

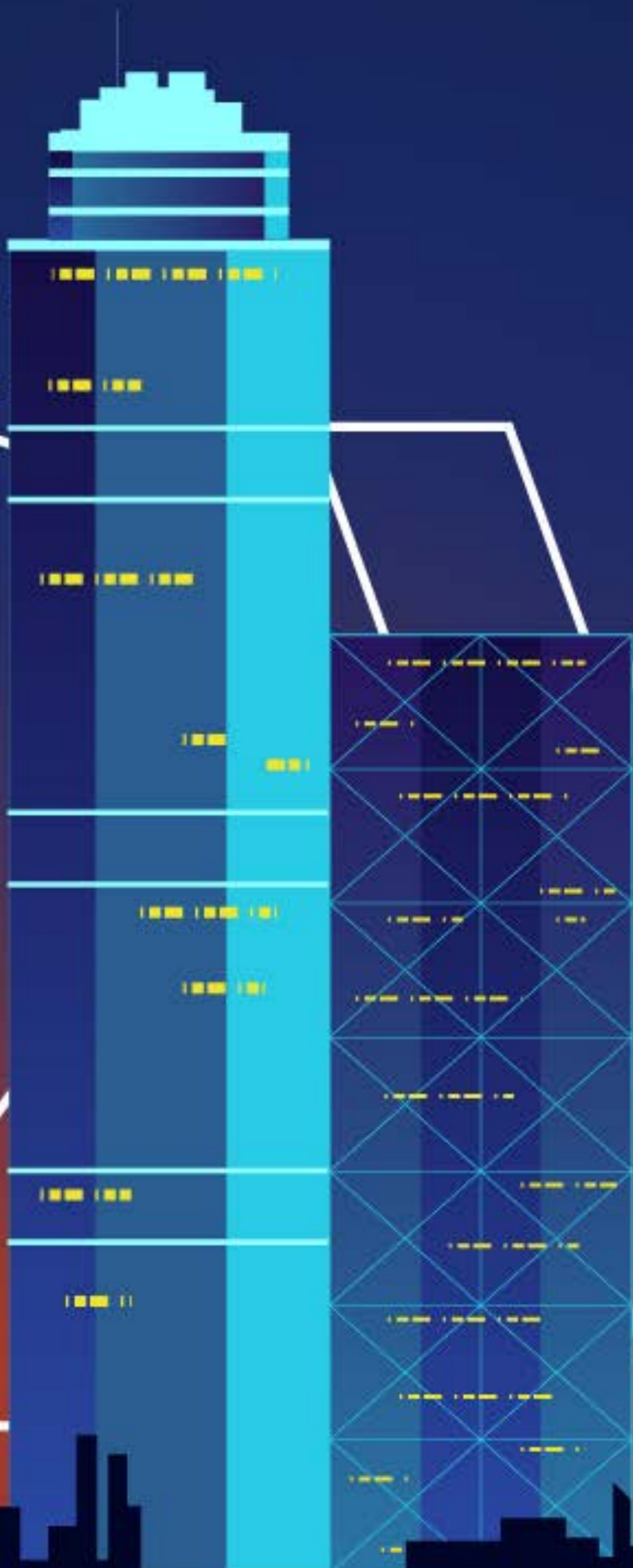
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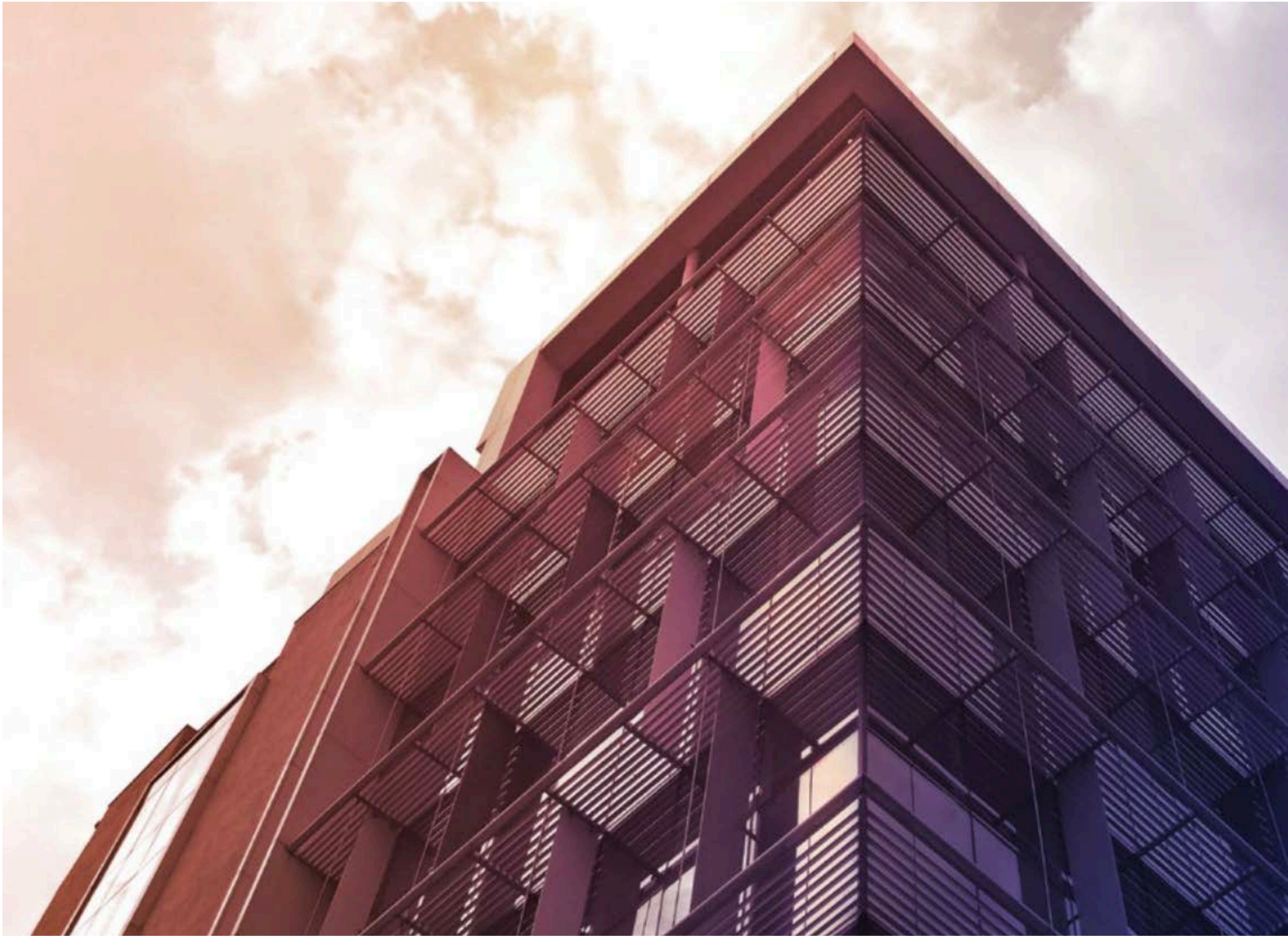
# quarterly

Special Edition

THE



ENTERPRISE



EdgeVerve Headquarters, Bengaluru, India

## About EdgeVerve

**EdgeVerve Systems Limited**, a wholly owned subsidiary of Infosys, is a global leader in AI and Automation, assisting clients thrive in their digital transformation journey. Our mission is to create a world where our technology augments human intelligence and creates possibilities for enterprises to thrive. Our comprehensive product portfolio across AI (Infosys Nia), Automation (AssistEdge) and AI enabled Business Applications (TradeEdge, FinXEdge, ProcureEdge) helps businesses develop deeper connections with stakeholders, power continuous innovation and accelerate growth in the digital world. Today EdgeVerve's products are used by global corporations across financial services, insurance, retail, consumer & packaged goods, life sciences, manufacturing telecom and utilities.

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# The 2X Enterprise

**Volume 6, May 2021**

Wishful thinking, you say? Not a pie in the sky anymore!

AI & Automation — seemingly the greatest technologies ever — are the essence of today's digital enterprise. What was inconceivable only a few years back is now possible twofold! As the digital revolution takes shape, AI & Automation are bound to become indispensable, accelerating innovation, scale, and growth in endless ways, thus shaping The 2x Enterprise down the road.

In this edition, we will look at practical application of AI and Automation in enterprises and how they are transforming businesses in unpredictable ways, enabling them to thrive in the disruption.

The Edge Quarterly was conceived to share practical leadership ideas and best practices with enterprise leaders. We hope that you will like the articles and share ideas, thoughts, and comments. You can also view the online version of the magazine for access to other cutting-edge white papers in addition to blogs on AI and Automation at [edgeverve.com/the-edge-quarterly](https://edgeverve.com/the-edge-quarterly). To feature your enterprise story or transformation journey in our next edition, please write to us at [contact@edgeverve.com](mailto:contact@edgeverve.com)

**The Editorial Team**

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# Driving Paradigm Shift in Financial Services

## Women at the Helm



**Deepa Surendran**

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### Summary

Evolution means change, and today, the Financial Services sector can deliver unexplored possibilities by deploying automation and AI capabilities unheard of in the past decade. And women leaders are indisputably driving that change.

### Introduction — Automation and AI technologies transforming the BFSI industry beyond years

Twenty years ago, there was much hype surrounding the BFSI industry; it was one of the hottest industries to pursue. It's now 2021. Has the industry hit a roadblock? The truth is in order to remain relevant, organizations need to challenge traditional ways of functioning, going above and beyond what's expected.

Today, emerging technologies like AI and Automation are fully harnessed by organizations across all industries to succeed in the new age of digital. The Financial Services sector is one such industry where technology implementation into specialized banking areas is not a novel phenomenon. But, are financial institutions adopting new technologies to meet the evolving landscape? Does it see AI & Automation as a threat or an opportunity?



“Robotic Process Automation in BFSI Market Size, Share Valuation to Reach USD 3,457.8 million By 2026.”<sup>i</sup>

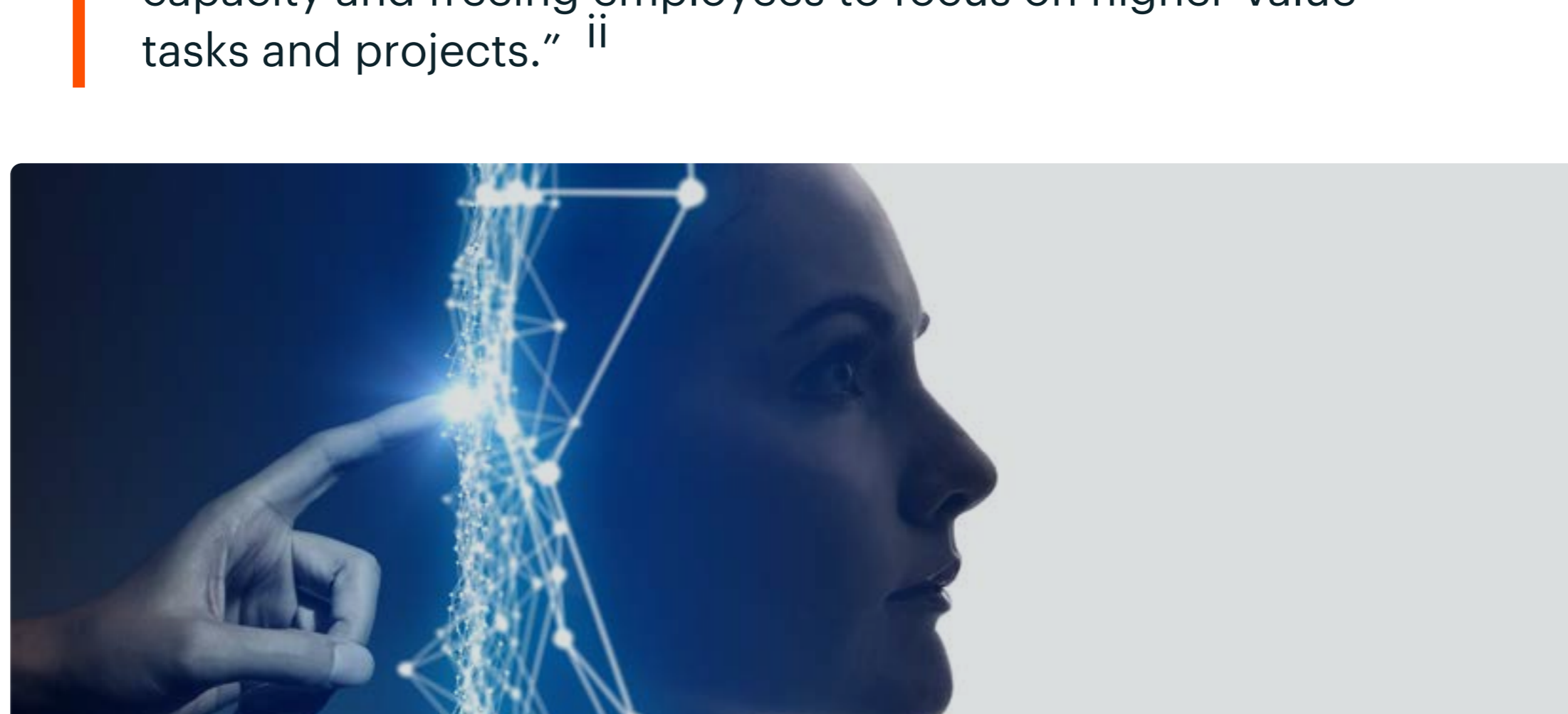
The BFSI industry needs to evolve into being technologically savvy to maintain a competitive advantage, avoiding the fear of becoming defunct. One of the fastest-growing industries globally, the BFSI market is undergoing a paradigm shift in customer expectations, competition from fintechs, and the launch of new, digital tech innovations. The coming century will see banking companies play the role of technology platform providers to their customers, and it is inevitable if they have to stay relevant.

In India, where most banking captives or GCCs are housed we have witnessed a move up the value chain in the last two decades. This move up the value chain has been triggered to a significant degree by technology playing the role of a catalyst. Automations, deploying AI for processes have increased, rendering process-driven activities obsolete.

The Finance function is overwhelmed with mundane activities during the month-end or quarter-end, despite having ERP and other technologies. Moreover, interfaces require manual interventions and are characterized by complex systems, and the lack of a seamless financial tool can cost the organization big. This is particularly so in organizations that have had inorganic growth. Multiple systems that come with acquisitions take time to decommission, leading to manual interventions resulting in loss of productivity and increasing errors. Implementing technologies like RPA and AI can help simplify or transform these interventions across the banking value chain.

Apart from automation, GCCs also have to look at their delivery model. Third-party providers are going strong post the pandemic as they deliver value for money. In such a scenario, GCCs have to stay relevant and benchmark themselves to these players. The right mix of outsourcing and insourcing can help meet the cost targets that their group has set for themselves.

“McKinsey sees a second wave of automation and AI emerging in the next few years, in which machines will do up to 10 to 25 percent of work across bank functions, increasing capacity and freeing employees to focus on higher-value tasks and projects.”<sup>ii</sup>



### Here are a few use cases where automation plays a key role in digital transformation in the BFSI Industry

- **Customer Service**

Automation helps provides a hassle-free customer experience as they are available 24x7 by supporting digital self-service. The bots automate routine work, freeing up staff to focus on building customer relationships. From driving personalized engagement to drastically reducing errors, automation is the way forward to enhance customer satisfaction.
- **Financial Planning & Reporting**

RPA bots can be leveraged to update budget forecasts, run validation checks based on historical data, leading to error-free reports and accurate financial planning.
- **Debt collection**

Automation can be deployed to eliminate manual collection operations, thus streamlining the process and improving debt recovery time and efficiency.
- **Reconciliation**

Automation of time-consuming financial reconciliation processes helps eliminate errors and the risk of fraud. Automating general ledger banking & month-end reconciliation is a breeze, allowing the team to focus on more value-added tasks.

Due to the data-driven nature of the banking and financial sector, RPA undoubtedly helps them to capitalize and gain from growth opportunities, thus providing a competitive edge that's responsible for the overall market growth.<sup>iii</sup>

With digitization growing leaps and bounds, employees are embracing change, deploying workplace automation than ever before. The desire to contribute to more value-added work is higher, transforming the way some sectors like BFSI operate. What do banks and financial institutions require to transition to the new world of work? With high automation potential in the banking sector, can the new, evolved workforce become the “agents of change”?

### Leading and shaping the future workplace

The workforce has evolved substantially; with the millennials entering the workforce, they are questioning obsolete ways of working, and women are leading the way. For instance, an employee from my team resumed work after her maternity break. She wanted to adapt to the new world of work to bring about enterprise-wide transformation. She identified repetitive tasks that could be automated using bots and wished to focus on more value-added and complex responsibilities.

This is an example of how automation can augment and amplify human capabilities in the workplace. Undoubtedly, organizations have no choice but to adopt cutting-edge technology; the new generation is asking for it; they know where to use their grey matter and what can be left to the machines. With automation and AI technologies, this is not a pie-in-the-sky goal anymore!

“Fifty percent of women say that feeling like the work they do makes the world a better place is the most important factor when deciding their future careers.”<sup>iv</sup>

It's time we challenge the perception that there is a dearth of women pursuing tech. It's time women participate in technological disruption in some of the most competitive industries by shattering the glass ceiling. In a world constantly shaken by new technologies, the very root of suffering is the inability to accept change and create promising avenues.

### Women leaders indisputably spearheading change in these unprecedented times

We need more women leaders to revolutionize the way we work and think, laying the foundation for a new digital world. For instance, amid COVID-19, BFSI companies had to make a complete shift to the new concept of working from home, especially on such a large scale.<sup>v</sup>

In my conversation with one of the leading women's network vendor, they pointed out that post-pandemic and switch to WFH, they have seen a significant rise in women interested in joining the workforce. Flexibility is here to stay, and it allows every organization to tap into the talent that otherwise would have been wasted. The leap that technology took in the last 12 months to facilitate the new ways of working is unprecedented, and the momentum is here to stay.

With the pandemic transforming the way we work, live, and think, women leaders in tech are capitalizing every bit on the opportunity to determine the best path forward by adopting innovation at scale.

