in-house startup at Deloitte, reimagines the audit life cycle for smaller firms with technology at their core. Much of the audit methodology and technology available today is too complex for smaller clients. They need a simpler set of automated and intelligent tools to make their audit compliance more efficient. Auvenir accomplishes this through: This simplification of the audit process, which is built on digital technology, helps large firms successfully serve smaller clients.1 Each of the practice areas — audit, accounting, tax and advisory — is affected by technology. The journey typically goes through a standard path, from employing robotic process automation to automate mundane repetitive tasks, to utilizing analytics and finally to integrating artificial intelligence and machine learning. Having said that, each of these practices transforms itself in a unique manner. Audit and accounting As machines take over more manual tasks and decision-making, the role of humans in the audit and accounting fields is bound to undergo fundamental changes. Emerging technology can fundamentally alter how audit and accounting services are provided. Among all professional services offerings, this practice has great potential for transformation. Given that the audit function is extremely data-heavy, it is impossible to manually sift through all the data. Firms sometimes take a sampling approach to detect compliance problems. However, doing so risks allowing some issues to slip through the cracks. In a typical audit, the engagement team samples a small percentage of

transactions looking for discrepancies. When auditing employee claims, the sample set is determined based on certain parameters, such as the value and type of the claim and employee job level. This may provide a broad level of confidence, but there is a likelihood that some discrepancies are missed. One example is when the same employee has multiple claims for the same item. Identification of anomalies can be automated through an RPA plus machine learning approach. Machine learning can also study past data and recognize patterns, enabling it to identify discrepancies or anomalies even without human interaction. PwC is partnering with H2o.ai to build a bot that analyzes billions of data points in milliseconds, seeing what humans can't. Using that AI technology, PwC is able to check 100% of the transactions and look for additional patterns that would not be detected with manual sampling. This helps weed out any chance of undetected discrepancies and build better trust in the audit outcome.2 Blockchain is another valuable technology that will help auditors. We have seen audit firms tricked when companies produced doctored bank statements and other evidence. The result is the reporting of incorrect financials and loss of trust in the audit process. However, creating a private blockchain between the auditor, company and bank eliminates the risk of doctored evidence, saves time and creates an automated and efficient audit. The same blockchain technology can be used for validating a number of areas, including: Now primarily a people-based business, auditing needs to move toward a people-plus-technology model. The human experts will remain at the forefront, maintaining the client relationships and explaining the nuances of the reports. However, much of the intensive, repetitive work can be automated. This will not only result in more thorough reporting but also help reduce costs, making the offering much more competitive. Accounting technology startups like Pilot, Bench and Botkeeper offer online, cloud-based bookkeeping services that are simple, automated and easy to use. While most accounting firms are focused on the end deliverables (financial statements or tax returns), these startups try to solve customer pain points, particularly for small businesses. A typical accounting firm would ask CPAs to exchange data and documents with the clients, but this is often unstructured, need-based and ad hoc. That sometimes leads to the client asking for the same information on multiple occasions, which adds to the overhead and client stress. These process-oriented accounting startups, on the other hand, automate data collection and make it seamless for the client. They provide a smoother user experience, better-quality service and faster results thanks to their use of technology.3 Tax Today, tax planning is primarily a manual activity with established tools in certain areas like tax filing. Those tools include process automation (RPA and intelligent process automation) and data automation (visualization tools and extract, transform, load, or ETL). Global tax preparation mostly consists of compliance and reporting. The latest corporate trend is the use of shared service centers and real-time collaboration tools to automate workflows, such as calendar activities, internal controls and documentation. Some companies may also opt to work with a third party. Ernst & Young's Global Tax Platform automatically exports and standardizes data — collected from the client ERP system — that is needed for tax calculations. The data includes sales invoices, value-added taxes paid on source materials, and intercompany transactions. Then the system reduces manual work by automating tax computations and tax form preparation. As data is standardized and

digitized, it is now possible to use analytics to gain additional insights that help tax firms advise clients on better tax planning and management.4 It will no longer be enough for tax experts to excel in their domain alone; they need to be proficient in data analysis and new digital technologies. They must also understand how to manage change and improve their processes. Tax technology, automation and transformation strategies, and data and project management skills will be the influencing factors in the tax value chain. Advisory Advisory is focused on productivity tools, information tools and personal development. Many of the same tax and audit tools — including blockchain — apply here. Given that time is at a premium for consultants, technology can also help maximize personal productivity. Voice- or chat-based automated personal assistants can reduce nonbillable hours spent in meeting room bookings, travel planning, etc. Timesheet generation can be automated using calendar, travel and email information. Client engagement teams typically spend an hour each week to ensure that their timesheet entries are accurate, since this is used for billing. Incorrect information can lead to delayed or rejected payments from clients. Tools like Intapp's time module scan calendars, emails and travel records, and then combine that information with a firm's project management tools containing assignment information. Machine learning and AI are then used to auto-populate a timesheet featuring the right cost center, project codes, purchase order and other client billing information. This significantly reduces the time spent on paperwork and increases time available for value-added tasks.5 New technology tools can also aid in personal development. Comprehensive learning tools can be delivered on mobile devices. Performance feedback systems with advanced user experience can help gather real-time feedback. Digital badges and skills programs can motivate learning. Advanced content management systems, delivering the latest and greatest on technology and client information on mobile devices, can help drive better information management. Google-like universal search on all external content and internal content (customer relationship management, proposal hubs, employee and skills databases) will make data retrieval easier. Traditional scripting-based methodology for processing and managing content is often inadequate because of inconsistent formats or variations in content layout. It is not easy to read data from documents that are nonsearchable or use a variety of formatting that hinders accurate extraction. Infosys works on content extraction with a completely different approach, moving away from empirically derived rules. NIA Vision is a machine learning-based content platform with image-based extraction and parallel neural pathways that can accurately convert and extract complex documents. It is built to support self-learning based on feedback, thereby optimizing maintenance costs. Clients expect their advisors to provide them with deeper insights and faster execution. As a consequence, advisors also want to create globally consistent systems and processes within their organizations to be able to extend better support. Staying ahead of the technology curve could prove to be a big growth driver for professional services firms. It would not only allow them to explore new opportunities and new business models, but it would also drive greater value for their clients. 1 Auvenir 2 PwC-H2O.ai 3 Pilot Bench Botkeeper 4 EY Global Tax Platform 5 Intapp Time
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The Business World's Race Toward "Quantum Supremacy"