“The pandemic can be an opportunity for change and catalyst for growth for women in fintech, as indicated in Deloitte's research.”<sup>vi</sup> As remote working is the de facto norm, women are making the best use of automation technologies to free up their staff to focus on higher-value tasks, in the process, ushering in transformative change.

“According to an analysis, women outscored men on most leadership competencies, from taking initiatives and inspiring and motivating others to building relationships.”<sup>vii</sup>

### Conclusion

Achieving gender diversity in technology areas will not only activate a flexible workforce but also help organizations, especially the BFSI sector, navigate these uncertain times. As mentioned in the example, overcoming resistance to change will ultimately transform the way a process functions. Faster technology adoption is the need of the hour; the question is, “How many things can we automate?”

Today, women leaders are questioning stereotypes, rising above the unconscious bias, and are being the catalysts of driving change in organizations. They are thinking of ways to eliminate mundane jobs such as updating excel sheets and collating data; instead, focusing their time on identifying opportunities for automation that will enable organizations to create digital experiences.

How can we make life much easier for our team and customers? How can we focus on tasks that provide intellectual stimulation? These are some of the pressing questions that we need to address, besides tackling the elephant in the room: How can we make the BFSI industry more inclusive and adaptive to change?

**Disclaimer** Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the respective institutions or funding agencies

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May 2021

# Transforming Entertainment

## The Intelligent Evolution of Content Delivery and Management



**Shweta Jain**  
APAC Head of Business Development, M&E, at Amazon Web Services (AWS)

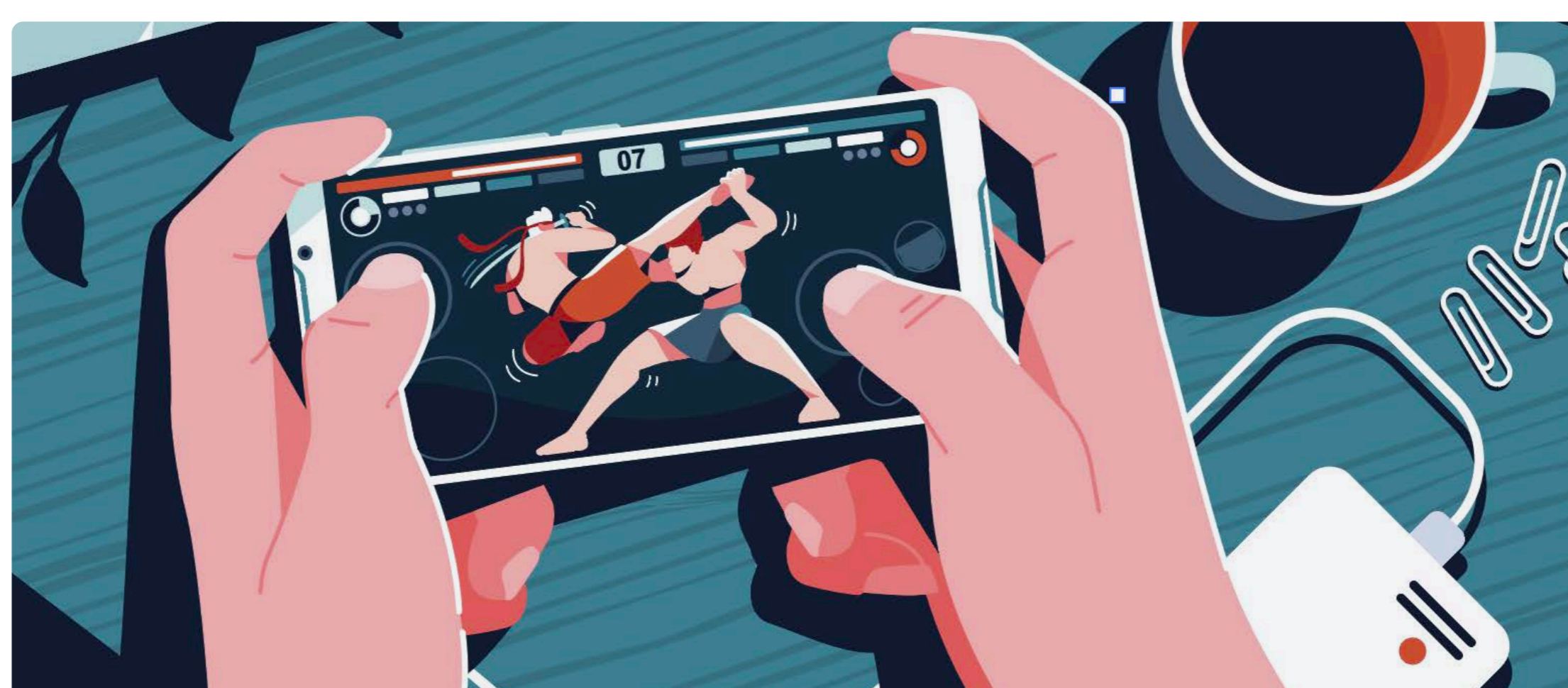
### Summary

The media and entertainment sector is growing at a staggering rate, accelerated by the rise in consumption due to COVID-19. This segment is also at the frontline of innovation. How are intelligent technologies like AI and automation defining the future of this dynamic industry?



The media and entertainment (M&E) industry has been growing at a staggering pace, with the global pandemic having further accelerated the digital transformation that was already underway. The pandemic has also created pressure on content creators as well as content distributors, due to spikes in demand from increased consumption, delays in fresh content supply, and a significant reduction in advertising spend as businesses look to cut costs.

M&E companies around the world are taking on the challenges with technological innovation, accepting that rapidly evolving consumer behavior, competition from players across levels of scale, and the need to deliver exceptional experiences consistently, are all crucial factors for success in this highly competitive industry. Furthermore, trends such as device-agnostic consumption coupled with the need to deliver high-quality content at scale require a robust backend infrastructure capable of managing such demands.



### Navigating the Maze

According to PwC's Global Entertainment & Media Outlook 2020–2024<sup>i</sup>, the global revenue from over-the-top (OTT) video is projected to grow at an annual rate of about 15% through 2024. The markets for many other media segments— including virtual reality (VR), video games, internet and out-of-home (OOH) advertising, music, radio, and podcasts, and digital books—are also all expected to grow. The report mentions that global revenue from traditional TV, cinema, and print publications is expected to further decline in the coming years. It also highlights how in only a few short months, COVID-19 accelerated ongoing changes in consumers' behavior, pulling forward a series of digital disruptions that would have occurred in future years.

As the M&E players strive to capitalize on the new growth opportunities with technology-driven and innovation-led media products, there are still challenges that they must face.

### The Need for Innovative and Responsive Business Models

In an environment where consumer behavior keeps shifting, it is key that enterprises continuously offer new and more refined customer experiences. Businesses can no longer rely solely on traditional broadcast business models, making it essential for M&E businesses to continually innovate and have a diverse product portfolio. The focus on consumer experience means that enterprises need to build brand new growth strategies for a direct-to-consumer dynamic. M&E brands need to focus on reinventing themselves with sustained efforts to innovate, while finding ways to bring products to market faster.

Democratization of enterprise technology means that competition is fiercer than ever before. Competition has come from disparate sectors, disruptive digital-native start-ups, and even established media companies that have reinvented themselves to focus on digital. Enterprises cannot be complacent and need to transform digitally – or risk becoming obsolete.

### In Intelligence We Trust

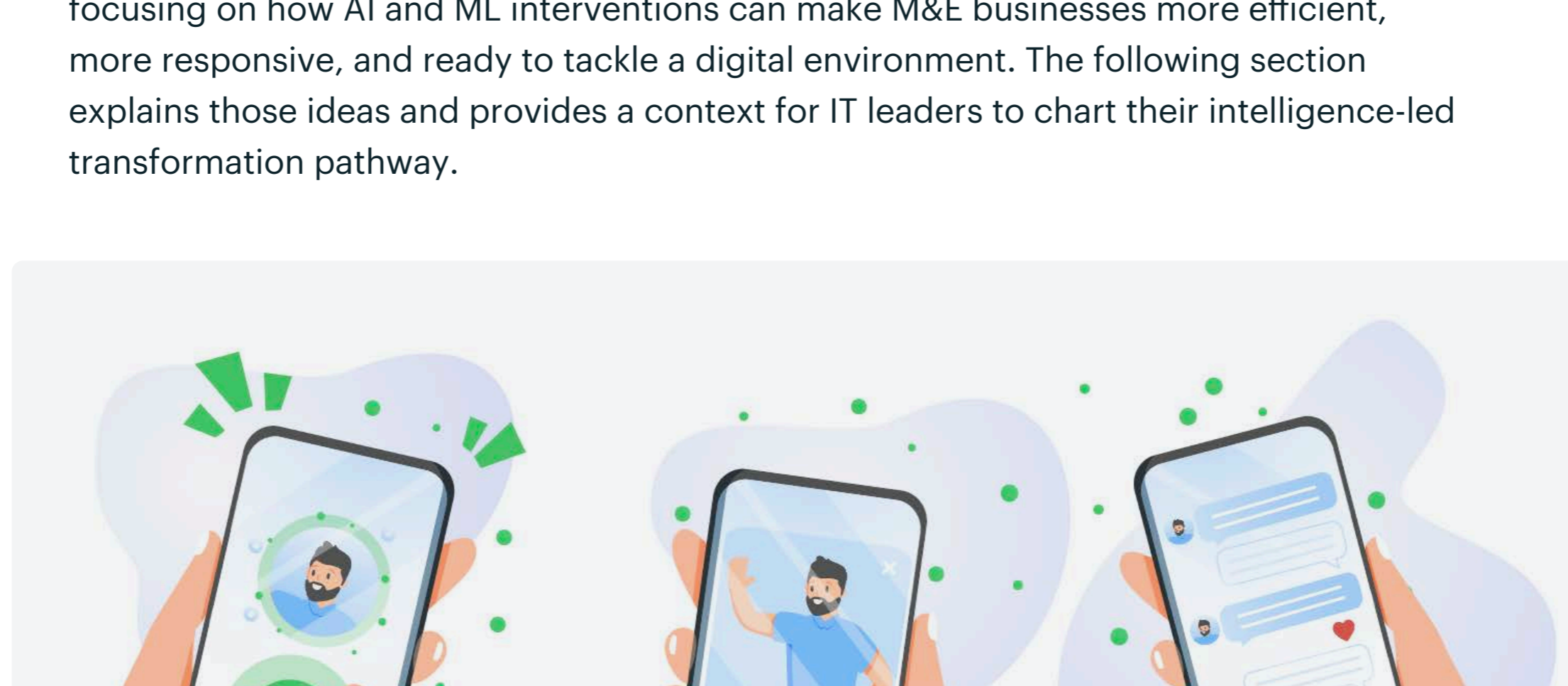
With so much to do, where do M&E businesses begin to reinvent themselves? A Deloitte<sup>iii</sup> perspective paper on the 2021 outlook for the telecommunications, media, and entertainment industry in the US outlines the following strategic opportunities for business leaders in these sectors to future-proof their growth plans:

- Renewing the focus on customers' needs by taking a more nuanced approach to customer engagement.
- Converging and remixing entertainment experiences through new service offerings and entertainment bundles—and adopting new strategies that can enable business agility.
- Repositioning to monetize advanced wireless networks through new products, services, and business models.

These insights hold true in Asia Pacific, and technology leaders must align their transformation strategies with these priorities and develop roadmaps to drive business value.

Cloud technology addresses the challenges M&E businesses face on two levels – allowing seamless content delivery and management at scale, and hyper-personalization at the individual user level, both of which are crucial to success.

Furthermore, integrating cloud-based machine learning and AI services can help M&E businesses streamline and automate processes, including advertisement insertion, transcription, conversion between video formats, and more. In our e-book, "Engage Your Audience with Machine Learning Powered Experiences," we discuss the transformative effects of machine learning on the media and entertainment industry<sup>ii</sup>, focusing on how AI and ML interventions can make M&E businesses more efficient, more responsive, and ready to tackle a digital environment. The following section explains those ideas and provides a context for IT leaders to chart their intelligence-led transformation pathway.



### Prioritizing the Customer

Cloud-based ML services can help businesses delight customers by creating unique experiences for them to enjoy through personalized recommendations and intuitive searches, ensuring customers spend more time on the platform, engaging with the select pool of content curated just for them.

For example, NASCAR uses AWS ML-powered tools like Amazon SageMaker, Amazon Rekognition, and Amazon Transcribe to power content indexing. Viewers benefit from shorter search times, and can spend more time enjoying content on the platform.

Likewise, TVNZ, New Zealand's state-owned, commercially funded broadcaster, uses Amazon Personalize to quickly generate and evaluate show recommendations, which drove significant improvements to key viewer engagement metrics on their online on-demand TVNZ OnDemand platform.

### Moderation, Compliance, and Control

With a global audience, companies must often manage legal, regulatory, and compliance requirements, which can be a mammoth task requiring huge investments in human and IT resources. With ML, businesses can moderate various forms of content, including user-generated content at scale, to make detecting and censoring simpler. Information security, recognition-driven applications such as blurring out faces to preserve privacy, and compliance with local legal requirements are just a few of the use cases.

India-based video sharing app MX TakaTak<sup>iv</sup> aims to provide a safe environment to more than 150 million monthly active users. The app uses Amazon Rekognition, an image and video analysis service from AWS, to check whether the avatar content uploaded by users complies with community guideline requirements. Earlier this year, MX TakaTak won Amazon's Enterprise AI Award for extraordinary innovation in the Media & Entertainment category at the Amazon AI Conclave 2021.

### Media Subtitling and Localization

Localization and hyper-localization will be the next frontier for competition in the M&E industry. Consider the case of India, where over 65% of its 560mn+ internet users stream or download video content once a month.<sup>v</sup>

In 2020, a Media Partners Asia study<sup>vi</sup> found that 90% of video content consumed in APAC is in the local language of the respective country the content is consumed in. Localizing not just content, but also experiences in these geographies remains a substantial opportunity for M&E businesses to ensure customer satisfaction.

For example, Korea-based beNX's Weverse fan engagement platform leverages Amazon Translate and Amazon Comprehend services from AWS to allow chatting between Korean pop singers and millions of their global fans, in their preferred language – a great example of how AI can play a role in breaking the language barrier and bring people closer together.

### Smarter Advertising

Under greater pressure to deliver revenue, companies are looking to make the most of their advertising spend. With advertising budgets reducing across industries, greater efficiency and measurability are crucial to driving returns. ZEE5 offers millions of ads in live and VOD based without sacrificing broadcast-level quality-of-service. Using AWS Elemental media services, ZEE5 delivers live and on-demand content with video streams that combine content with ads personalized to viewers. ZEE5 uses AWS Elemental MediaLive to encode and deliver 80+ live channels to viewers, AWS Elemental MediaConvert to transcode hundreds of hours of video on demand, and AWS Elemental MediaPackage to perform just-in-time packaging of 20+ channels with AWS Elemental MediaTailor performing ad insertion.

### Innovation Begets Innovation

As businesses move to the cloud to innovate, they also gain access to a wide range of pre-built cloud-based solutions that already have the relevant AI services integrated within the solution. By building off these solutions, M&E businesses can bring their offerings to market quickly, without the need to worry about infrastructure or creating a solution from scratch. These time savings enable developer teams to repurpose their time into even more projects to drive innovation faster, and at lower costs to delight their customers.

As global regulation catches up with innovation, companies must be prepared to respond swiftly and effectively to any fresh developments. The past year has shown us that uncertainty is an element to be navigated and managed, not avoided or feared, and the businesses and technology leaders capable of recognizing this idea will earn an edge in the future. However, it is their ability to harness intelligent technologies to chart their growth that will determine how well they translate that edge into actual business performance.

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# Smartness Guaranteed

## How AI is Building a Digital and Data-driven Insurance Industry



**Hema Prem Raina**

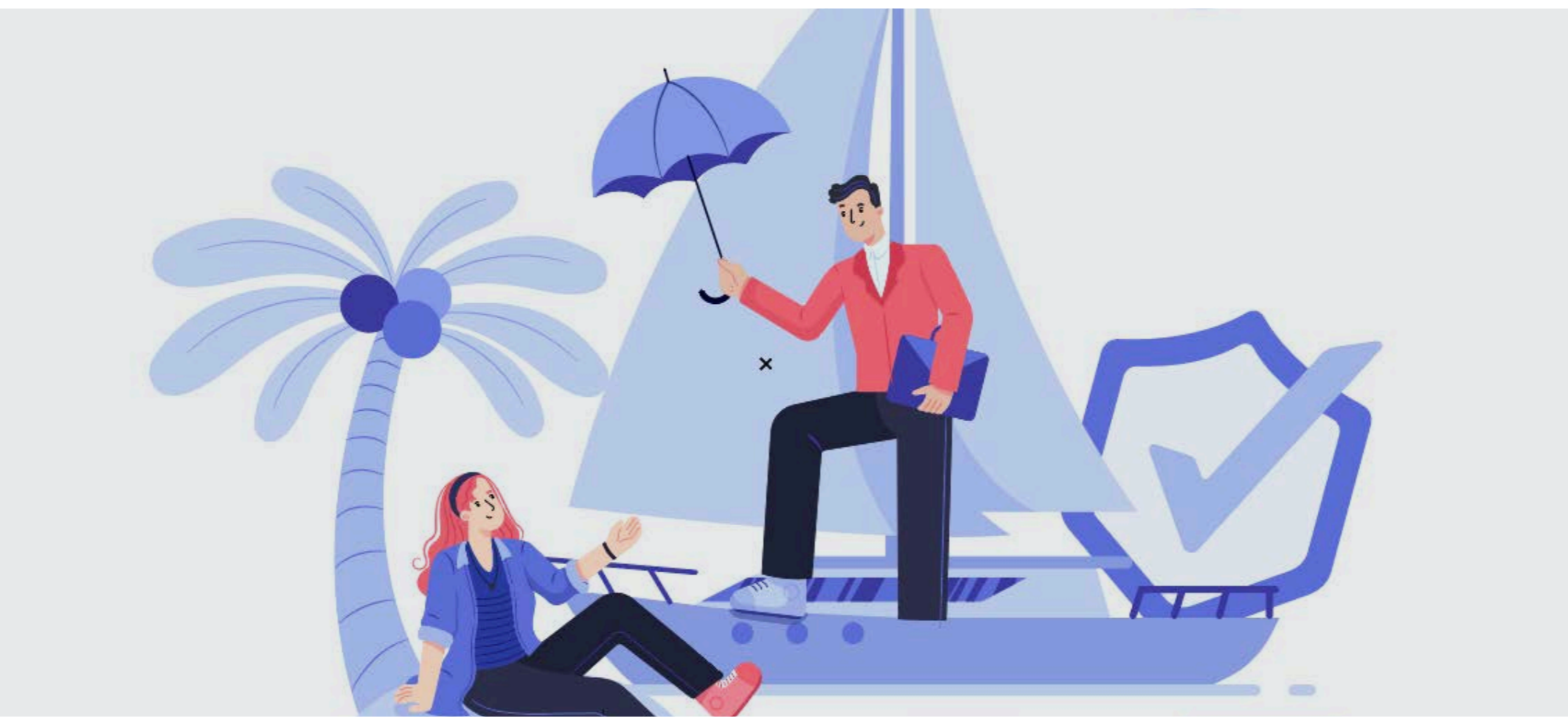
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### Summary

The transformation of the insurance industry requires a strategic combination of AI and smart data-driven technologies that will help continuously innovate, build competitive advantage, and adapt to the evolving digital landscape. Let's take a closer look into the future of insurance.