Insights Other Insights Scientists and futurists have described quantum computing as the next stage of data processing since at least the early 1980s. While these next-generation machines are already here, quantum computers have generally been experimental devices — making bigger splashes in the laboratory than the boardroom. IBM has said that won't last long. The high-tech giant announced at its Think Summit in Taipei this year that IBM quantum computers would be commercially available in the next three to five years and "mainstream" by the end of that window.1 The race has already started for "quantum supremacy." And the goal goes beyond counting petaflops, the measuring stick for traditional supercomputers. Quantum computers will soon perform more and more activities that are not feasible with classical computers. An article in the journal Nature illustrated the stark difference when Google pitted the two different types of computers against each other. The quantum computer was able to finish a calculation in 3 minutes and 20 seconds. It would have taken a classical supercomputer almost 10,000 years to crack that same problem.2 Quantum experiments A number of high-tech companies, including Alibaba, IBM, Google and Microsoft, have also been experimenting with quantum computers for more than a decade. These organizations have generally used the enhanced computing capability for cybersecurity, machine learning and artificial intelligence. Now some organizations are looking at how quantum computing could maximize bidding strategies in online advertising markets. Companies outside of the technology industry are also exploring the possible benefits of quantum computing. For example, Volkswagen used D-Wave's quantum computer to build a concept traffic management system that might one day route vehicles more efficiently and potentially reduce traffic congestion. The company collected anonymized traffic data from thousands of taxis in Beijing, converted them into mathematical algorithms and mapped them on quantum hardware. Volkswagen was able to route 418 cars to the airport without any of them encountering slowdowns.3 The financial services industry has also been active in this area, with companies such as JPMorgan Chase and Barclays studying ways quantum computers could be used in trading strategies, portfolio optimization and fraud detection. JPMorgan Chase has partnered with IBM and used the company's quantum computer to test algorithms and applications.4 While the companies mentioned above play an end-to-end role in the quantum computing ecosystem, there are niche players too. They focus on the hardware and systems, or software and services. Major firms in the quantum computing ecosystem are shown below. Today's quantum state While existing quantum computers range between two and 10 physical quantum bits, or qubits, market trends indicate that computers with around 100 physical qubits should be available for commercial use in the next five years. Using quantum mechanics principles, those qubits can exist in three states simultaneously (0, 1 or both). A classical computer can only store just a 1 or 0. So, the power of a quantum computer increases exponentially as the number of qubits increases. Although quantum computers are now available,

companies are generally buying time on these machines rather than purchasing the hardware. Quantum pioneer D-Wave started selling its first computer for $15 million in 2017. However, a quantum computer that could handle all the needs of an organization would be far pricier. A 2019 article in the Guardian estimated that a "useful universal" quantum computer today would cost about $10 billion.5 To utilize these commercial quantum computers, companies must create strategies to align their people and processes with this technological leap forward. Currently, we can categorize the level of engagement in quantum computing into three types: The level of engagement depends on a company's strategy, business values and appetite for risk. Organizations need to communicate with industry stakeholders and create a road map for understanding quantum computing principles and how they can apply to business processes. The quantum future For those ready to move forward, system integrators can help companies navigate a quantum future by: At Infosys, we have been experimenting with quantum simulators and cloud access provided by Microsoft and IBM. Most of these platforms have their own custom quantum programming languages, which work in coordination with classical programming languages. Most of our current experiments with quantum simulators are designed to solve common mathematical calculations with large numbers. Engineering groups have conducted experiments with these quantum computing environments to better understand the technology's potential. However, the true benefits may become apparent only after quantum computing technology surpasses today's computing capability. While quantum computers offer great promise, their current performance is mixed. For certain algorithms and computational trials, performance on the quantum infrastructure did not match up to those on conventional computers. Current quantum computers need specialized hardware setups that are cooled to almost absolute zero to limit noise and are placed in large specialized enclosures. That makes accessibility to quantum computers difficult. Also, most experiments are performed with simulators, which further hampers performance. Many algorithms run slower on simulators than on traditional computers. Quantum supremacy approaching Globally, investment in quantum computing research has risen steadily, both privately and publicly. China has allocated more than $10 billion toward quantum computing, and the United States authorized a $1.2 billion investment over the next five years.6 By 2023, about 20% of organizations are expected to be exploring quantum computing projects at some level, according to Gartner.7 We believe that this gap between classical and quantum computers is likely to narrow significantly in the next few years. When that happens, the true power of quantum computing can be harnessed for complex real-world use cases, such as logistical planning, scheduling and routing, identifying new materials for faster drug development, and bidding and trading strategies. Gradually, we are learning how to take advantage of this new technology and prepare for the day soon when it becomes the computing paradigm. 1https://www.techspot.com/news/80222-ibm-vp-quantum-computer-commercialization-coming-next-3.html 2 https://www.nature.com/articles/s41586%20019%201666%205 3 https://media.vw.com/en-us/releases/1098 4 https://www.jpmorganchase.com/corporate/news/stories/jpmc-prepares-fintech-quantum-leap.htm 5 https://www.theguardian.com/technology/2019/aug/02/quantum-supremacy-computers 6 https://www.jpmorgan.com/commercial-banking/insights/demystifying-quantum-computing 7 https://

Reinventing HR in the new normal

----- Arcticle source ----- https://www.infosys.com/insights/other-insights/reinventing-new-normal.html ----- Insights Initial response to the "shock" Other Insights The sudden rise of the COVID-19 pandemic was a shock to everyone. The world was placed under lockdown overnight. Children could not go to school and adults could not step out for work. Companies had to respond quickly to ensure business continuity. While many gaps were exposed, it also proved to be a great learning opportunity and provided a chance to reimagine the future of work. "The pandemic has changed work and workplaces faster than any of us would have ever predicted, but it's also given companies the chance to refresh their HR strategies for the 21st century," explained Samad Masood, head of Europe for the Infosys Knowledge Institute. Masood moderated a panel discussion in November 2020 that examined how HR leaders are managing the challenges that remote working brings and how human resources strategies are changing — often for the better. The panel discussion — which can be viewed here — included leading practitioners in education, utilities, pharmaceuticals, and consumer products companies along with Dinesh Rao, an executive vice president who leads Infosys' enterprise application services. Education The San Francisco Unified School District, a public school district in California, has more than 57,000 students, 5,000 teachers and around 2,000 support staff. They followed the same processes for eons. When things came to a sudden halt with the lockdown, they had to quickly work out how each would function in this new scenario. Teachers, who had not worked much with technology, needed to learn the technical aspects. Next they had to determine how remote schooling would function. And most importantly they had to come up with innovative ways to engage students remotely. The curriculum instruction department had to contemplate how to deliver professional development to teachers. "Our commodity is people and relationship building with people. And when we were torn apart, we had to figure out how do you build those relationships remotely," said Sandy Maynard, executive director of enterprise systems for the San Francisco district. They took it as an opportunity to make changes that were long overdue. Silos were broken down, and people from different groups came together to deliver a new way of learning. As Maynard says, the "education system is at a watershed moment in history." Many positives emerged as learning moved from classrooms to the living rooms of homes. "Transparency will probably be one of the best things that a school district has experienced", she added. As learning moved from classrooms to living rooms, teachers could count on parents for help and parents could see what teachers were doing. Parents could play a more active role in the learning process. Utilities Welsh Water is an essential utility that has to provide 24/7 customer service. Their digital services grew by 400% in certain areas as a result of the pandemic, and their customers had greater expectations of service from their utility providers. Fortunately, they had the essential facilities for business continuity when the pandemic started. "We just

happened to be going live with a new telephony system, which meant that we could transfer all of our contact center operations to be working from home," said Samantha James, Welsh Water's managing director of household customer services. There were many teething problems, but challenging times also sparked innovative ideas. Desktop computers were quickly modified to enable remote connections. Collaboration tools, which generally take months to be rolled out, were adopted in a matter of days. In the last few months, Welsh Water has transformed the way employees work. "Now we can get all of our company, North, South, East, or West Wales working together. It's a much more efficient way of working for us," said James. But she also stressed that there are many concerns that they are trying to address. Work hours are extending and there is fatigue from constantly looking at screens. Pharmaceutical BioMarin develops and manufactures therapeutics for people with serious medical needs. So, they had to ensure that their production pipeline stayed open when the pandemic hit. Everyone was forced to work from home for safety. But this hindered research and development projects as staff could not carry out experiments that required physical contact. In response, the organization had to swiftly put together a reservation system to get people to offices for at least a few hours a week. They put processes in place to ensure that few people were there in the lab at a time and safety measures were followed. This also prompted them to come up with alternate ways to maintain productivity. "The pandemic forced us to think differently about work and come up with alternatives to maintain productivity," said James Brandt, a vice president and head of total rewards at BioMarin. IT Services Productivity is central to a consulting and services company's business model. Therefore, the most important task for Infosys was to enable its employees to work from home and also ensure their wellbeing. It was also critical to quickly ensure information security and data protection of its clients. Infosys reinvented a lot of things that earlier needed to be done in-person. Training and package implementations were successfully done remotely. Projects which had always been done on-site, were seamlessly completed remotely. Employee productivity increased compared to earlier times, and customers were extremely happy. At Infosys, we came out extremely well in terms of productivity and quality of service. Also, in our recently concluded client value survey, customers have expressed extremely high satisfaction. Consumer Packaged Goods Culture and wellbeing was central to the response of leading tobacco company Philip Morris International. "The real appetite was to speed up and really put some security around the way that our employees were feeling," said Andrew Hall, Head of people and organisation enablement operations at Philip Morris International. An important first action that the company made was to communicate clearly to colleagues that their jobs were protected during the pandemic. On top of this, Philip Morris made a commitment to reward people who went above and beyond their normal work during the pandemic and put restrictions on big restructuring programs. According to Hall, this initial response — combined with the strong culture of the organization — was central to its ability to ensure that employees have retained a positive and productive outlook. Employee engagement in remote working environment As the new world of remote working has set in, it has been important for all the organizations on the panel to ensure that teams continue to work well together. Collaboration tools have played a crucial role. The way meetings are conducted have changed. Companies are trying

to put together best practices to ensure maximum effectiveness. Meetings with smaller groups are encouraged in order to ensure everyone participates in the discussion. Employees are being coached on the best ways to conduct meetings. For instance, Samantha James said that at Welsh Water, "the length of meeting is no longer the default one hour. It's now 50 minutes or 25 minutes for shorter meetings. There is a meeting free time between noon and 1 p.m. This makes sure that people get some breathing space." Working from home has also resulted in extended business hours, eating into the personal time of employees. The companies on the panel have also been encouraging employees to take regular breaks to refresh themselves and spend time with family. Counselling and psychological support is also being made available. Organizations are making every effort to enhance the quality of work and employee comfort. They are taking conscious steps for regular engagement, creating the right incentive structures and putting together the right career development plans to help foster growth. "We're trying to come up with a tool set that can help managers be successful," Brandt said. This tool nudges managers to have more on-on-one conversations with their team members and also receive regular feedback. Infosys conducts regular surveys to understand the pulse of its employees. It has also come up with four specific codes to guide managers for engaging with their teams. The four Cs are: connect, collaborate, celebrate, and care. At the onset of the pandemic, Philip Morris started using a net promotor score to understand how people felt to be employed with Philip Morris and how they were engaging with key processes. With vital employment continuity practices and inherent resilience, Philip Morris saw an increase in employee engagement scores throughout the pandemic. Future challenges and changes Going forward, one of the biggest changes in work culture will be that people will no longer be tied to geography. This provides an opportunity to tap the best human potential, without being constrained by locations and boundaries. This will completely change the way hiring is done. People no longer need to live in the same area as the company. Now people can hire from regions with lower costs of living. "We have a large portion of our population in the Bay area, which is one of the most expensive labor markets in the U.S. and around the world," Brandt said. "So it is challenging. Now we feel we can hire people in different places and still be effective." Maynard, who works with schools in San Francisco, echoed the thought. Schools have never been able to match the salaries that technology companies pay in Bay area. So they always had very few takers for the jobs. "Now we can bring in people living anywhere. Their benefit is that we might pay the wage for San Francisco, and they might live in a place where the cost of living is less." On the other hand, remote working can stifle creativity and co-creation as it reduces the employee bonding over lunches and informal discussions. The challenge is how to connect remote workers. Employers also have to assess the impact on performance management, on leadership development, on retention and engagement. "The big challenge for us then is to figure out how we carry that through and maintain productivity and effectiveness as we adapt to the way people are telling us they want to work," said Brandt. It also raises regulatory issues. As Hall said, "a person based in Poland might have gone back to Portugal during the pandemic and worked from there. This might be acceptable during the pandemic, but once we come out of this, what will the regulations be and what will the policies need to look like in these