The insurance industry is at an inflection point in its evolution. As a highly regulated sector focused on robustness over innovation, insurance has typically been quite resistant to any significant changes, but technology is changing that rapidly. As with virtually every industry today, the potential for intelligence-driven transformation is seismic.

With insurance, we are witnessing a seemingly serendipitous intersection of technologies set to drive its future. The rise of connected devices and the consequent explosion of data, the proliferation of open-source systems, developments in cognitive technologies, and advancements in physical robotics are coming together to act as a catalyst for systemic reform.<sup>i</sup> Machine learning, deep learning, neural networks, computer vision, and natural language processing can power various innovations such as document processing, chatbots, affective computing, and even integration with IoT and smart devices.<sup>ii</sup> It is no surprise that there is palpable excitement for AI in insurance in my conversation with prospects, clients, and peers.



### Reinventing the industry one process at a time

Some processes are readier than others to be optimized, while others may have a longer lead time, but could generate more value once adopted. Let's look more closely at some of the insurance use cases for AI-led transformation.

#### > Claims Processing

Claims processing is a task fraught with manual intervention on both sides of the fence - the insurer and the customer. Customers frequently submit claim applications in various unstructured data formats, which insurance executives then sift through and process, making for an unwieldy and error-prone system. Through different document capture technologies that are miles ahead of OCR and other recognition alternatives, AI can change that by injecting intelligence into a traditionally manual process. Customers are usually in a position of discomfort when making claims, and any improvement to their experience can drive a substantial improvement in the experience and consequently in their loyalty. Insurance organizations are also always keeping up with changes in regulations and compliance, requiring staff training and system updates. Still, with AI, simple modifications can mean that documents are analyzed in line with the latest regulations, ensuring a seamless, secure, and compliant claims process, not to mention the exponential increase in speed.

#### > Quote and Bind

Extensive manual intervention remains a theme in the insurance sector, and besides the unnecessary costs and inefficiency, it also risks error. Usually, quotes are sent over email (and sometimes even fax) after being calculated manually. Policies are again bound manually with endorsements requiring additional manual effort. In an intelligent ecosystem, however, algorithms compute a quote based on a wide range of factors, including real-time external data. Additionally, AI-based systems can offer multiple quotes and product options, generating upselling opportunities for the provider and even creating all documentation. With the benefit of continuous learning, intelligent systems can also learn which products and price points to recommend to specific customers, increase conversion rates, enhance customer satisfaction, and improve the bottom line.

#### > Underwriting

The data explosion I refer to earlier in this piece is the exact reason why underwriting could use a facelift. While the skill and experience of underwriters remain essential, access to intelligence could help them make better decisions. Consider the case of data from connected vehicles being used to alter the risk profile of the insured dynamically based on choices of route, driving settings (self or manual), or even weather. Equally, the rise of wearable technology offers a whole new paradigm in intelligent healthcare insurance, motivating users to reach goals such as lower premiums and helping companies make more intelligent pricing and policy approval decisions.

#### > Document Creation

Documentation is of paramount importance in the insurance industry, given the need for the highest governance standards. Using intelligent tools to create documents doesn't just eliminate manual effort but creates an indexed and searchable repository of information that users can find at speed. Today, AI and automation technologies can generate complex policy documents without error, reducing costs, increasing efficiency, and ensuring security.

#### > Customer Service

Unlike the other use cases in this list, customer service is not specific to the insurance industry. Still, perhaps it is even more critical given the consumer's situation during most interactions. Intelligent analytics can give providers access to a wide variety of insights that can empower customer service teams to deliver exceptional experiences. Although some providers may cite legacy systems as a challenge for adopting intelligent platforms for customer service, the market offers a great range of thin intelligence layers that sit on top of existing systems with no need for rip-and-replace, instantly creating an intelligent organization capable of better service.



### Moving ahead with intelligence

The idea of intelligent transformation is not without its challenges. Leaders cite manual business processes and legacy systems as roadblocks. Other obstacles include:

- > The lack of skilled talent (internal and with vendors).
- > The absence of proven successes in the insurance industry.
- > Inadequate planning that leaves digital initiatives further down the priority list in favor of other work.

The problem, equally, is one of mindset, where people see digital as an end as opposed to a means, setting projects up for failure. Adoption remains the first step, but it is doomed to fail without specific use cases in mind.<sup>iii</sup>

Enterprises looking to begin their journey should work with partners capable of demonstrating sectoral expertise and consulting capabilities. They must also complete an honest assessment of their organization's maturity and readiness for such change. Perhaps the time is ripe for introducing a new leadership role with the mandate of spearheading AI and automation projects substantiated by business cases.

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May 2021

# Forward Together

## Why Technology Needs Inclusion



**Aruna C Newton**  
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### Summary

We often speak of inclusivity in technology as a social good. An act that's good for conscience and better for the marginalized, but what about the business case? By building products and services with inclusivity at the core, we are not just doing what's right, but we are also doing what's right for business. Are social responsibility and commercial success mutually exclusive?

To say technology has transformed every aspect of human life is in some parts an overstatement and others an understatement. While progress through technology has been nothing short of incredible, it also falls staggeringly low on the scale of fairness and equitability. Technology carries the implicit attitudes and values of those that build it. Our most ubiquitous technologies continue to be developed by a small segment of society<sup>i</sup>, intensifying exclusion just as much as they promote effectiveness. Frequently, marginalized populations face the brunt of this issue, specifically those with disabilities. A deeper look at the relationship between technology and inclusivity reveals that designing for inclusion is usually an afterthought or a bolt-on, one that's often padded with messages about 'doing the right thing' or 'making a difference.' Well-intentioned as these may be, they also carry connotations of condescension and sympathy, which may often be detrimental to genuine inclusivity. Why exactly is this problematic? Read on.

By treating disability as an anomaly, product and service creators treat accessibility as an additional feature, not part of the core value proposition. This approach is riddled with biases and errors in thinking. For any event to be seen as exceptional, it must be rare. Disability is anything but that. In the US alone, over 61 million adults live with a disability. With issues ranging from mobility and vision to self-care and cognition, this segment represents no less than 26% of the adult population in the country.<sup>ii</sup> The global figures are equally intriguing. According to WHO estimates, close to 15% of the worldwide population, over a billion people, falls under this category, making it the world's largest minority segment.<sup>iii</sup> It is no surprise that the Disabled and Elderly Assistive Technology market is estimated to touch US 31.5 billion in the next six years at a CAGR of 6%.<sup>iv</sup> Assistive technology is but one way to serve these valuable customers.

### The Case for Inclusivity

Going by the numbers above, building inclusive technology is not just a tool for social good but also business growth. By leaving out people with disabilities at the product conceptualization and development stage, companies miss out on a tremendous market opportunity of customers eager and willing to be served. Why do companies exclude such a large customer base from their business plans? The problem is one of mindset as much as it is of the method. The conversation needs to move away from a matter of purely social conscience to one of shared growth. Simply put, the industry needs to swap its condescension for collaboration.

Disability at birth is merely one segment of the people living with such challenges. Others could experience disability because of accidents, lifestyle issues, and age. This change has an effect on their needs, but not so much on their preferences, a fact that current design processes find easy to confuse. For instance, in the developed world, the size of the aging demographic and age-related disability is substantial. Their challenges are significant and should feature at the inception of an idea and not as an additional feature. Disability should not be a driver of marginalization but of inclusion and growth. The proliferation of technology should drive products and services designed for people across the ability spectrum. For any technology to be genuinely successful, ubiquitous, it needs widespread adoption, and that scale requires a broadening of the user base. Ignoring an entire demographic does not accomplish that goal. Conversely, building a process, culture, and philosophy with inclusivity at the core could help companies convert the incredible opportunity that lies dormant even today. So, where can they start?

### Redefining Processes for Inclusive Outcomes

#### > The Importance of Design to Inclusive Technology

The first step for companies is to earn skin in the game and develop more inclusive technology. This journey begins with their design process. Enterprise can modify individual products and services for better accessibility, but real change lies in shifting the design process's vantage point. The best way to learn is to make. By creating inclusive products designed to service users across the spectrum of abilities, enterprises can gain valuable insights to inform future iterations. Over time, enterprises must endeavor to build inclusivity-first products and services just as they develop mobile-first or desktop-first products. Accessibility must be just as essential and intuitive as any other function.

#### > Developing organizations capable of nurturing a wide variety of talent

For enterprises to instill diversity into their design process, they should begin by building diverse teams. Also, it is essential to review the design process and establish where the user blind spots lie, so teams can then engage with people who can offer insights from experience. It is crucial to 'design with and not just for'<sup>v</sup> the people often ignored. A team with diverse underpinnings will also improve the creativity and quality of discourse in the creation process, potentially leading to more innovative, relevant, and scalable products. Further, engaging with diverse perspectives and viewpoints will inevitably lead to more accessible products capable of driving exceptional experiences across the spectrum of users.

#### > The features of inclusive technology

Once you decide to shift your design approach, how can you identify that a product or service is inclusive? One way is to check the legislation for your location, such as the Americans with Disabilities Act (ADA) in the US. Frameworks like the Web Content Accessibility Guidelines (WCAG) provide location-agnostic accessibility guidelines for all web design. Compliance is just one part of the accessibility paradigm, and enterprises need to view accessibility-led design as part of a better user experience. It is the definition of users that needs broadening and not just the idea of accessibility. The Infosys Center For Emerging identified this need and developed the Infosys Accessibility Testing Tool (iATT), which uses built-in intelligence to assess websites for accessibility and generate comprehensive web accessibility and visual consistency reports. The tool is now recommended by W3C (World Wide Web Consortium).

### A Shift in Philosophy

Building for inclusivity is a fundamental shift in philosophy. Enterprises are doing themselves a favor by serving a customer base eager to use and pay for high-quality products and services. The relationship is one of mutual growth and benefit. When companies are hard-pressed to grow in a highly competitive and fragmented world, building more usable products is an effective route to scale. We are moving towards a world that celebrates diversity. Businesses must make the changes that help them understand that inclusivity and accessibility are about commerce just as they are about conscience.

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# The Intelligent Enterprise

## Realizing the promise of intelligent automation for shared services

**Barbara Hodge**  
Principal Analyst and Global Digital Content Editor, Shared Services & Outsourcing Network (SSON)

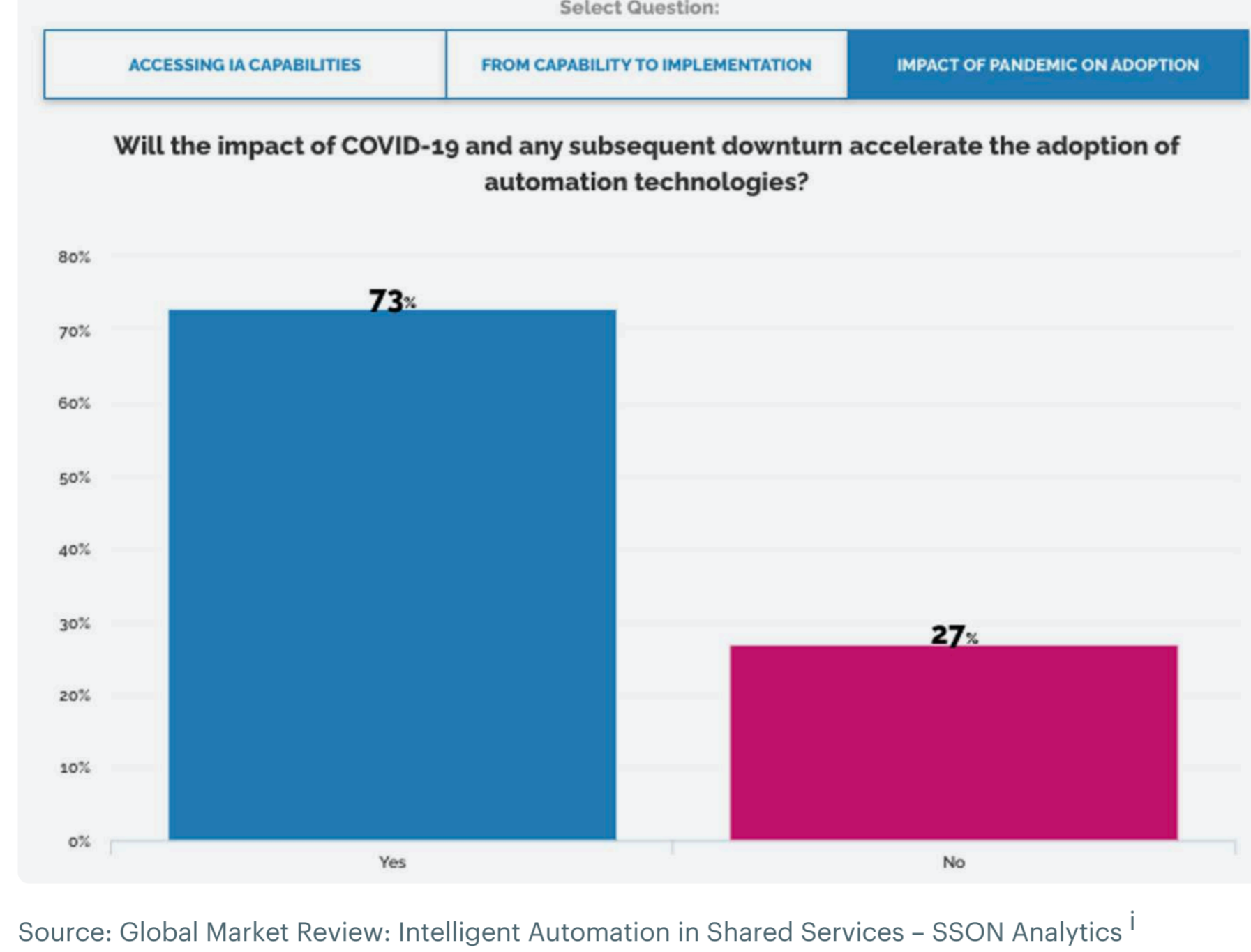
### Summary

Over the past half a dozen years, shared services have – initially, cautiously – experimented with and then enthusiastically embraced process automation technology. In the early days, this took the form of robotic process automation (RPA), which served to knit together disparate tasks, acting as a band-aid to connect different systems or applications. Today, this trend has morphed into a sophisticated movement, embracing the concept of the “digital enterprise” as it drives smart automated solutions through “platform” thinking.

Over the last 20 years, most of us have witnessed a significant change in our workplace. And, while “newer” generations have grown up as digital natives, most of the leadership teams in global enterprise came up through the ranks before digitalization was the noun we now know it to be.

However, despite the legacy workforce, operational infrastructure, and processes that characterize most organizations, there is an undeniable force, rightly described as the fourth industrial revolution, that is currently rebooting the modern enterprise.

This change goes far beyond software “enabling” human workers. That language itself is very yesterday. The imperative today is to re-define organizations as digitally enabled and data-driven. This, and this alone, will ensure that products and services are customer-centric and reflect the real-time changes in customer needs as well as the marketplace. This ability to react quickly requires agility to be built into enterprise operations. And this is not possible under the old architecture.



Source: Global Market Review: Intelligent Automation in Shared Services – SSON Analytics<sup>1</sup>

### First: the new reality

We are operating in a “new reality” driven primarily by the change enforced upon organizations over the past 12 months, but building on an underlying shift that has been making itself felt for years. Digital transformation has been the rallying cry in every enterprise, but its focus to date has been siloed: data digitization; process automation; skills enhancement; a hybrid workforce; etc. These piecemeal approaches are not enough. What’s required is nothing less than a holistic review of cultural change and Intelligent Automation that places customer and employee experience under the spotlight.