situations?" Philip Morris created its "smart work" initiative, which gives employees the power to decide their future working pattern. They could continue to work from home if it suits them or could go to office on some days if required. "Now people have become accustomed to new ways of working," Hall said. "In many cases, they are starting to fit their work around their lives, as opposed to the converse before pandemic. As leaders, we have to react to that." Balancing resilience and Agility One of the biggest lessons is that sometimes the unexpected can actually come true. It's fair to say all organizations that have managed to survive through 2020 are now better prepared to handle such shocks in the future. They now have stronger business continuity plans in place. "Into the second wave now, I feel we are in a comfortable position with all the appropriate controls and checks in place," Hall said. "And most importantly, we are prepared with the answers to those 'what if' scenarios that only happen once in a generation." But while businesses may be more resilient to shocks, they also have to ensure that flexibility and agility remain a strong part of their future work practices, particularly when dealing with their employees. As remote working becomes the new normal, companies will have to continue to build new policies to foster employee development, efficiency, productivity, and accountability. "I think what will be interesting though is now people have potentially gotten used to being at home," Hall said. "How do we encourage them to go back into the workplace to benefit from some of the things? How have people's lifestyles adjusted to working from home, and how will they be impacted by a return to work?" Though people have started weaving their lives around working from home, they still yearn to mingle with their colleagues in person. Digital technology cannot fill that void. As the light at the end of the COVID tunnel begins to appear, companies need to plan how to bring back people to the office while retaining some benefits achieved from working remotely. =======================

ServiceNow Back to Box: Reducing the Technical Debt on Service Management

----- Arcticle source ----- https://www.infosys.com/insights/other-insights/ service-management.html ----- Insights Other Insights Enterprises are going through a phase of digitization. CIO, CTO and business leaders are investing in modernizing Service Management to reduce TCO, reduce the technical debt and build an intuitive marketplace to drastically improve IT and business user experience. Service Management modernization is gaining traction in every industry with clients using ServiceNow as an enabler of business and digital transformation, investing in massive technology transformation programs along with organizational change management to drive positive business impact. However, often enough, ServiceNow deployments result in higher platform customization due to lack of program governance, poor architecture design, complex business requirements and push from users to replicate legacy platform capabilities. This results in poor ROI realization, increased upgrade cycle, poor platform performance,

and increased TCO. There is an opportunity for organizations to simplify their existing ServiceNow deployments and establish controls to enable simplified processes and harness the true power of the platform. Customization can get Complex Imagine you ordered a DIY furniture kit from a home accessory store. You open the box and find the instructions to assemble a simple chair. While you put together the parts, you realize it would be nice to have arm rests that could be folded based on the user preference or perhaps feature a cup holder. So you go ahead and modify the existing arm rests using your own tools and skills and build the chair of your choice. Down the years, you realize your chair does not offer ergonomics for height or seat back tilt. You find that the store now offers new DIY kits that allow you to make ergonomic chairs. So the choice is you either invest in the new DIY kit or someone helps you figure out what was the original design of the chair, what changes did you make to it, what are the changes you need to make now to align it with the specification of an ergonomic chair. Basically you ensure that you bring back the existing chair to resemble the new DIY kit. This is the gist of what we call 'Back-to-Box'. Why do we need to go 'Back-to-Box' ServiceNow has been around for several years. It began as a simple platform that supported the management of IT services and allowed users to build applications on top of it. This encouraged customers to bring in more functionalities, build more applications and go beyond IT services. They began to code and build custom applications deviating from core platform specifications and industry practices, thus unsettling the ServiceNow implementation roadmap. Over a period of years, the ServiceNow platform in several organizations became unstable and complex because of implementation of these excessive customizations. While ServiceNow began to come up with new versions every six months, companies could not keep pace with the upgrades. Clients now needed someone to do a complete reassessment of their existing processes and platforms, and enable "Back-to-Box" capabilities to drive efficiency. One of our client, a leading retail firm in the United States, where the ServiceNow Service Management tool is the ERP for IT, was not able to harness the true capabilities of ServiceNow Platform as it was heavily customized. These customizations were having an adverse impact in the following ways: Infosys helped the client by simplifying ServiceNow deployment and bringing the platform Back-to-Box. Infosys did this by rapidly establishing a baseline, removing complexity from the platform and enabling simplified processes. This resulted in 5X faster platform upgrades, 50-60% reduction in operational cost and improved employee productivity. ServiceNow Then and Now For the past several years, ServiceNow has been at the center of transformation for enterprises as a Service Management platform to drive infrastructure, application, cloud and business transformation. These early adopters of ServiceNow built a stack of custom solutions, added layers of complexity and technical debt on the platform to meet their business requirements and goals. However, this is no longer sustainable. ServiceNow has invested a lot to simplify the platform, adding newer capabilities with every release but unfortunately enterprises are unable to implement these solutions efficiently due to the complexities mentioned above. With the new and evolved ServiceNow and the futuristic roadmap the product promises to bring, there is definitely a lot of business value in implementing the platform "Back-to-Box" and be on the latest release to maximize the utilization of the platform. Enterprises can make their digital transformation journey a

smooth ride by simplifying the process, increasing product awareness, building technical governance, aligning IT and business towards a common goal and keeping the platform as an Out of the Box (OOB) solution. This would also help organizations with the following advantages: How does 'Back-to-Box' work Infosys has developed "Back-to-Box" offering within its widely acclaimed Enterprise Service Management (ESM) Café solution to help keep the customer's platform close to OOB and accelerate business value realization from ServiceNow deployments. This offering rapidly baselines the platform complexity, measures the deviation from best practices, and provides a structured methodology to simplify ServiceNow deployments. Some of the key highlights of this offering are: ServiceNow will continue to evolve bringing path breaking solutions. Infosys' recommendation is to look at a controlled and efficient technology transformation without impacting the future upgradability and without adding heaps of technical debt on the ServiceNow platform. "Back-to-Box" helps you do just that. =====================

Fostering Agile Industry Leadership Needs a Strong Technology Backbone

----- Arcticle source ----- https://www.infosys.com/insights/other-insights/strong-technology-backbone.html ----- Insights Other Insights Across the world, we see a wave of disruption driven by technology. This is significantly impacting not just the way organizations function but also the way that people live and work. This quantum of change that is sweeping societies is not restricted to any particular region or geography. Instead, it is being felt across geographies, economies and industries. In many ways, this massive disruption, often dubbed the fourth industrial revolution, has levelled the playing field for organizations. As a result, once leading organizations often struggle to compete with agile newcomers that manage to transform entire industries with relatively few resources. For incumbents, this signals a need to explore how best they can rewire their organizations and transform their business models to respond to the changing environment. The need for change isn't just necessitated by aggressive competitors. Today's customers too are becoming more demanding than ever, with ever-increasing expectations. In such a scenario, the future belongs to those who are bold enough to embrace change and be innovative. The answer, of course, lies in technology adoption. Organizations today have no option but to leverage digitization wholeheartedly to survive and compete in this new reality. Embrace robust technologies There needs to be a sense of urgency when it comes to embracing the latest and greatest technologies, whether cloud, AI/ML to gain competitive advantage. Organizations need to first evaluate them and determine if they are a good fit and are in line with overarching organizational goals. In our experience, we've found that there are far-reaching benefits that can be accrued from using the right technology to advance your business goals. For example, one of our clients, a retail enterprise was looking to expand across multiple countries around the

world, for both traditional retail and e-commerce formats. We worked with them to deploy a Microsoft Azure platform solution with separate e-commerce application instances for each country for autonomous operations. The retailer was not only able to bring better integration with backend system but also achieved enhanced visibility across the enterprise. This enabled the company to scale seamlessly. In another instance, we worked with a US-based pharmaceutical company with a presence in more than 50 countries. It operates 2,000+ websites hosted by 200+ infrastructure service providers. By investing in a unified cloud infrastructure to enhance its digital marketing, the company was able to accelerate product launches by reducing time-to-market for new websites from six weeks to one week. Such broad, sweeping impact across the organization is absolutely critical. Extreme automation for better utilization of human potential Extreme automation can also help significantly amplify human potential. A large part of an organization's activities revolve around keeping the lights on. Functions that are mundane, repetitive, or are tactical in nature should be automated so that employees can focus more on driving innovation or strategic initiatives. Pfizer, one of the world's largest pharmaceutical companies, is a great case in point. Its objective was to improve overall IT operations efficiency. By leveraging Infosys Nia to automate repetitive business and IT processes, Pfizer was able to achieve results across various areas including compliance, application availability, ad-hoc report generation, stakeholder communication and standardized user management. Overall, Pfizer achieved a 10 percent reduction in total cost of ownership and automated 17+ business processes. In addition, it also saw a 15 percent increase in joint team productivity and 22 percent increase in productivity related to critical operations requirements. By effectively leveraging adoption of digitization, cloud, AI/ML, and automation, companies can help significantly amplify both human and organizational potential. Having said that, technology for the sake of technology serves no purpose. Always ensuring that there is a stronger alignment between technology and business outcomes is absolutely essential. Becoming a Live Enterprise The environment around us is changing rapidly, be it economic, social or commerce. It is extremely important for organizations to adapt to these changes in order to survive. In order to move along with the times, it needs to be nimble in its response to the changing markets, business needs and consumer choices. In other words, an organization needs to be a Live Enterprise or a living, breathing organism that is capable of responding and adapting to the changes around it in an optimal manner in order to succeed. How can technology help here? Given the dramatic nature of change and complexities involved in adapting to this change, current systems are simply not equipped to handle this shift. Automation, data and algorithms and a platform-powered approach can help enterprises get deep insights, improve and hasten decision making and achieve efficiency. At Infosys, we are working closely with our clients to help them become Live Enterprises by completely reimagining the way that they function. To sum up, a strong technology focus that is aligned to business goals is key to establishing an enduring industry leadership. =====================