### Second: the new workplace

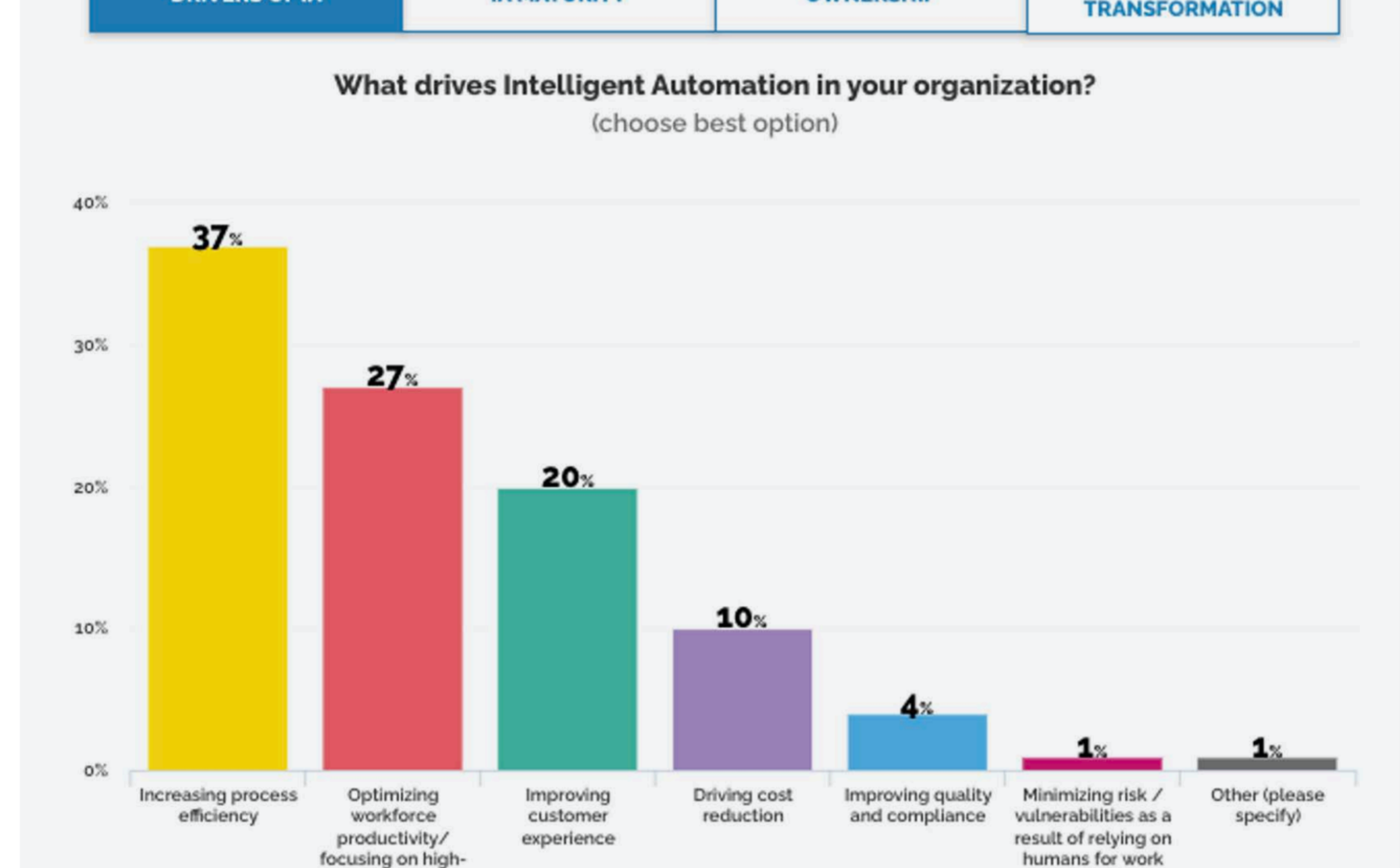
What’s been proven over the past year is that most people can work from home very effectively, and that the offices we relied on in the past are no longer critical to getting work done. In fact, the Shared Services and Outsourcing Network’s (SSON) Q12021 survey on the impact of the pandemic on service operations tells us that employees are now more effective than ever: 50% of staff are operating at a higher level of productivity than they were a year ago.

What’s missing, or still in progress, is embedding work from home into how work is done. And while the hardware issues were easily resolved, many of the challenges around engagement, transparency, and isolationist or wellness concerns are still very much a factor today. But they can and will be resolved.

As a result, we can look forward to operating with a hybrid workforce, hybrid offices, and embracing virtual. Neither time zones nor country boundaries will create a barrier to operations.

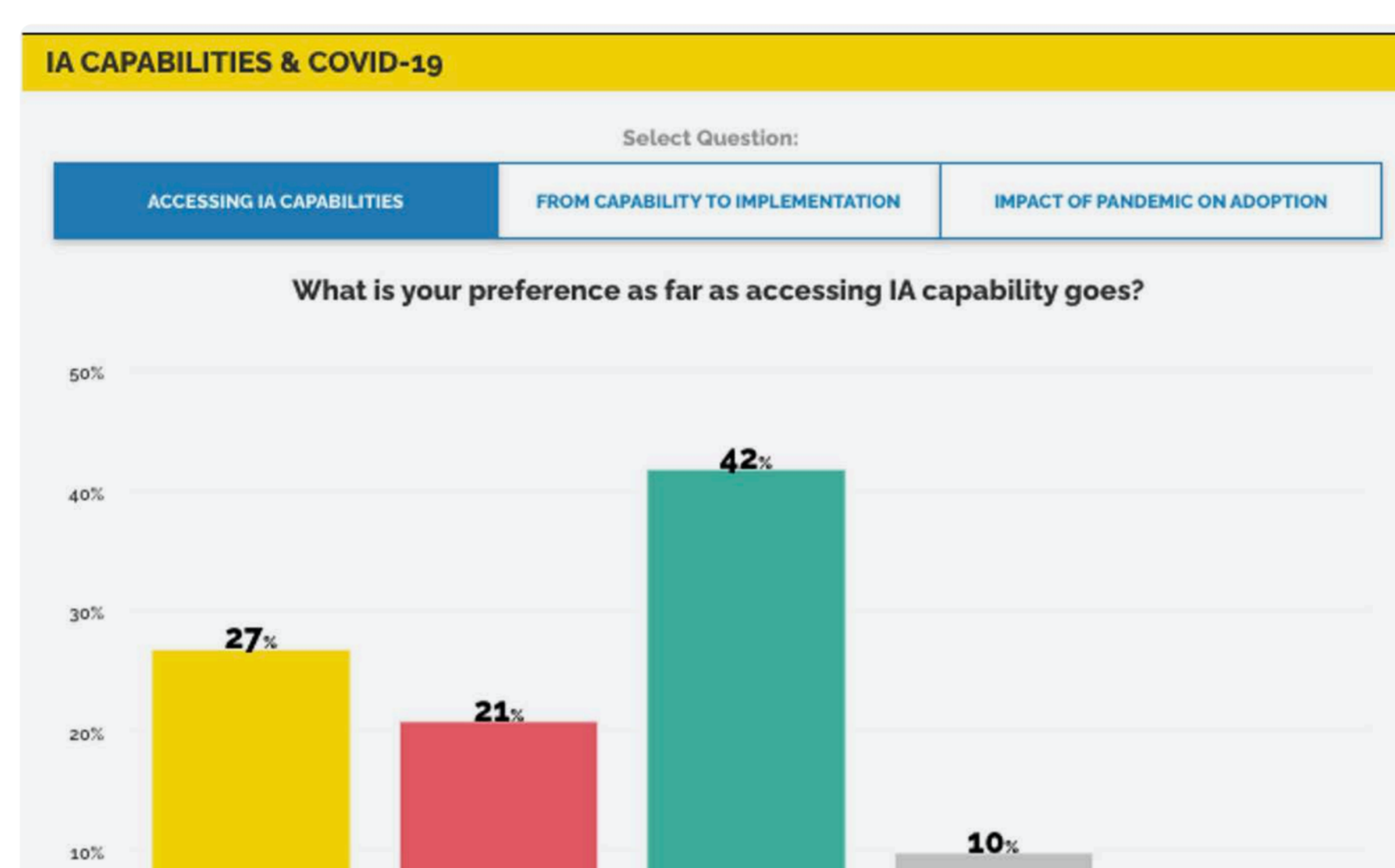
### Third: the opportunity provided by automation-driven processes

Within shared services and global business services around the world, automation had already been driving effectiveness and efficiencies. The advantages lay very much in optimizing human involvement by shifting human workers from transactions to value-add for knowledge-based activities. This trend will only continue with the plethora of solutions, like process discovery or process mining, that makes it easier than ever to identify processes for automation.



Source: Global Market Review: Intelligent Automation in Shared Services – SSON Analytics<sup>1</sup>

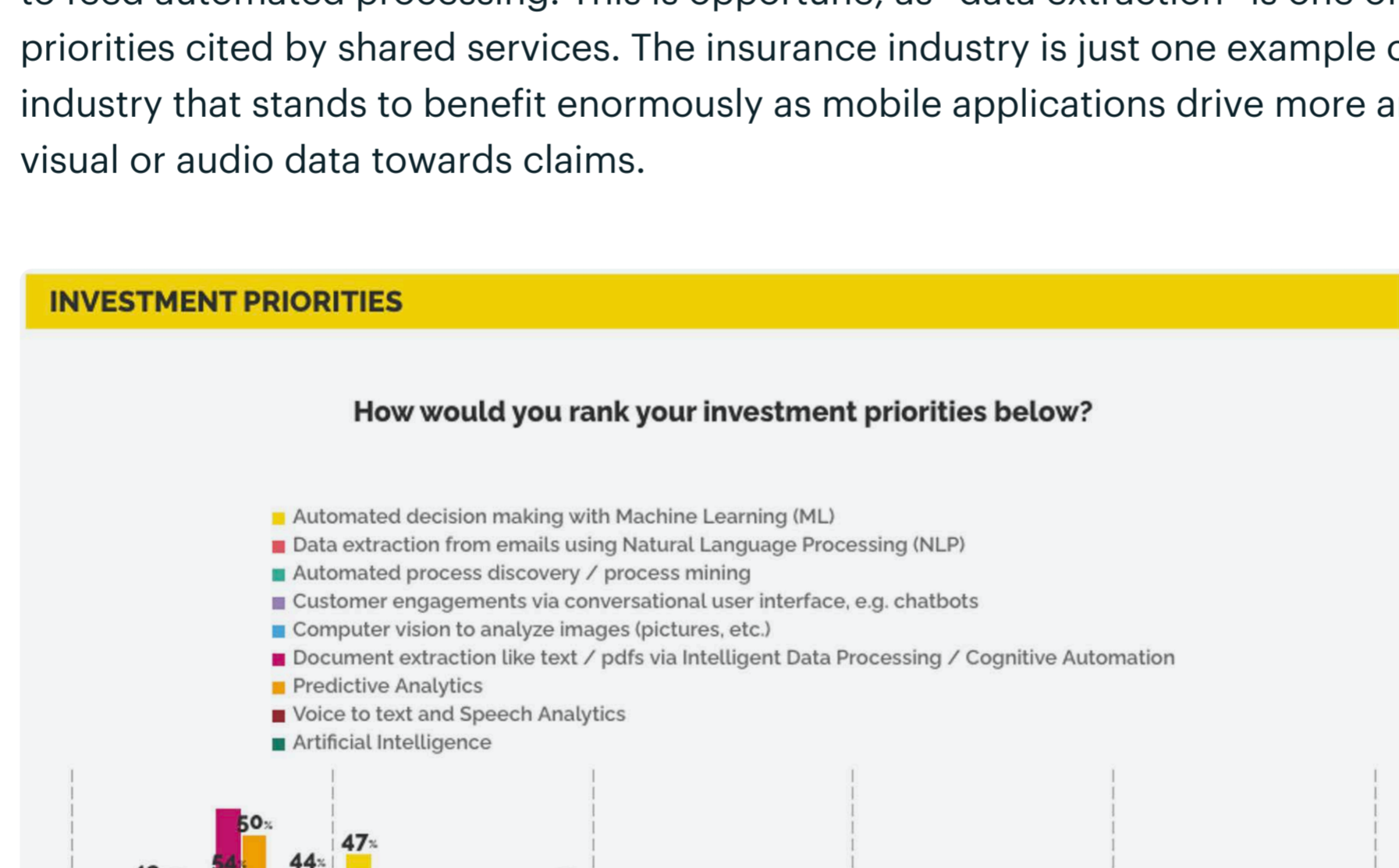
But it goes further than that. Today, enterprises recognize a platform-based approach that allows combining a best-of-breed technology stack as the way forward. The advantages of accessing digitized data throughout the process flow cannot be over-emphasized: all the blockages that previously prevented seamless service orders are being removed, and tasks are combined within a seamless and automated application that straddles the entire process.



Source: Global Market Review: Intelligent Automation in Shared Services – SSON Analytics<sup>1</sup>

### Fourth: the acceleration driven by digitized and structured data

For a long time, even while automation solutions were becoming more sophisticated and more capable, the constant stumbling block was lack of digitized or structured data. The market was quick to react; there have been multiple intelligence document processing type solutions that have recently emerged, with the ability to convert not just text or images but even audio and video into a structured format that can be used to feed automated processing. This is opportune, as “data extraction” is one of the priorities cited by shared services. The insurance industry is just one example of an industry that stands to benefit enormously as mobile applications drive more and more visual or audio data towards claims.



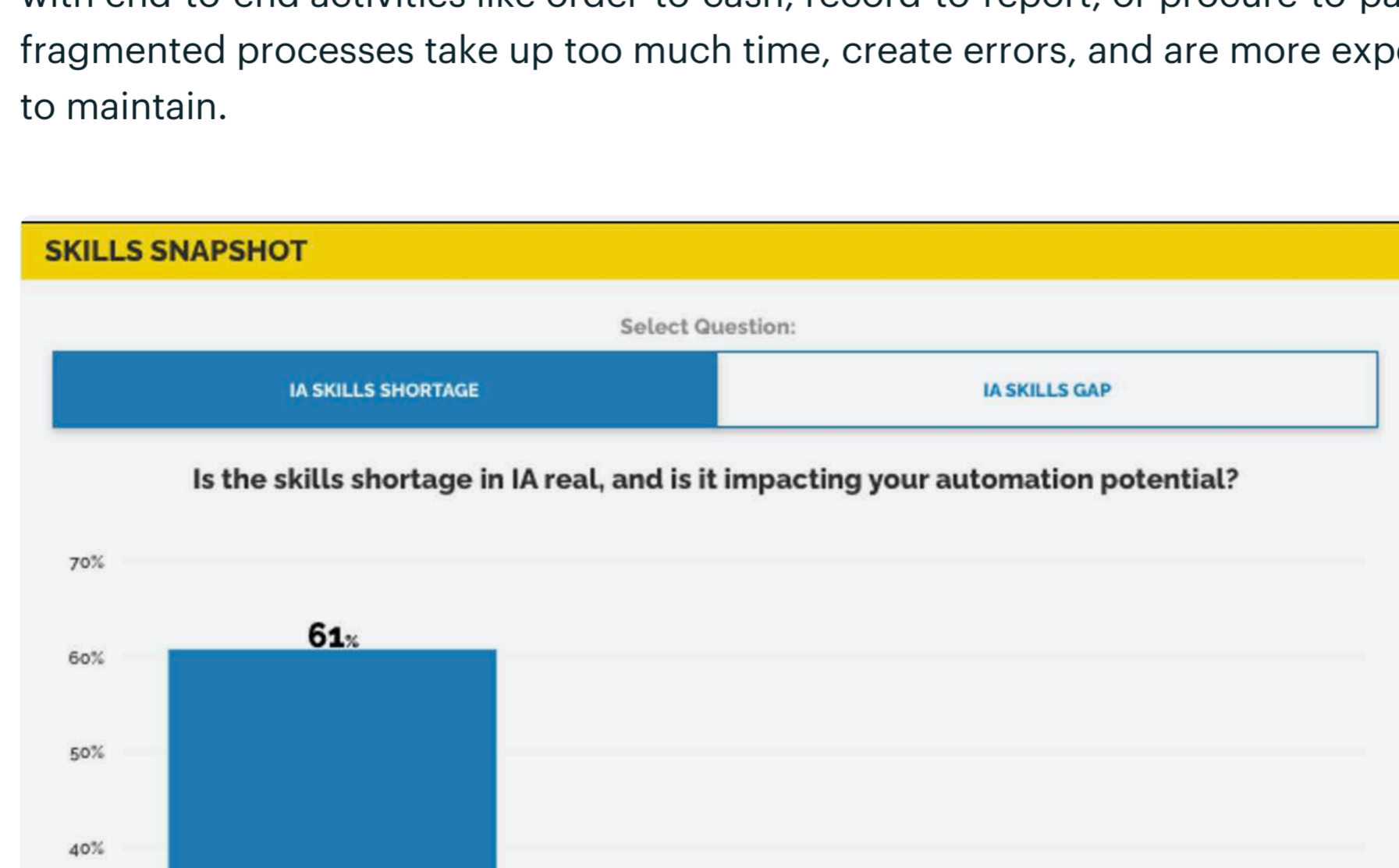
Source: Global Market Review: Intelligent Automation in Shared Services – SSON Analytics<sup>1</sup>

### Fifth: the imperative of transparency

The right decisions are made based on complete transparency. Understanding external market trends, customer behavior, changing demographics, and shifts in supply-side dynamics are all critical to making the right decisions that help an organization succeed. In the past, this kind of visibility required pulling various reports and didn’t reflect current data. Today, all this is much easier.

### Where does this leave us?

Primarily, with little choice but to ensure you’re not left behind. Intelligent Automation, with the emphasis on “intelligent” rather than “automation,” is truly a game-changer for the modern enterprise. It will drive smarter and better hiring, ensure skills are maintained according to enterprise needs, and provide improved talent management, as the human workforce and its capabilities will be accessible at the touch of a button. Intelligent Automation will also drive improved processing along with end-to-end activities like order-to-cash, record-to-report, or procure-to-pay, where fragmented processes take up too much time, create errors, and are more expensive to maintain.



Source: Global Market Review: Intelligent Automation in Shared Services – SSON Analytics<sup>1</sup>

Apart from the operational impact, however, automation drives improved experience and engagement for customers. This, at the end of the day, will prove the overriding objective: maintaining a strong and trusted brand for customers and thus retaining existing customers while constantly attracting new ones.

Despite the excitement and near hysteria unleashed by robots at work, it’s important to remember why this is even happening. Going back to basics to consider why you are in business, who you serve and why they choose you will always be an essential factor. Once that line of sight is clear, modern Intelligent Automation solutions make it that much easier to stay ahead of the curve in every way.