3D Printing: Technology of the Future Arrives

Insights Other Insights 3D printing has been considered the manufacturing technology of the future as far back as the 1980s.1 The technology's popularity was initially championed by hobbyists and in university labs. More recently, 3D printing has become the norm rather than the exception in a growing number of industries, including aviation, automotive, electricity generation, and the medical and dental fields. However, additive manufacturing — another term for 3D printing — is still perceived by much of the business world as a technology that will revolutionize manufacturing one day, just not yet. The COVID-19 pandemic, however, is allowing the 3D printing industry to prove its value and show that the future might finally be here. With demand for medical gear outstripping production, 3D printing has bridged gaps in a broken supply chain. The technology has been used to create face masks, ventilator parts, nasal testing swabs, and other needed equipment that was suddenly unavailable.2 Industry leaders were already aware of 3D-printing capabilities, but never has it been showcased so effectively to a global audience. Even before its performance in this crisis, the industry was projected to grow by a compound annual growth rate of 26% between 2020 and 2024, according to Statista.3 The role 3D printing plays in this crisis could further alter the technology's trajectory, showcasing its flexibility and capabilities to the broader public as well as corporate decision-makers. After decades of promise, 3D printing is poised to become the broader corporate mainstay that's long been predicted.4 COVID-19 When the pandemic quickly spread across the world, governments reached out to industry to help. Tech companies volunteered to create contact tracing apps and analytics tools.5 Perfume-makers and distilleries produced hand sanitizer. And the 3D-printing industry rushed to the front lines where there were shortages of medical equipment. Chiari Hospital in Brescia, Italy, was crowded with 250 COVID-19 patients and soon ran out of the valves needed for its ventilators.6 Each valve was designed to last just eight hours, and the supplier was unable to restock the hospital. At the Italian research institute Isinnova, the CEO and an engineer created a prototype in three hours and teamed up with a local 3D-printing company to make valves for the hospital. At the University of Nottingham in England, engineers designed 3D-printed face shields and delivered 5,000 of them to local health care workers. Automaker Ferrari printed respirator valves, and Nissan produced face shields. Worldwide, 3D-printing companies, universities, governments, and industry groups created networks to solve shortages created by the coronavirus pandemic. The fast-paced efforts were allowed to skip lengthy regulatory processes in most cases. As a result, they were able to produce effective parts in hours rather than weeks or months, a wakeup call for medical supply manufacturers. Falling barriers As long as 3D printers have been available, companies saw this as a tool to quickly create prototypes before sending the products into a traditional manufacturing process. That made 3D printing a known quantity in corporate research and development departments, but not necessarily in manufacturing units. French cosmetics

giant L'Oréal was one of the early corporate champions of 3D printing. The company bought its first 3D printer in 1993, and has used it to create mockups, packaging models, and even assembly line replacement parts.7 In 2017, L'Oréal created 14,000 prototypes using 3D printers. Prototyping has been a valuable use, but it's not all 3D printing has to offer. The technology has untapped ability to change how companies design some products, build supply chains, and manufacture their goods. Previously, cost and technical limitations have held back widespread adoption. 3D printing sometimes failed to match traditional manufacturing in the cost and the variety of materials used. For example, using additive manufacturing to make heat exchangers or turbine engine vanes may cost 10 to 30 times more than casting them. And that doesn't include the additional design and validation costs. In the past four or five years, many of these limitations have started to dissolve as the technology has matured. Meanwhile, industries have found more areas where 3D printing can reduce costs, or more importantly, add significant value to their products. Materials A growing number of machines can 3D print a variety of metals and specialty alloys, which allows engineers to maximize the trade-offs in terms of weight, strength, temperature resistance, and cost. For example, aluminum and titanium are popular for aerospace structural parts while nickel alloys are used for hot engine components. That flexibility makes 3D printing a core manufacturing technology in some industries. A great example is the aerospace industry, which demands lightweight, high-quality parts. Aerospace manufacturers were quick to embrace 3D printing for thousands of different parts, including air ducts, wall panels, and more recently, engine components.8 Even with all these advances, the variety of raw materials is not unlimited; not all metals are suited for 3D printing. Some nickel alloys are easy to print while others are not. For example, the high-performance nickel-based MAR-M-247 is prized in the aerospace industry but can't be 3D printed now with the desired quality. The goal for 3D printing is to have a choice of materials as broad as those used in other manufacturing processes. 3D-printing companies have an important role in those advances. But so do materials scientists worldwide who are pushing 3D printing's boundaries into new areas, such as nanomaterials. Cost Almost every business can find a use for 3D printers, but many cannot afford them. In other cases, conventional manufacturing systems were significantly cheaper. However, 3D-printing industry trends have been predictable: It has enjoyed steady declines in the price of machines and steady increases in sales. Throughout its evolution, new technologies were introduced and then refined to make printing cheaper, faster, and more versatile. Industrial machines now use lasers, heated nozzles, electron beams, or plasma arcs to mold plastic or metal. Each process provides a different set of benefits and drawbacks in cost, speed, and quality. And each provides fertile ground for innovation, particularly as new materials are introduced. Businesses can buy 3D printers for as little as a few thousand dollars. Earlier metal 3D-printing machines cost nearly $900,000. Now, companies can find metal printers for $120,000. Advances at the U.S. Department of Energy's Oak Ridge National Laboratory, known for its 3D-printing innovations, allowed researchers to lower the final cost of carbon-reinforced polymer printing from $1,000 per pound to $20 per pound.9 3D printing is following the predictable path of other technologies, such as home computers: The equipment is getting more powerful, flexible, and cheaper. And as more printers are produced, the

prices will continue to come down as economies of scale take hold. In addition, businesses are also taking a more long-term view of costs. Components need to be evaluated by their overall life cycle cost, from birth to retirement, rather than only their manufacturing costs. The weight of components can be reduced substantially through 3D printing, which reduces operational and maintenance costs. A higher manufacturing cost upfront could be more than offset by future savings. These factors make 3D-printing technology competitive and push it further into the corporate mainstream. Size Creating tools and small replacement parts has generally been easy work for 3D printers. But some have discounted the technology because of its inability to print larger items. That's another area where additive manufacturing has advanced. In 2016, Oak Ridge National Laboratory set a world record for the largest solid 3D-printed object.10 The "trim and drill" tool was created for Boeing to use to build aircraft wings. The 1,650-pound tool was 17.5 feet long and 5.5 feet wide. The lab also used 3D printers to create vehicles and even a house, although obviously they weren't produced as single pieces. Other printers now can create objects that are 40 feet long.11 Large-scale 3D printing can perform work that once required injection molding, casting, or forging. Existing barriers Although 3D-printing technology has rapidly advanced, there are still barriers to overcome in some industries. Technological, financial, and labor limitations can slow the adoption of additive manufacturing. Some of those include: Like most technologies, there is not a one-size-fits all approach. Just because an object can be 3D printed doesn't mean it should. The value accrues when the cost and benefits are aligned with the company's strategies and goals. 3D printing's future The $11 billion 3D-printing industry is now caught between being a niche and a mature technology in some industries.12 The popular misconception is that it's for experimentation rather than production, and for small-scale fabrication rather than industrial-scale manufacturing. 3D printing won't live up to its high expectations until companies advance past the traditional usage. Manufacturing There is still an incorrect assumption that 3D printing is useful mainly for parts that are either not frequently used, not commonly available, or even discontinued. Survey results released by 3D-printer manufacturer Essentium in early 2019 found that the technology was mostly used for small-scale projects. Eighty-three percent of those surveyed said their largest production runs were in the hundreds or less, according to 3Dnatives.com.13 However, a follow-up study late last year found substantial increases in the scale of 3D printing; nearly half of the respondents were creating print runs in the thousands.14 In some cases, companies look to 3D printing for on-demand manufacturing. The ultimate example of this use is found on the International Space Station. NASA has been using a 3D printer there since 2016 to create its own machine shop in space.15 If a tool breaks — which has happened previously — astronauts could print a replacement in as little as 15 minutes, rather than waiting months for the next shuttle to bring one. The value there is obvious. However, 3D printing will become transformative when companies more thoroughly integrate the technology into their manufacturing process. Design At its core, 3D printing is a manufacturing process. That means companies can build their products in a different way, but that's not always where its entire value lies. The unique nature of 3D printing lends itself to creating new designs, rather than substituting existing ones. Organizations will find far more value in this technology when they produce their items