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May 2021

# Application Security

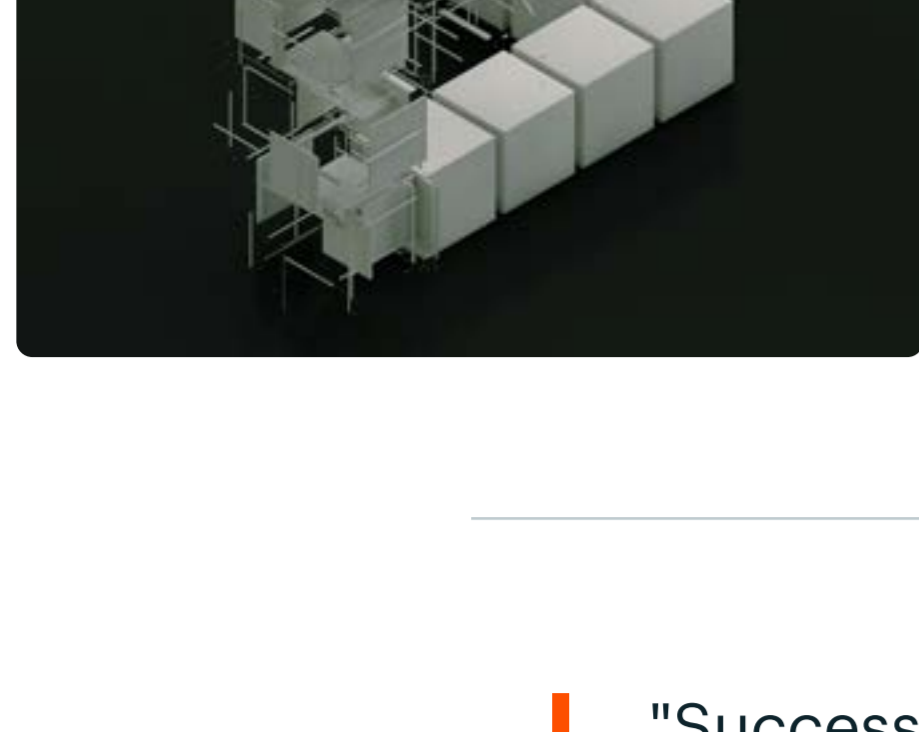
## The Advent of AI



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### Summary

Today, AI is a disruptive technology in the digital era. But every coin has two sides. While AI technologies in the cybersecurity domain provide significant benefits in increasing robustness, it can also be used maliciously by hackers to commit massive security breaches. This article aims to discuss how the misuse of AI is taking place, how ML and DL technologies aid hackers in planting sophisticated attacks, and how resilient systems should be built to evade such attacks.



"Success in creating AI would be the biggest event in human history. Unfortunately, it might also be the last, unless we learn how to avoid the risks." -- Stephen Hawking

AI has emerged as a disruptive technology in this digital era. The magnitude of this super technology can be understood by the tech tycoon Elon Musk's statement, "I fear the dominance of AI." As technology and innovation are advancing rapidly, the threat environment is also increasing; more innovative, sophisticated cyberattacks are prevalent by hackers utilizing AI technologies like Machine Learning models and Deep Learning capabilities. As every coin has two sides, AI technologies in the cybersecurity domain provide significant benefits in helping organizations build more resilient secure systems and tools but can be used maliciously by hackers to commit security breaches which will have a devastating impact on various targeted organizations/countries across the world.

This article aims to discuss how the misuse of AI is taking place and also how ML and DL technologies aid hackers in planting sophisticated attacks, and how resilient systems should be built to evade such attacks. Furthermore, I will be writing about how these technologies help hackers/organizations build security tools to identify critical vulnerabilities which are otherwise hard to find using traditional tools and techniques.



### Misuse of AI

In today's Information Age, the amount of data we produce on a daily basis is truly overwhelming. AI uses Machine Learning and Deep Learning algorithms to process large amounts of data, learns from the data, and ultimately solves worldly problems. The more it learns, the stronger it is!

AI has become an integral part of our day-to-day lives. Unquestionably, everyone has their reservations, whether AI-based systems are vulnerable to cyberattacks or not? Most of us employ Machine Learning technologies in our daily life when we use search engines like Google and Yahoo. Whether it is voice assistants like Alexa, Siri, or OKGoogle, or recommendation systems on Netflix, YouTube, or even e-commerce portals, the application of AI is in almost every field.

Let's see how Google, Facebook, and Twitter use AI technology to serve the relevant feed to their users. Inevitably, it raises a lot of privacy concerns too. These platforms collect information (view history, search history, clicks, hovers etc.) to promote certain ads to influence them. This is also called mental malware used by tech giants to influence user decisions. The perfect example of misusing AI by tech giants is Cambridge Analytica<sup>1</sup>—Facebook data privacy scandal. The Facebook–Cambridge Analytica data scandal concerned obtaining the personal data of millions of Facebook users without their consent by British consulting firm Cambridge Analytica, predominantly to be used for political advertising.

Now let us understand the possible misuse of AI against automated speech recognition (ASR) systems. ASR is the technology that enables voice technologies like Amazon Alexa, Apple Siri, OkGoogle, and Microsoft Cortana to parse voice commands. A malicious intent user might tweak a music file, post on YouTube to contain a hidden voice command. This YouTube link can be sent as a phishing link for a targeted victim to click. When the song is played by the victim using voice technology, in general, humans won't notice the hidden command while the song is being played; it would be clearly audible to Machine Learning algorithms which look for patterns in sound waves and can act. The possible damage could range from canceling your daily routines, deleting trained skills & history of voice commands on these voice assistant devices, and further exploiting weaknesses present in other smart technology integrations like a smart lock, smart home, etc.

### Fooling Machine Learning Models

If we don't build resilient and secure AI systems, it might have a catastrophic effect on organizations and humans who use these AI-based systems. Security researchers tricked a Tesla Model S into switching lanes<sup>ii</sup> in March 2019. All they had to do was place a few unobtrusive stickers on the road. This technique exploited a weakness in the Machine Learning algorithms that power Tesla's Lane Detection technology in order to cause it to behave erratically.

In another instance, researchers demonstrated how an attacker could fool the image processor of a self-driving car<sup>iii</sup> into bypassing a stop sign or mistaking it for a speed limit sign. Just imagine the potential damage it can cause to human lives if things go out of control like this.

There are many such adversarial misuses of AI systems possible in the Intelligence financial fraud detection systems, smart healthcare systems, etc. The malicious actors in such cases can be insiders or external hackers.



### How is AI aiding hackers to commit crimes?

AI-based cyberattacks are on the rise by hackers. Hackers are upskilling themselves as technological advancement takes place by using AI which is faster, adaptable, and more efficient at attacking processes than traditional methods used by hackers. Let's delve into various ML and DL-based algorithms and methodologies used by hackers to commit crimes.

#### Machine Learning for Web Application Security Exploits:

ML was first used in exploiting web application vulnerabilities like password brute-force attacks. A password brute-force attack is one in which a hacker can try trillions of passwords in less time against a system in an attempt to gain access. Hackers even started using botnets to increase their chances of success in brute force attacks. CAPTCHAs (Completely Automated Public Turing test to tell Computers and Humans Apart) are often used as a security control to avoid brute force attacks over the internet.

In Jan 2019, F-secure LABS<sup>iv</sup> team successfully cracked simple text-based CAPTCHA using their AI-based CAPTCHA cracking server called CAPTCHA-22. It uses ML modules like OpenCV, Computer Vision, and Attention-based OCR (AOCR) model, which uses a sliding convolutional neural network (CNN), and python frameworks. We can train deep convolutional neural net models to find the letters and digits in the CAPTCHA image.

In May 2020, the same F-secure Labs<sup>v</sup> team was successful in bypassing CAPTCHA Outlook Web App (OWA) portal, where the noise level in the CAPTCHA was significant.

#### Machine Learning for DDOS Exploits:

A recent DDOS (Distributed Denial of Service) attack using AI-Controlled Botnet on TaskRabbit servers<sup>vi</sup> in April 2018 revealed 3.75 million users' sensitive data like Social Security numbers and bank account details were scooped from their user data and before they could restore the website, an additional 141 million users were affected. Hackers are using ML to build out large-scale attack infrastructures, often referred to as bots or botnets, reflecting the automated nature of the attacks.

#### Machine Learning for Ransomware:

Cybersecurity firm Cybersecurity Ventures<sup>vii</sup> has predicted that, globally, businesses in 2021 will fall victim to a ransomware attack every 11 seconds, down from every 14 seconds in 2019. That figure is based on historical cybercrime figures. It is estimated that the cost of ransomware to businesses will top \$20 billion in 2021 and that global damages related to cybercrime will reach \$6 trillion. These ransomware attacks can increase multifold if at all hackers start planting AI-powered ransomware attacks.

IBM<sup>viii</sup> Research developed a new generation of malware called Deep Locker, which was a POC to raise awareness about AI-powered ransomware attacks. This Deep Locker can stealth under the radar and go undetected till its target is reached. It uses an Artificial Intelligence model to identify its target using indicators like facial recognition, geolocation, and voice recognition. The Trigger condition to unlock the attack is almost impossible to reverse engineer. The malicious payload (will only be unlocked if the intended target is reached using a deep neural network (DNN) AI model.

#### Machine Learning for Social Engineering:

Social Engineering is the art of manipulating human psychology, which tricks users into performing actions in favor of hackers and gives away sensitive information to hackers.

In March 2019, an unusual cybercrime<sup>ix</sup> case occurred in a U.K.-based energy firm where fraudsters used AI to Mimic CEO's voice. Criminals used AI-based software to impersonate a chief executive's voice and demand a fraudulent transfer of €220,000 (\$243,000).

Scams using Artificial Intelligence are a new challenge for companies to deal with. Hackers are also using AI to create deep fake videos of popular politicians and spreading them across social media to mislead people. Although it is not new to manipulate videos, AI technology is becoming very convenient for malicious intent personal to create deep fake videos using Deep-Neural Network based face swapping algorithms.

### Advantages of AI in Cybersecurity

The power of Artificial Intelligence is "so incredible, it will change society in some very deep ways," said billionaire Microsoft co-founder Bill Gates. AI-based security tools are much better than traditional security tools in finding anomalies & irregularities in network traffic or big data analysis, predicting malicious intent user behavior, identifying botnet programs, detecting malware, etc. They also can help organizations in timely detection and alerting of threats. So, all the use cases described in how hackers use AI to commit crimes can be prevented and remediated using AI technology itself. Deep fakes can be detected and prevented using Deep Learning techniques. It's very important for organizations to embrace AI technology, understand how ML algorithms work and how they can enhance the security posture of an organization.

### How to build 2X resilient, secure AI Systems?

Though there are many trending technologies like Bigdata, RPA, Cloud, 5G, IoT, and quantum computing, I see AI has emerged as a disruptive technology in this digital world. AI is used in every technology to solve worldly problems. A recent 2020 report from Statista<sup>x</sup> reveals that the global AI software market is expected to grow approximately 54% year-on-year and is expected to reach a forecast size of \$22.6 billion.

Before an organization embraces any new technology, one must think through and consider all aspects cited below.

- Are we using technology for ethical purposes to solve worldly problems?
- What security measures will help to provide Confidentiality, Integrity, and Availability aspects?
- What about privacy-related regulations and measures & legal laws?

I consider below cited security measures that can be leveraged while building applications/systems using AI.

- Bring the resources up to speed by providing technical Training and Awareness
- Perform Threat Modeling
- Perform secure code review of software
- Training the machine learning models on adversarial examples
- Implement strong security controls like authentication and authorization along with other standard security controls
- Implement Audit logging
- Use of secure open-source components
- Secure storage and transfer of data
- Periodic checks — AI is not once set and forgotten
- Most importantly, use AI-enabled solutions/tools to detect bot programs, threats & malicious activities, user behavioral analysis/network traffic analysis, and malware for timely detection and alerting
- Perform pentesting of applications/systems

### Conclusion

Enterprises should constantly study the evolution of AI technology, its capabilities, and techniques in order to identify and predict new threats and stay ahead of cybercriminals. Keep a tab on ever-evolving AI security standards<sup>xi</sup> while embracing AI.

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May 2021

# Data Programming

## Achieving Zen



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### Summary

Creating labeled training sets is the most time-consuming and expensive part of applying Machine Learning. Solving this is a crucial foundational block towards scaling enterprise adoption of AI. Read this article to know how Data Programming can prove to be a much desired solution.

Today, large volumes of training data are hand-labeled by humans like ImageNet, an image database organized according to the WordNet hierarchy. This project, where \$300K was spent on Labeling 14 million images, was instrumental advancing computer vision and deep learning research. ReportLinker<sup>1</sup> estimates that the total spend by organizations globally in dataset collection and labeling will be \$3.5 billion by 2026. At Infosys, we have estimated that 25-60% of implementation cost in ML projects is spent on manual labeling and validation.

If these figures are not staggering enough, they are set to get even higher if you consider this: The nature of Machine Learning algorithms is becoming increasingly sophisticated. These algorithms take more features in the training dataset than earlier considered. For example, in a key-value pair extraction from a document, the training data would traditionally have the key name, its datatype, and location. Multimodal ML algorithms can consume rich text information for better prediction, which means that all training data needs to be recreated, including the new input features.

Another example is self-driving cars that have inputs from a camera and sensors. Future inputs will be from LiDAR technology. The implication is that the features fed will change, and hence the training data will have to be created all over again. This needs to be addressed now, with an efficient, shop-usable, and faster way to create datasets that enable us to deploy the Machine Learning models.



### Leveraging existing domain knowledge and skills

Software programming is the key strength of software teams in any enterprise. Data programming hinges on the creation of ML by programmatic rules or heuristics called "labeling functions." The team of researchers from Stanford coined the term Data Programming, also created this open source project for it. This project was called Snorkel. While labeling functions are given a smooth starting point, we cannot expect them to create high-quality Machine Learning data. The labeled data may have incorrect or missing labels called noise. The extent of noise is characterized by the logic of the labeling function. When logic creates noise, we refer to it as a weak signal. Here is one example of a weak signal — think of the hashtags added in Instagram, Twitter, or other social media. What if you were analyzing the Twitter handle of product support or market sentiment of a company using the hashtags? Many hashtags used in social media are not entirely representative, or clean of biases to be used for building an accurate sentiment analysis model. But they can still serve as preliminary data.

#### ➤ The magic wand in data programming is about thinking beyond these labeling functions

It is an approach to how these multiple weak signals are combined to give better coverage and accuracy. The key challenge is the ability to resolve conflicting labels from multiple labeling sources. How do we know what is accurate without access to ground truth? While a naïve and common method is to actively bring human-in-the-loop for every conflict resolution and assignment of the final label, it defeats the purpose of "true" data programming. So, what are the state-of-the-art models we can use for this purpose?

The problem of conflicting labels is also a scenario that emerges in human-labeled data. Often, when a worker is onboarded into the data annotation platform, a test task designed with known answers is given to all the annotators to evaluate. Annotators who don't perform are removed from the platform. Further, each annotator is awarded a "worker trust score" based on the performance. Each time there is a conflict, instead of an unweighted majority vote to resolve conflicts, they consider the worker trust scores as weights. In our context, the labeling functions are analogous to "virtual annotators." The concept of sprinkling test data with known answers (or source of truth) to evaluate a labeling function's trust score could be done if we had a sizeable source of truth or constant human quality assurance. However, we work with a limited source of truth and no human quality assurance of the final label assigned. Therefore, addressing this is key to the success of data programming.

#### ➤ To address these issues, data programming methods resort to using Generative Adversarial Networks (GANs)

The GAN network has a generative and discriminative network and is a generalization of a Turing test. In a Turing test, a human evaluator converses with an unseen talker, trying to understand whether it is a machine or a human. If the human evaluator cannot distinguish whether the unseen talker is a human or a machine, then the Turing test is said to have been passed. In our context, we use the generative model to utilize the consensus and conflicts between other labeling functions to estimate the accuracy of the labeling function and their correlation to other labeling functions. The resulting probabilistic labels are then used to train a discriminative model, which can be compared with the human evaluator. This discriminator network learns to generalize beyond the information represented in the labeling functions. With time and the addition of unlabeled data, it has been proven by researchers [at Snorkel] that discriminative models can find patterns beyond what is expressed in the labeling functions.

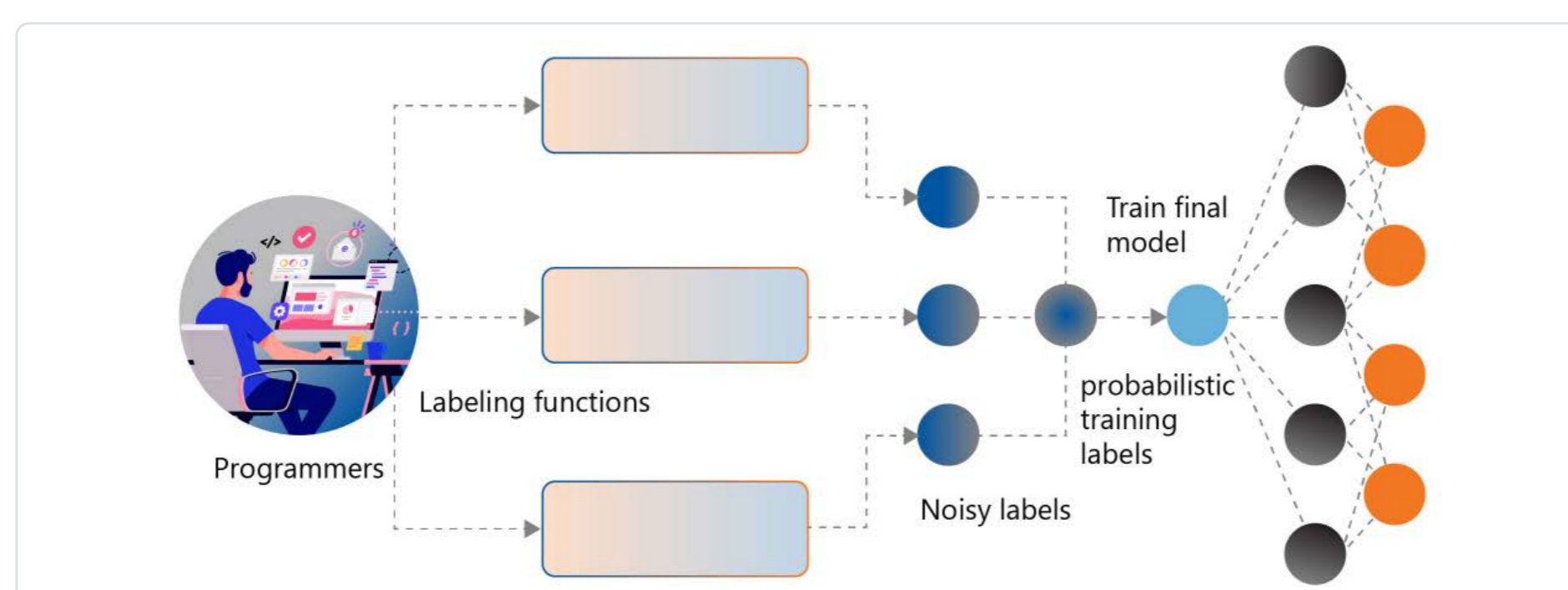


Figure 1: Overview of Data Programming

### AI at Scale

Data programming effectively creates Machine Learning data by minimizing human labeling and the associated costs. They yield faster data creation and higher quality of labeled data, forming the foundational block to building AI at scale in enterprises.

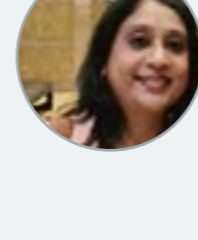
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May 2021

# Bank to the Future

## The Transformative Impact of AI on Banking and Finance



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### Summary

In a segment like banking, where customer experience and access remain guiding principles, innovation must drive actual business results. The recent past has seen a wave of digitalization; it is critical to understand how intelligent digital technologies are reshaping the contours of the banking industry from a customer, business, and community perspective.

With the pandemic accelerating enterprise digital transformation journeys, there has been a lot of talk around the need to balance survival, innovation, and growth. For several industries, the battle is between sustaining business health while ensuring customer retention and growth. However, in an industry like banking, which is more a necessity than most others, customer experience, and access remain guiding principles. Gone are the days when banking was seen as a traditional industry or, even until recently, a behemoth slow to move with the times. The impact of intelligent technologies on banking has been seismic, perhaps tellingly so, in developing countries, while spawning a broad range of new players in the segment from digital banks and payment solutions to fintech consultants and technology platforms.

In India, demonetization provided the first catalyst for digital payments, contributing to the genesis of UPI and making digital banking the norm rather than the exception. Nearly five years have passed since then, and the banking landscape verges on being unrecognizable. With over 1000 fintech companies founded between 2015 and 2019 innovating for a smartphone user base that could touch 900 million by 2023, dramatic growth in the industry is expected.<sup>i</sup>

This progress is possible mainly because of the proliferation of AI and ML solutions such as text-to-speech, natural language processing (NLP), and advanced analytics, transforming front, middle, and back-office banking operations, unlocking opportunities for both aggressive growth and cost savings. Let's take a closer look at how intelligent digital technologies are reshaping the contours of the banking industry from a customer, business, and community perspective.



### Impact that Matters

The common belief that in today's world, banks play a much more significant role than ever before, encouraging upward social mobility and stimulating economic growth. Their ability to service customers is much improved, and what was once a clunky necessity-driven exercise is fast becoming a minimal friction system designed to delight. For customers, in particular, the change has been substantial. Fundamental to this progress is a better understanding of consumer behavior. With digital technologies enabling omnichannel ecosystems, banking businesses have access to data that offer a deep understanding of consumers' banking and non-banking behavior, allowing the hyper-personalization of products, services, and sales methods. Access to rich analytics enables businesses to develop targeted personas that empower them to serve their customers better, recommend the most suitable products, and drive sales. A tremendous increase in the user base, an event made possible by the increase in usability and customer experience improvements, supports this service quality. Besides driving sales and delivering targeted products, today's banking system offers a stellar customer experience, encouraging adoption.

A time-consuming process at a branch is now a few taps away on a mobile device. This ease of use has also impacted consumers who are digital natives but averse to traditional solutions, onboarding them onto seamless digital platforms that offer convenience and comfort of use. The growth in UPI (Unified Payments Interface) payments is a case in point, exceeding billion monthly transactions in October 2020, doubling transaction volume on the platform from the previous year, an increase that coincides with a drop in transactions through cards and prepaid payment instruments.<sup>ii</sup> Now, nearly at 3 billion monthly transactions<sup>iii</sup>, the platform is a testament to the effect of usability, intuitiveness, and reliability on customer experience and adoption.

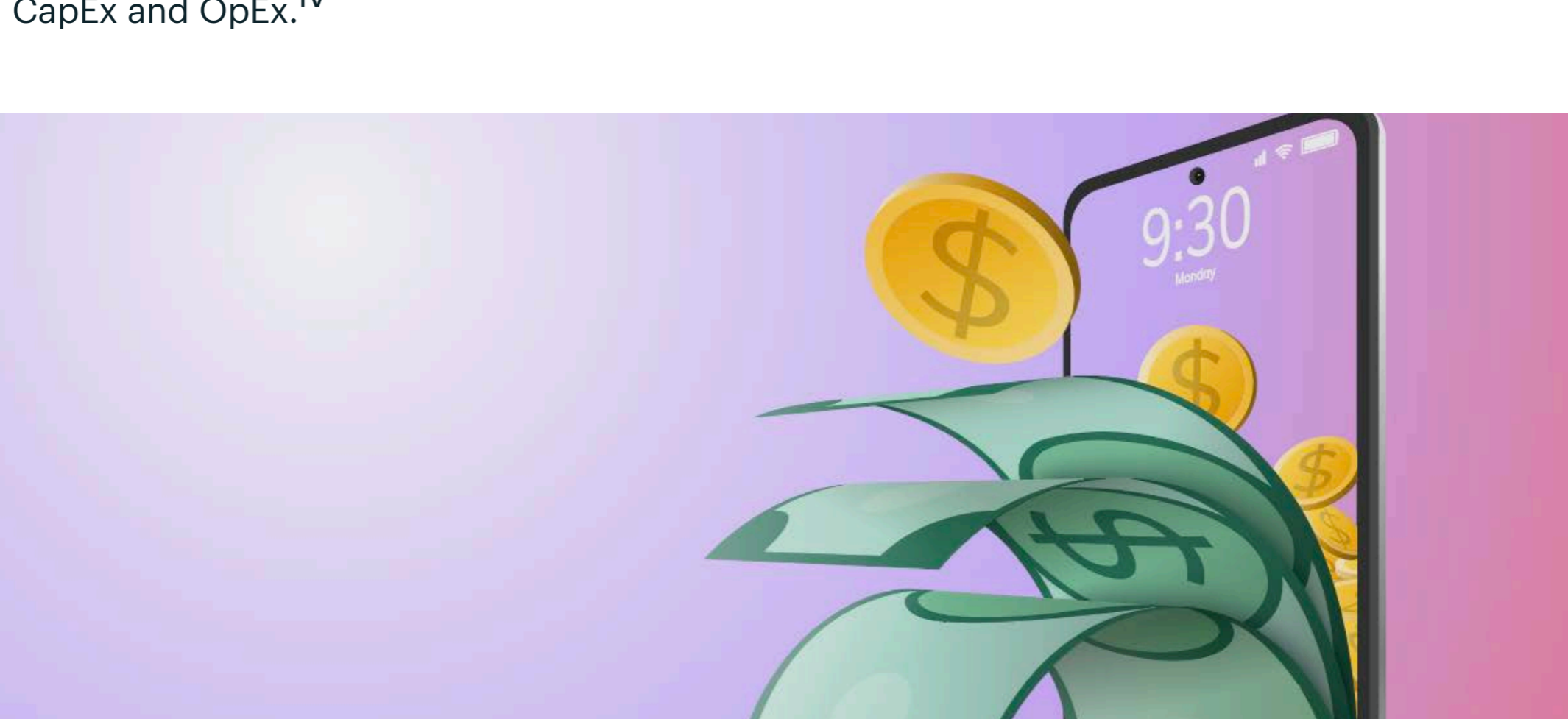
The same attributes are making investments in technology attractive to banking organizations, revolutionizing how they operate.

### Technology that Businesses can Bank on

For banks to adopt a culture of continuous innovation, it must make business sense. The banking ecosystem is fraught with complexity, tackling regulatory and compliance pressures, managing diverse customer portfolios, and ensuring business continuity, all while sustaining a well-oiled operations machine. Digital transformation has brought a raft of changes and challenges in compliance, and intelligent technologies help banks keep up. For instance, AI and ML-driven solutions help with compliance and transaction evaluation. Simultaneously, Robotic Process Automation (RPA) and cognitive technologies enable both adherence to rules and performance monitoring, saving time and reducing effort.

The augmented intelligence referred to in the previous section also empowers banks to develop new products based on focused, unique, and substantiated insights. The resulting confidence doesn't just reduce time to market but also facilitates rapid product development and testing, moving new offerings from prototypes to pilots faster. This exponential improvement also applies to reputation. Previously notorious for archaic and time-consuming procedures, banks are now leveraging fintech to be at the forefront of innovation, offering them a much-needed public facelift. The result is a greater appetite for banking services, visible through significant increases in NPS and other reputation metrics. Equally important is the effect intelligent transformation has on the bottom line.

Investments in well-planned digital innovation reduce operational costs associated with labor, location, and maintenance, i.e., they offer disproportionate RoI. AI-led projects can revitalize and inject intelligence into operations, including asset management, fraud detection, market research, customer support, credit scoring, and even underwriting. These insights drive savings that can be passed on to the customer and also used for further innovation. The possibility of AI-driven value creation in banking is higher than most industries, touching nearly \$1 trillion in incremental value each year, increasing revenues, helping identify new opportunities, and lowering CapEx and OpEx.<sup>iv</sup>



### An Investment in Improvement

With all its potential to improve customer experience and make banking intelligent, the greatest benefit of technology-driven banking is creating a more equitable world. Digital finance makes both spending and lending accessible to the previously unbanked because of its ease of use, speed, and relatively inexpensive means to scale. Directly correlated with GDP growth, financial inclusion is even more crucial, given the challenges raised by COVID-19. Over 1.7 billion people globally<sup>v</sup> remain without access to a bank account while the SMEs continue to struggle to find finance, further making a case for fintech-driven interventions. Most importantly, without technology that virtually eliminates last-mile service delivery costs, it is impossible to scale physical infrastructure in line with demand speed.

By processing large volumes of data much faster than any manual process, AI is democratizing credit, providing the lifeblood for several small and medium-sized businesses. Creative efforts such as sending relief money through digital channels or financing supplies to those isolated without assistance further substantiate the case for digital banking.

### Looking Ahead

While a range of players has driven fintech innovation, public sector initiatives have facilitated the most extraordinary access.

Over the next few years, we will see greater private sector

involvement, especially in the case of big-ticket solutions. Banking the unbanked and digital education for the newly banked will be high on the priority list as the industry itself prepares for a digital-driven future. In time, financial institutions could even operate in ambient intelligence, guiding seamless payments for customers and intuitive engagements with banking and payment platforms.

The journey to a more digital monetary system has its challenges - security, the availability of clean training data, and even more complex threats - but its benefits are manifold. The impact of intelligence extends far beyond efficiency and can create trust, equality, and better living conditions for people across the globe. That promise alone should be enough inspiration for each one of us to sit up and take notice before deciding how we can contribute to this intelligence revolution.

**Disclaimer** Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author and do not necessarily reflect the views of the respective institutions or funding agencies.

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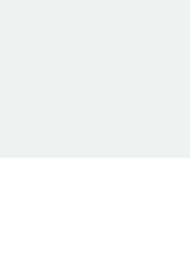
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AI

# Intelligent Implementation

## Ensuring AI success through smarter maintenance



**Ashwini Balakrishna**  
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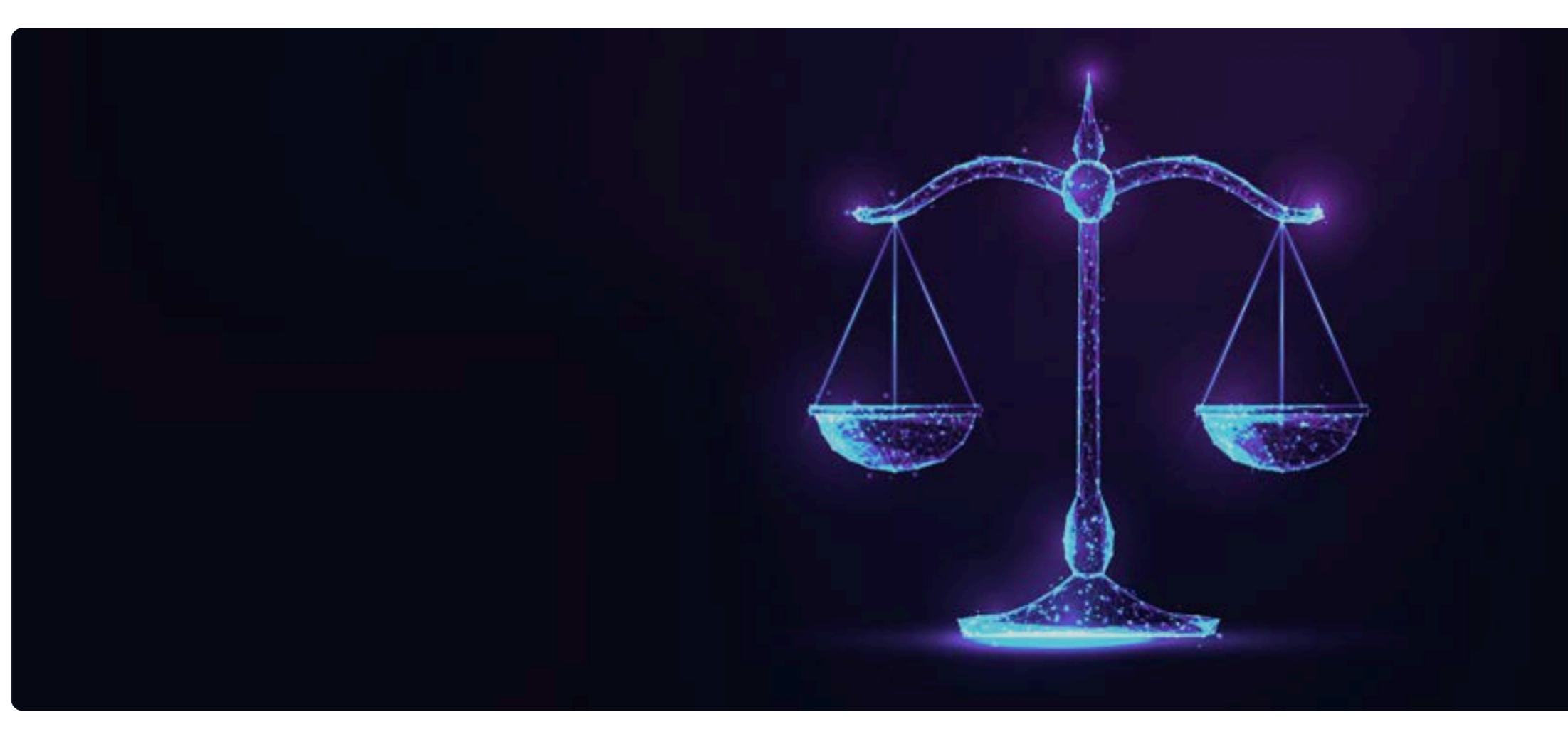
### Summary

The proliferation of AI is not up for question, but successful implementation remains an area of speculation and assumptions. Why do so many companies that run AI pilots never end up scaling their implementations in production? The answer might lie in their approach to AI maintainability.

AI platforms and solutions no longer feature in the 'emerging technology' category. From the experimental phase to the mainstream, intelligent solutions are now a mainstay in enterprise growth and digital transformation plans. AI is being used to drive better insights, automate technical and business workflows, and create an ecosystem of continuous learning. Across sectors, digital transformation and the adoption of AI-infused automation solutions have driven the proliferation of machine learning (ML) and deep learning (DL) techniques along with the latest iterations of Natural Language Understanding (NLU), Natural Language Processing (NLP), and Natural Language Generation (NLG). With developments such as computer vision algorithms for image processing, these technologies enable better decision-making, greater efficiency, and a substantial reduction in manual effort. The result is a more innovative and leaner enterprise capable of balancing stability, scalability, and innovation.

Several enterprise AI products in the market offer or claim to offer end-to-end AI platform solutions. These offerings typically allow businesses to leverage their AI capabilities while minimizing the need for technical expertise, allowing even developers with basic application development skills to build tools and solutions. The platforms incorporate a hardware and software architecture for a framework that supports AI application software. The software then uses various AI components like those mentioned above to derive and deploy cognitive solutions capable of mimicking the human mind and actions. Some AI platforms are generic and built to integrate with many AI technologies, while others solve particular business issues using a specific AI modality. This range of choice, ease of use, and incrementally valuable output make AI platforms an essential tool for enterprise growth.

The proliferation of AI, however, is not without its challenges. Much has been written about AI pilots that fail or ideas that never move to production, but this article is more concerned with sustaining and scaling the success of those that do.