from scratch with 3D printing in mind. The technology can make products that are smaller, stronger, or cheaper — all because of design innovations. Frequently, these advances result from the ways that design thinking interacts with a fundamentally different process. A new product is often realized through a structured design-thinking process that considers desirability, feasibility, and viability. Often, the feasibility stage is where the product is altered, sacrificing some desirability and viability aspects. Limitations force conventional manufacturing to modify designs even though it results in more weight, cost, and complexity. Conventional manufacturing is a top-down process where a component is created or machined from larger pieces. 3D printing operates from the ground up, where material is added in tiny layers to create complex parts and more efficiently utilize the raw material. Volkswagen-owned Bugatti, maker of supercars often priced in the seven figures, used 3D printing to construct titanium brake calipers for its new vehicles.16 In the 45-hour process, lasers melt titanium powder to create 2,213 layers of metal. Even though titanium is heavier than Bugatti's traditional material of choice (aluminum), the caliper is 40% lighter due to the new design. A Bugatti executive said 3D printing was the only option for this new design. Another example comes from GE Aviation, which was trying to redesign its jet engine fuel nozzles. The walnut-sized part has 14 internal fluid passages needed to mix the fuel and air. The design was good, but the manufacturing processes weren't up to the challenge. "We tried to cast it eight times, and we failed every time," said Mohammad Ehteshami, then-head of engineering at GE Aviation.17 Instead of welding together 20 pieces, a modified off-the-shelf 3D printer was able to create the new nozzle using 3,000 layers of powdered metal. The result was 25% lighter, five times more durable, and 30% cheaper. The success forced GE Aviation to create a new manufacturing plant in Alabama to print the nozzles, about 600 per week.18 Often, the benefits of 3D printing aren't calculated in the manufacturing costs. They are generated in downstream value, such as more-efficient power-generation components that can save millions of dollars in fuel costs and reduce emissions. Scott Strazik, CEO of GE Gas Power, said 3D printing allowed his company to design turbines that could save its users up to $2 million per year in fuel and add another $3 million annually in new power generation capacity.19 Supply chain Before the COVID-19 pandemic started, organizations already realized that 3D printing could make supply chains more compact. The crisis has now exposed critical weaknesses in those global networks and gives executives an opportunity to reimagine their supply chains. The conventional way to mitigate risk has been to spread out the supply chain worldwide, which usually reduces costs. That approach generally worked well until early this year after the coronavirus spread throughout China, the world's largest manufacturer. Factories there and in other hard-hit areas closed temporarily and snapped import trade links. Often executives didn't have visibility into their supply chains and were unaware of their vulnerabilities. Its large workforce and lower pay allowed China to disrupt the manufacturing sectors in much of the world. The consumer electronics shift to China made sense because low-cost labor was needed to assemble 200 or so parts in a sequence. 3D printing could allow some companies and countries to create their own disruption and bring back manufacturing with less labor and capital investment. The pandemic won't reverse globalization. However, more organizations are searching for local suppliers and seeking to boost local capacity near their primary markets.

Businesses need to closely examine the most critical parts of their operations and create contingencies in case there are disruptions, either locally or globally. Businesses could set up 3D-printing facilities near major population hubs, rather than shipping merchandise from manufacturing centers across the world. Items can be made when ordered and still arrive quickly, as consumers have come to expect. 3D-printing company Carbon and sportswear multinational adidas teamed up on the 3D-printed Futurecraft 4D shoes. Adidas CMO Eric Liedtke told TechCrunch, "Ideally, the vision is to build and print on demand. Right now, most of our products are made out of Asia and we put them on a boat or on a plane so they end up on Fifth Avenue … Instead of having some sort of micro-distribution center in New Jersey, we can have a micro-factory."20 Often 3D printing can make a single object cheaper. However, the greater benefits are unlocked when the technology is a core element of the supply chain. New markets The efficiency, creativity, and versatility of 3D printing is attracting new industries. Each advance — either in printer technology or new materials — opens a door. CB Insights assembled a list of 35 industries that have the potential to be disrupted by 3D printing.21 Those include: Upending the system Calculating the value of 3D printing is complex. Businesses must consider the prices of equipment, materials, speed of production, and other measurable factors. Beyond that, companies need to predict the changing costs of the technology and expanding selection of materials. There are sunk costs in traditional machinery and risks in upending a system that is working, at least for now. And there is the unknowable lost value of innovations that could have been discovered through 3D printing. Many businesses will hesitate to disrupt their current supply chains or undercut their existing processes. That's a tricky line to walk in many industries, until an emergency arrives and there are no other options. This current crisis is forcing much of the world, from individuals to the largest corporations, to act and react differently. The old ways are no longer effective. New solutions are needed that can provide efficiency and flexibility, and facilitate innovation. No single technology can meet everyone's needs. However, many organizations will take a closer look at 3D printing and discover a versatile tool well suited to a rapidly evolving and unpredictable landscape. Rafi Billurcu, a partner at Infosys Consulting, and Rahul Chalisgaonkar, a principal in the supply chain practice at Infosys Consulting, contributed their expertise to this report. 1History of 3D Printing: It's Older Than You Are (That Is, If You're Under 30), Dana Goldberg, April 13, 2018, Redshift. 2How 3D printing could save lives in the coronavirus outbreak, James Temple, March 27, 2020, MIT Technology Review. 3Additive Manufacturing and 3D Printing - Statistics & Facts, I. Wagner, Nov. 18, 2019, Statista. 4An Engineering Services Framework for Additive Manufacturing, Sudev P. Pattathil, Sheshadri Ganeshaiah Uttameshwar, and Dr. Ravi Kumar G. V. V., 2018, Infosys. 5Beyond Ourselves: A Response to COVID-19, Jeff Mosier, 2020, Infosys Knowledge Institute. 6Coronavirus: 3D printers save hospital with valves, Zoe Kleinman, March 16, 2020, BBC. 7Why did L'Oréal invest in additive manufacturing?, Carlota V., Feb. 24, 2020, 3Dnatives.com. 8How 3D Printing is Transforming the Aerospace Industry, Morgan Schwartz, Nov. 7, 2017, TriMech Solutions. 9Moving into the future with 3D printing, William H. Peter, Lonnie J. Love, and Ryan R. Dehoff, March 23, 2018, Oak Ridge National Laboratory. 103D printed tool for building aircraft achieves Guinness World Records title, Vlastimil Kunc, Brian K. Post, Lonnie J. Love,