### Maintaining Balance - Challenges of Maintenance

For AI models to be successfully utilized, they must offer consistent and accurate output throughout their life cycle. The issue doesn't always lie with the production iteration, but how it is maintained. The fact of the matter is that if we deploy AI solutions without management and maintenance, they cannot meet expectations.<sup>ii</sup>

Let's look at big data management in AI systems as an example. It is relatively simple to create data pipelines or add big data to the Hadoop ecosystem or any other big data storage via an AI platform. Enterprises can also try prebuilt advanced ML algorithms on their data before validating predicted outcomes. They can then move validated AI models to production. Enterprises can iterate validated models for all identified best fit AI use cases, testing and moving them to production for business consumption. Over time, this kind of iterative approach creates a scenario where multiple AI models are working simultaneously. It is here that the complexity starts to set in. With intelligent solutions gathering information at every user touchpoint, enterprises are facing a data explosion. Companies don't just need to collect data but need to make sense of it to turn it into valuable insights. Trying to move all the data to a central location and harnessing it for smarter business strategies is the top priority for most enterprises today. The job is easier said than done, and it is not surprising that less than one-fourth of senior C-executives report progress in driving their organizations to a data-driven approach.<sup>i</sup>

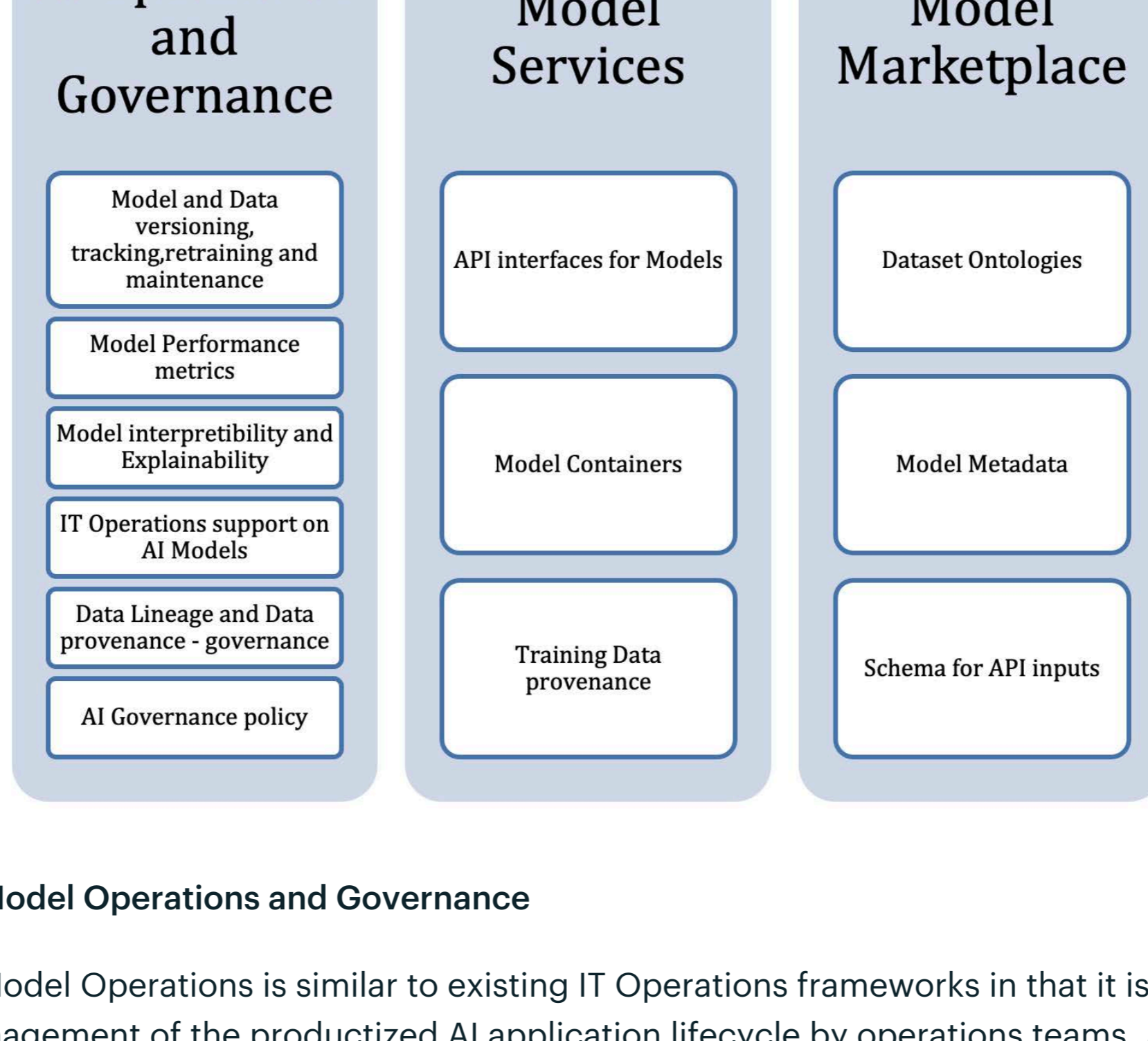
Now, running the automations needed by AI models is handled directly by the AI platform. As the model keeps running, real-time data changes and its performance starts to deteriorate. When this happens, the business raises concerns about accuracy drops and prediction errors, questioning whether the prediction system can handle requests. Implementation teams must have a thorough understanding of data volatility, revalidate their initial assumptions, preprocessing, and feed more training samples or re-train the model. There are other possibilities such as changes in data creating biases, unacceptable outcomes, or inexplicable decisions that require the reconfiguration of parameters, retraining, and sometimes even code changes for the redeployment of models to production. Given the number of times this can happen, how can enterprises keep track of the changes made to AI models? This is just one example. Let's look at a few other issues before discussing a solution framework.

- > The lack of operational capability to create and deploy an AI model
- > Tackling post-production AI model output inaccuracy in some business scenarios
- > The absence of traceability in AI model versions once moved to production
- > The absence of end-to-end data governance and compliance and absence of governance strategy and policy
- > The lack of interpretability and explainability
- > The inability to manage structural bias and unintentional bias in model outcomes



### The Maintenance Trifecta - Maintenance Solutions Designed for Long-term Value

Each of these issues can be tackled with a robust maintenance framework. Consider defining your thinking under three specific areas of impact designed for better enterprise AI implementations:



#### 1. AI Model Operations and Governance

AI Model Operations is similar to existing IT Operations frameworks in that it is the management of the productized AI application lifecycle by operations teams. AI Model Operations, however, differs from other applications in a few ways. Because ML solutions are not just code-based tools but a combination of the code, data used in training, and the ML/DL model form the scope of AI Model Operations alongside monitoring AI automation jobs and infrastructure monitoring tasks. Some of the additional aspects of AI Model Operations include:

- > **Model and Data Versioning, Tracking, Retraining, and Maintenance**  
AI models and associate data with the right versions need to be created, numbered, tested, built, deployed to production, tracked, and monitored for production support and ease of maintenance. The training data used and the updated model should be easily identifiable, and this necessitates a defined version policy that comprises all the ML artifacts.
- > **Model Performance Metrics**  
The model inputs, outputs and decisions, and interpretability metrics need to be monitored as model coefficients. Various tools can examine these metrics. For instance, ELI5 is a Python package that helps debug machine learning classifiers and explains their predictions. TensorBoard is another visualization tool used to track and examine both training and real-time model performance. Local Interpretable Model-Agnostic Explanations (LIME) also need to be monitored and reviewed to check if model fairness has been maintained or compromised. Enterprises must also measure model runtime success rates to assess whether AI model predictions meet the acceptable accuracy levels. A re-evaluation of the model-data (schema), AI model (algorithms and training), and code (business requirements and model configurations) must follow any deviation or performance below the benchmark.
- > **Model Interpretability and Explainability**  
As AI models increasingly influence decision-making, there is a need to provide evidence to trust their output. Companies may frequently be held accountable for inaccurate, biased, or simply unfounded AI results from a compliance standpoint. Why domains like healthcare, transparency and accountability are crucial, and that's why AI models need to offer interpretability and explainability. Model interpretability can predict the likely result of changes in input or algorithmic parameters, while explainability is the ability to understand all AI outputs. Augmenting algorithmic generalization, understanding the importance of features can improve these elements. Enterprises should also consider using LIME and DeepLIFT models to explain model predictions to users.
- > **Data Governance - Data Lineage and Provenance**  
Data governance and compliance are the latest and arguably the most significant<sup>iii</sup> addition to AI solution maintenance. AI solutions today must offer complete traceability of data sources, training data, and the model used. The records should provide a comprehensive view of the data, all the way from model to output.
- > **AI Governance Policy**  
Enterprises must develop an organizational AI model governance policy over and an overarching global AI governance framework. The policy must cover the ethical use of AI and have the proper controls for AI implementation and usage.

#### 2. Model Services

- > **API Interfaces for Models**  
Many AI solution providers now offer API access to their ML solutions for third-party integrations. This is no different from providing REST APIs for other applications. Many ML solutions can be developed, published, and consumed as the business need arises, and enterprises can consider enabling free or paid access to these solutions.
- > **Model Containers**  
Another way of sharing ML models is to develop them on a base docker. Using predetermined infrastructure and ML packages as a base docker image, enterprises can build a model on top and share them with clients as docker images. Model containers are another way to productionize AI models, and automating their deployment should be considered to save time and effort while eliminating inaccuracies.
- > **Training Data Provenance**  
It's essential to understand the nature of the data deployed for ML modeling, whether it's primary or secondary, raw or processed, and structured or unstructured. Data provenance documents the inputs, entities, systems, and processes that influence the data of interest, providing a historical record of the data and its origins, which is crucial to ensure success in AI model management.

#### 3. Model Marketplace

- > **Data Set Ontologies**  
As all AI ontologies are purely data-driven, having domain-specific ontologies that solve business problems is critical. Ontologies are schemas for datasets and help enterprises use AI solutions with preset published datasets. For better-maintained ontologies, enterprises should look to version them correctly and publish them on marketplaces.
- > **Model Metadata Management**  
Metadata is the 'who, what, where, when, why, and how' of data. Existing metadata management systems can be applied to AI model metadata management.
- > **Schema for API Inputs**  
The scheme for exposed/published REST APIs is essential to understand the structure of data. There are many formats that support schema for APIs and enterprises should choose one that aligns with their needs, tools, and frameworks.

### Maintaining Impact - The Role of Better AI Model Operations

The success of AI implementations is essential to scaling an enterprise in the current environment, reducing capital expenses, and generating top-line spikes over 20%.<sup>iv</sup> Better maintenance can help AI initiatives enjoy greater leadership trust and organization support, ensuring long-term value generation and growth. With the industry moving on from its experimentation phase to effectiveness, technology leaders and solution partners capable of extracting tangible results from AI implementations will set the foundation for exponential scale as the proliferation of AI continues.

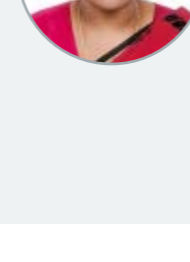
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# From Complexity to Possibility

## How AI Can Unleash the Potential of 5G


**Gnanapriya C**

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### Summary

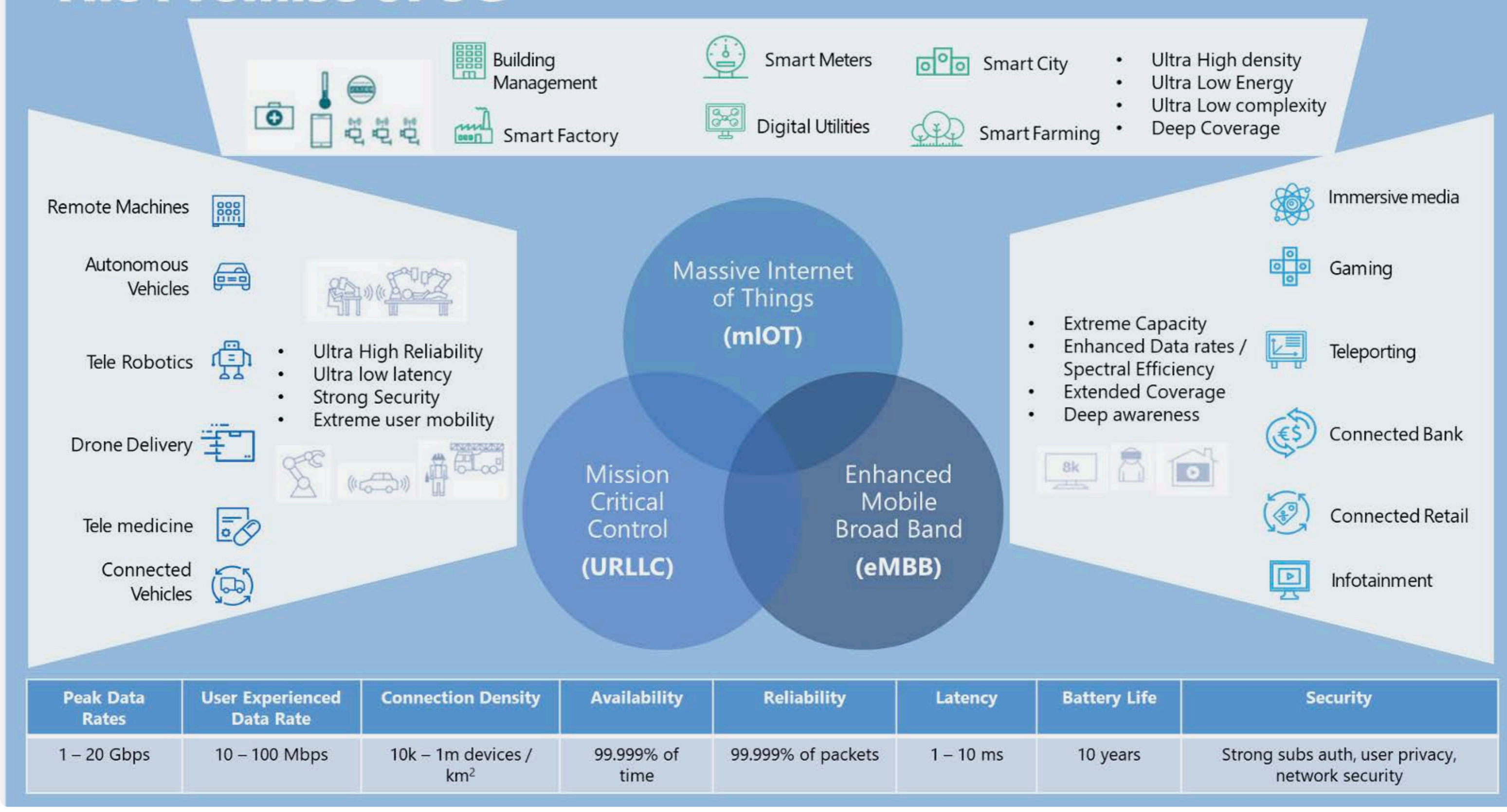
The proliferation of 5G will unleash a new paradigm not just in telecommunications, but life as we know. Hyperconnectivity and ambient intelligence will be the norm as the lines between digital and physical blur even more. The interplay of AI and 5G could tell us just how the story might play out and what its potential impact will be.

With the advancement of 5G, the telecommunications industry is gearing up for what might be its most significant development. Although it is some distance from mass adoption, 5G will be a critical driver of edge computing and distributed networks. This attribute makes 5G a force multiplier for technologies like IoT & industry 4.0, telemedicine, autonomous driving, and AR/VR, driving estimates to suggest that, globally, the networking industry will direct over \$1 trillion towards 5G.<sup>i</sup> Let's first look at the promise of 5G and the possibilities it creates. 5G has been around for some time, but it is now that the technology is gathering steam, with the GSMA suggesting that it could account for 20% of global connections, that's 1.8 billion connections by 2025.<sup>ii</sup>

Besides supporting each of its application spaces - enhanced mobile broadband (eMBB), massive machine-type communications (mMTC), and ultra-reliable low-latency communications (URLLC) - with robust and customized frameworks, 5G will enhance the functioning of wireless devices reliant on fast data transfer capabilities, spawning a whole realm of possibilities in areas such as remote healthcare, agriculture, media and entertainment, industrial automation, smart factories and autonomous vehicles.

The potential of 5G, however, is also fraught with complexity. Albeit similar to previous connectivity-driven technology shifts, the rise of 5G will be the most substantial change in the history of telecommunications, making it essential for enterprises to understand what it will take to harness the potential of 5G. Intelligent technologies, specifically AI and RPA, are crucial to that process.

## The Promise of 5G



### The Deal with Data

The proliferation of 5G will drive an explosion of data, both in volume and formats. Combine that with the need to provide powerful computing on the cloud and edge devices, and it becomes easy to see that organizations are dealing with a minefield just as much as they are with a gold mine. Consider the case of autonomous vehicles. In a V2X ecosystem, the central node, i.e. the autonomous vehicle, will communicate with its navigation and self-drive system, vehicle maintenance, the user, infrastructure, pedestrians, and even traffic systems using one of eMBB, mMTC, and URLLC, generating a massive and diverse dataset across touchpoints that needs to be correlated for variety of business use cases. In this scenario, an efficient and near real-time data management strategy is a precious asset. A comprehensive data management strategy to address this 'Connected Data' will require innovative and intelligent management solutions. Enterprises will need to support high speeds and virtually eliminate downtime while managing and directing data in various formats. It is here that automation and AI can play a significant role.



### Managing Information with Intelligence

From network planning and infrastructure management to self-optimization and customer service, AI offers a range of use cases viable for service providers.<sup>iii</sup>

Some of the key advancements in AI helps in these use cases,

- Building AI - Computer Vision, Language Models, Deep Neural
- Consuming AI - AI As A Service, Pre-trained contextual models
- **Network Planning and Network Performance Management**  
 Network orchestration will be a challenge for several providers in the move realizing autonomous and self-organizing networks. AI-based techniques are very much needed to play key role network planning, orchestration and closed loop assurance, routing and network operations, fault analysis and recovery. Also, support end to end dynamic orchestration and management through Network As A Service across Telcos, Hyperscalers, Edge and Consumer Devices. Another key feature of AI and ML-driven orchestration and management is the scope for continuous improvement. Through intelligent technologies, enterprises can now drive supervised learning (traffic prediction, classification, slice source prediction), reinforcement learning (resource management), and unsupervised learning (optimizing end-user QoE and network security).
- **Better Customer Service**  
 Through personalization, better network management, and data-driven insights, AI system will help network providers observe, analyze, and optimize customer experiences via automation with AI Bots. By predicting traffic and dynamically scaling capacity, AI can minimize downtime. For greater effectiveness, combining AI with automation could help providers make proactive adjustments or resource additions to the backhaul network, ensuring consistent service levels.
- **Digital Twins**  
 The rapidity and consistency of 5G combined with cognitive techniques can help enterprises leverage the power of a digital twin in several ways. Digital twins can simulate and manage processes such as supply chain operations, optimize manufacturing processes through IoT devices, drive better customer service, and even help power entire organizations or network-based units such as smart cities.
- **Future Planning**  
 We will only know the real impact of 5G once adoption reaches a critical mass. Enterprises should adopt a mindset of defining the trend to bring in agility and flexibility by design and not just following the status quo. Their ability to derive, process, and act on intelligent insights will determine their success in a new paradigm not just for the industry but also for society.
- **Security and Governance**  
 The spike in connectedness and increased bandwidth create a problem of volume and speed for cybersecurity. Many of the current security frameworks may not be viable for a 5G world<sup>iv</sup>, given the numbers of ways and mediums through which devices are connected. Security automation and intelligent, adaptive security management will need AI to ensure a protection framework capable of mitigating threats in 5G networks. Further, with the network opened up due to 5G, enterprises must have comprehensive data policies to ensure differential privacy, end to end security, governance, and compliance for data generated, processed and consumed by humans and machines.