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Transforming the Mainframe

----- Arcticle source ----- https://www.infosys.com/insights/other-insights/ transforming-mainframe.html ----- Insights Other Insights Business Challenge A UK-based bank wanted to implement DevOps for mainframe to reduce project cycle times to enable faster delivery, gain business growth, and deliver enhanced user experience. Infosys View Before undertaking radical change under digital transformation, organizations must check under the hood and resolve problems in legacy systems, or they risk gaining no significant outcomes from their digital transformation journeys. Business Outcomes And more... Read about the client benefits and the 5 best practices drawn from this engagement. =====================

Other Insights

----- Arcticle source ----- https://www.infosys.com/insights/podcasts.html ----- Insights Unpacking the Possibilities Offered by Blockchain Insights =====================

Other Insights

----- Arcticle source ----- https://www.infosys.com/insights/success-stories.html ----- Insights Blockchain for 5G Transforming the Mainframe Engineering a Next-Gen Sales Platform DevOps for Speed Simplifying the Quote Cycle Testing for Transformation A Mobile UX Refresh to Reach Customers Worldwide Faster Mainframes for Speed Trading Insights

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5 Takeaways

----- Arcticle source ----- https://www.infosys.com/insights/takeaways.html ----- Insights =====================

DevOps for Speed

----- Arcticle source ----- https://www.infosys.com/insights/takeaways/devops-speed.html ----- Insights 5 Takeaways Business Challenge A major US retailer urgently needed to reduce the time-to-market for their e-commerce business to compete against online rivals and retain customers. Infosys View Winning in today's competitive and fast-paced business requires software products and platforms that are responsive and adaptable to change, and a partner with the expertise to implement the technologies effectively. Business Outcomes And more... Read about the client benefits and the 5 best practices drawn from this engagement. =====================

Faster Mainframes for Speed Trading

----- Arcticle source ----- https://www.infosys.com/insights/takeaways/faster-mainframes-trading.html ----- Insights 5 Takeaways The need for speed and regulatory compliance are creating upheavals across industries where mainframes have been the mainstay for computing for decades. Modernizing these systems is a nightmare for every enterprise, considering the complexities and high costs involved, besides the fear of disruption to business. The need for a trusted partner has never been more. A leading global brokerage firm was looking to simplify and speed up the mainframe systems powering their trading platforms that supported billions of transactions each day. See how Infosys helped and the five key takeaways from the project. =====================

A Mobile UX Refresh to Reach Customers Worldwide

----- Arcticle source ----- https://www.infosys.com/insights/takeaways/reach-customers-worldwide.html ----- Insights 5 Takeaways The digital world has made it possible for enterprises to deliver services to customers near and far through mobile applications. However, regular and rapid rollout of features and new versions across geographies and different operating systems call

for flawless applications and mobile app testing capabilities. A chemical giant wanted to deliver services to their farmer clients across geographies through their mobile applications. See how Infosys helped and the five key takeaways from the project. =====================

Simplifying the Quote Cycle

----- Arcticle source ----- https://www.infosys.com/insights/takeaways/simplifying-quote-cycle.html ----- Insights 5 Takeaways Business Challenge A mobility products maker wanted to modernize the quote-to-cash process for one of their units as its legacy system was leading to loss of business. Infosys View A cloud-based, mobile Configure, Price, and Quote solution is imperative to provide consistent and accurate information to customers in real time on multiple channels. Business Outcomes And more... Read about the client benefits and the 5 best practices drawn from this engagement. =====================

Testing for Transformation

----- Arcticle source ----- https://www.infosys.com/insights/takeaways/testing-transformation.html ----- Insights 5 Takeaways Business Challenge A US retailer had no mechanism to track their inventory and pricing data, and was unable to implement omnichannel retailing effectively. Infosys View While data integration is key to any big data strategy, what is essential is a validation framework that allows for flawless testing and ensures complete visibility across channels and access to business intelligence and analytics. Business Outcomes And more... Read about the client benefits and the 5 best practices drawn from this engagement. =====================

Other Insights

----- Arcticle source ----- https://www.infosys.com/insights/videos.html ----- Insights Video Playlist: Perspectives on Digital Transformation at the Adobe Summit 2019 Infosys Center for Emerging Technology Solution: Co-creation for Growth and Innovation Video Playlist: Microsoft and Infosys Partner to Bring New Solutions around Digital Transformation Video Insights Insights =====================

Videos / Podcasts

----- Arcticle source ----- https://www.infosys.com/insights/videos-podcasts.html ----- Insights =====================