### Benefits of AI-driven Network Management

Using AI and automation offers a range of advantages to enterprises, not least the facility for continuous learning and improved security. There are substantial benefits from a business standpoint, too.

- **Enhanced Customer Experience and NPS**  
 5G promises to supercharge digital experiences as we know them. Other areas like Immersive gaming, connected retail, innovative banking, infotainment, drone delivery, and telemedicine could also see widespread adoption over the next decade, redefining quality in customer experience as we know it today. With the added benefit of AI and intelligent automation, enterprises can expect to drive loyalty and improve NPS through their ability to create consistent customer delight.
- **Improved Network Utilization & Growth Capacity**  
 AI and ML are already being used to optimize system resources, automatically scale capacity, detect anomalies, and offer predictive analytics in 5G distributed cloud layers.<sup>v</sup> Since the initial cost to buy and build 5G networks will be relatively high, with some estimates suggesting that global spending will touch \$88 billion by 2023<sup>vi</sup>, providers will look to reduce costs and improve performance to recoup these investments. It is no surprise that better resource utilization is one of the critical drivers of AI adoption in 5G.
- **Incident Prevention**  
 The power of AI-driven predictive analytics and always-on-maintenance will enable service providers to minimize disruptions, which is an even more crucial advantage given the critical functions that 5G will power. Reliability will be essential for adoption at scale and using intelligent technologies to ensure a seamless service could well be the catalyst for the proliferation of 5G.

Connectivity has driven the incredible advances in human history, and we might be on the cusp of the most extraordinary transition yet. As we have seen through what has been the most challenging year in recent memory, connectedness drives more than convenience and is essential to our functioning as a modern civilization. The marriage of AI and 5G offers the potential of an ambiently intelligent world in a future brimming with unlimited potential. The stage is set for innovative enterprises capable of driving this new wave of industry. Is your organization ready?

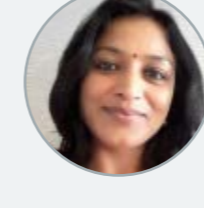
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## 2x Impact

### HR driving the intelligent enterprise



**Rita Singh**

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#### Summary

There is a lot more to digital transformation than implementing the relevant technology solutions. More than implementation, it's about adoption. To be a truly intelligent enterprise, a company needs its people to think digital first. Embrace the technology solutions available and harness them to improve the efficiency of their work. This is an exercise in culture change, and HR, as a custodian of organization culture, is in the driver's seat to bring in 2x impact.

Kate's company was undergoing a digital transformation and had adopted several intelligent systems to aid business processes and decision making. However, all was not going as planned. The systems were great, and they had the potential to make work much smarter for employees. The frustrating thing was that people were just not using them as much as they should. This was proving to be a massive challenge across the organization in their quest to move towards becoming an Intelligent Enterprise.

Well, Kate's company is not the only one facing this challenge. While the aspiration and the technology vision are in the right place when it comes to moving towards an Intelligent Enterprise, most companies get blindsided by the on-ground reality - i.e., the need for buy-in from the people. I see three roadblocks on this road - the pace of cultural transformation, the chasm between strategy and execution, and the data disconnect. The Human Resource function can help companies overcome these challenges **creating twice the impact on their transformation journey** towards an Intelligent Enterprise - making it 2x seamless, 2x faster, and 2x smarter.

Let's look at these challenges and what the Human Resource function can do to help overcome them.



#### Cultural transformation lags the technological pace

I know of this organization that invested in a great Human resources information systems (HRIS), and changed the HR structure with an intent to deliver value based on the Dave Ulrich model. However, shared services continued managing operations through manual processes.

It's relatively easy to invest in new technology but challenging to get people to adopt it. **To move 2x faster towards an Intelligent Enterprise also means a whole new way of working. Where data and facts need to merge with gut feel and intuition. And focus shifts from routine tasks - that are taken care of by intelligent, interconnected systems - to higher-value work.** This is a difficult shift for people in the workplace, especially those who aren't that comfortable with new technologies. Culture is often the most significant battle companies must fight when it comes to change. It's tough to break old habits. Yet, it's the most important piece for the success of the transformation. **According to Mckinsey, "70 percent of transformations fail, and 70 percent of those failures are due to culture-related issues."**<sup>i</sup>

The HR function can help drive this cultural transformation. HR will need to plan and pace for 2x impact on the Intelligent Enterprise. One way to do this is by ensuring relevant training, reskilling, and communication happens consistently and well in advance of the coming change. There must be a mechanism in place to understand and address employee concerns and perhaps even incentives for being early adopters.

#### The broken bridge between strategic goals and everyday routine

One of the key reasons for the cultural lag is that strategic initiatives take time to percolate down to the grassroots level. While the company's vision to become an Intelligent Enterprise may be set by the leadership team, achieving it is everyone's KPI. But are its resources in sync? Does the day-to-day functioning happen intelligently? Do the people feel like they are working in a 2x enterprise?

To bridge this gap, and make it 2x more seamless, the cultural transformation effort must be broken down into smaller initiatives at the team level. **In fact, according to HBR, over 50% of the variability in a unit's performance can be attributed to the individual leader.**<sup>ii</sup> And this is where HR can enable managers and team leaders to drive the desired change. Currently, most team managers are not equipped to lead their teams into the next normal. I have seen entry and mid-level managers enabled and empowered significantly in an organization that had a recurring enablement program every 2 to 3 years, designed around the organizational initiatives relevant at the time.

**There is a need to train and support managers and provide them with real-time people data to ensure that their teams work intelligently. That people are using the tools and technologies and moving away from manual, repetitive tasks.** For instance, one of our clients - a transnational consumer goods company - was facing a Human Resource efficiency issue in their Brazil operations. Complex legal and compliance requirements made it tedious to hire employees and manage exits and required a high HR headcount. Every document had to be manually checked and processed, wasting precious resource time. In this case, using automation and AI, we were able to help them cut down processing time from hours to just minutes.



#### The great data disconnect

The promise of an Intelligent Enterprise - doing things 2x more effectively using data in a smarter, faster, agile way sounds fantastic. But it's easier said than done. One of the biggest challenges companies face today is the data siloes that still exist. Existing systems are so fragmented that finding the relevant data is like looking for a needle in a haystack. Often things are so bad that people create manual reports from a system-generated report to give them information that makes sense!

And lack of these insights handicaps them, to begin with. To drive change, one must be able to identify gaps and measure progress. **If HR is to drive the cultural transformation towards intelligent ways of working, they need to be able to demolish data siloes to get a complete picture of organizational needs.** For example, what are the skills necessary to become an Intelligent Enterprise? How many of these skills do we have? What do we have to reskill for? What is the talent that we need to hire? What are the employee engagement and wellbeing needs during change? How well are people learning and adapting? What are the reasons behind attrition and how can they be addressed? How far along are we on the road to transformation?

By connecting the dots with organizational data - the HR function can identify where one can make a strategic impact in this journey, develop appropriate metrics around these areas, obtain data relevant to these metrics, draw out insights, and act for 2x strategic change. For instance, data on skills, experience, and performance can help identify which training programs have the most impact. Or data around engagement and productivity can help identify the impact of change on performance.

#### HR as a 2x impact partner in the Intelligent Enterprise

Data is the lifeblood of an Intelligent Enterprise that runs on AI and automation. However, data alone is not enough. The intelligence needs to be embedded in the company culture, and that's where the role of HR becomes critical. There is a long road ahead, and now is the time for the HR function to steer the organizational culture and capabilities towards its strategic vision.

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May 2021

# Future Forward

## Building a 2x Talent Enterprise



**Kisha Gupta**  
Head - Global Academic  
Relations, Infosys Ltd.

### Summary

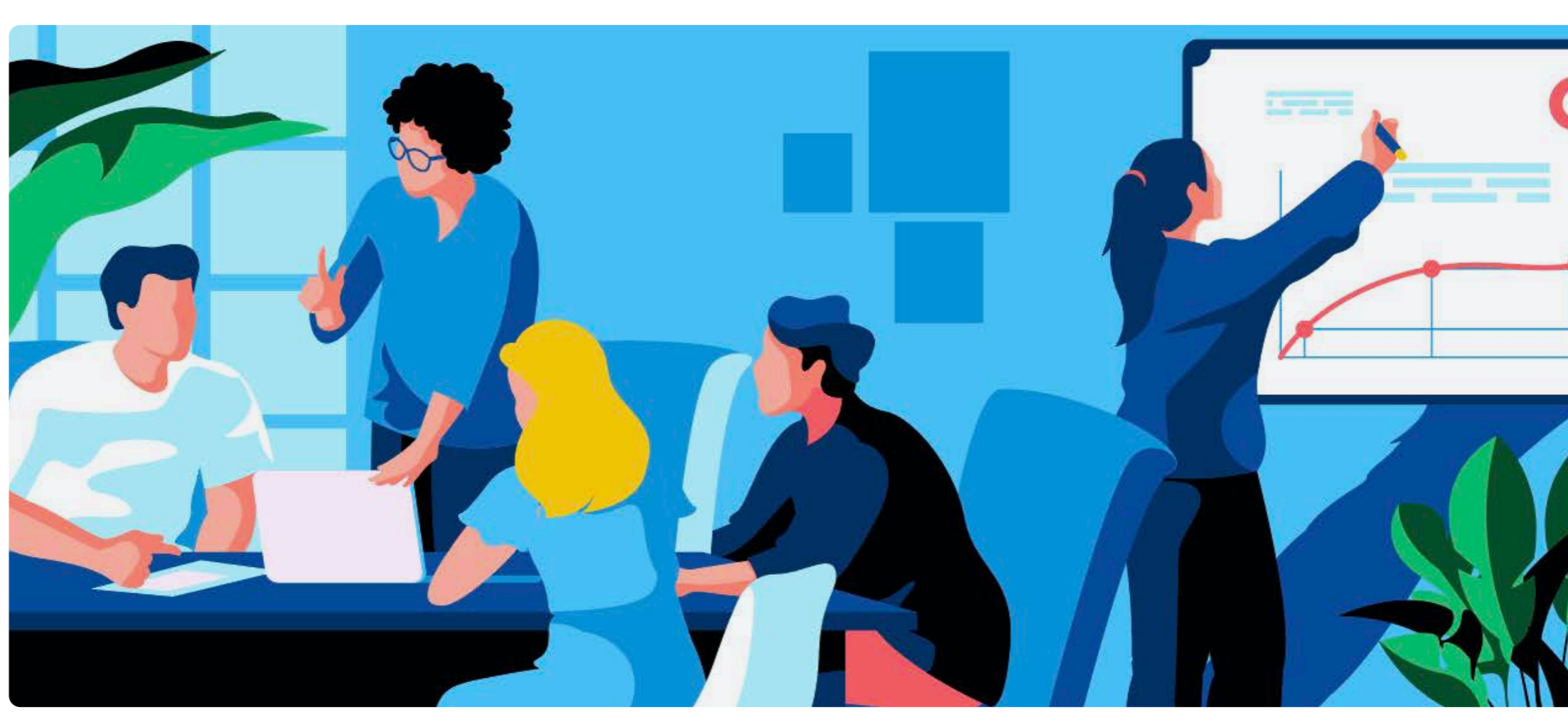
Talent is the biggest battle for enterprises in the 21st century. In a survey, 74% of CEOs were concerned about the availability of key skills<sup>i</sup>. Finding and retaining the right talent is critical for business success. As ways of work and workplaces transform, enterprises and academia must work together to build a resilient talent pool for the new-age techenterprise. We got talking to Kisha Gupta, Head of Global Academic Relations at Infosys, to understand where the talent tide is going.

**Q. Could you give us a view into the talentscape today? What is happening on the academia side, what are people learning, what skills they're developing, and what skills we see being important in the years to come?**

**KG.** The world is moving towards technology centrality. I don't think this pandemic could have been handled the way it was had it not been for the technological progress we have in the world. In a McKinsey survey 67% of companies stated that technology capabilities were a key factor of success during the crisis<sup>ii</sup>. Obviously there's an unprecedented demand of talent in that space. However, other than that, one area that has seen a lot of progress, and an upsurge in interest, in the last few years is the liberal arts. An unprecedented number of students have picked up liberal arts subjects over STEM subjects. People highly qualified for STEM are opting to do a Master's degree in philosophy, learning different languages, moving towards history degrees, economics courses, etc.

As we move into the digital age, we'll have to up our focus on the human context of technology<sup>iii</sup>. That's where liberal arts will play a key role – how do we think, believe, feel, and work. While there is a lot of focus on STEM, I think today more than people who code, we need people who can think about the applications of that code. What are the problems we can solve with technology? How do we apply AI ethically and responsibly? How do we make technology human-centric?

That's where talent is moving. That's where the balance is – technology and it's applications in the human context.



**Q. Today, when every business is a technology business, the workforce needs to be more tech-savvy and comfortable working with digital technologies. In a shift towards liberal arts, do you see a skill gap being created?**

**KG.** I don't see these two as disconnected topics but rather a balance we need to create. In fact, these are two extremely interlocked talent pieces. The way technology is being developed and advances in machine learning etc. very soon we'll not need many people to sit and write millions of lines of code. They will be auto-generated. What we would need is people who can empathize. People who can find more ways in which digital can touch more lives and make life more livable. And that comes from liberal arts or humanities as we call them.<sup>ii</sup>

Unless and until we understand the landscapes in which technology can foster and develop and do more, we will never be able to amplify the potential of technology to create a high performance enterprise.

**Q. You talked about building a high performance enterprise. How do you define a high performance enterprise and what are some of the key parameters of such an organization especially when it comes to talent?**

**KG.** I think a high performance enterprise would be an organization that focuses on profitability, social needs, and sustainability. I don't think any of this would matter if we stopped to exist.

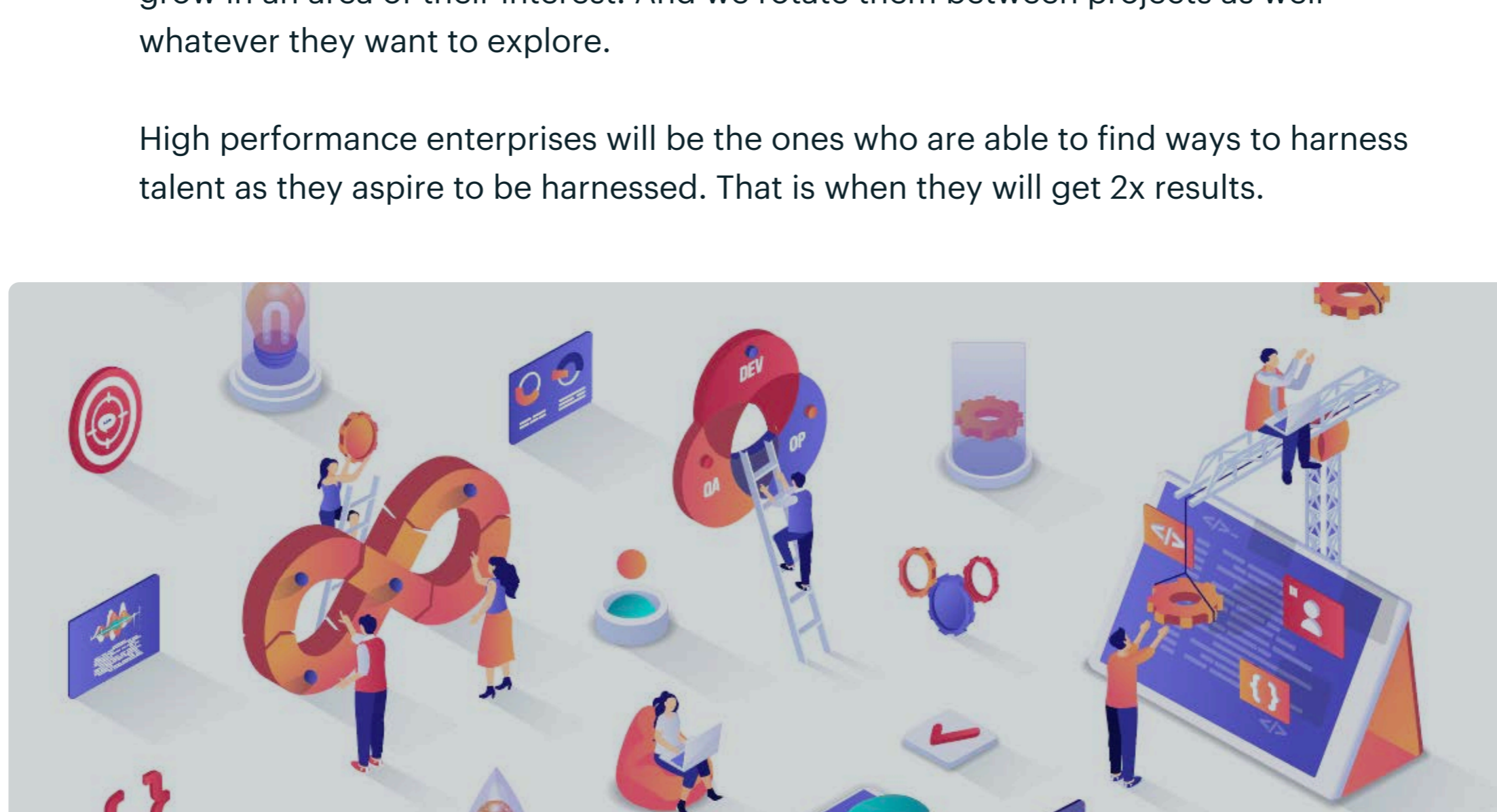
A high performance enterprise is one that gives back to the community, is highly sustainable, works with empathy, and considers and rewards people. Let me give you an example, I run this program called Infosys InStep which brings together around 250 extremely high caliber students from top tier one schools around the globe. They come from 45 countries and over 100 schools like Cambridge, Harvard, Oxford, MIT, Stanford, etc. The one thing that they've all got in common is their curiosity – which is for work and beyond work.

Any high performance enterprise has to recognize that talent resides at different levels. So there have to be avenues to reduce stress. There have to be avenues to explore all different kind of talents that person has and give them a variety of things to do. The more the job rotation possibility, the more we would be able to harness what a person brings to the table rather than what we need to get done.

Most companies when they get interns they tell them on day one – this is your desk, your laptop, your HR, and your manager. And this is what you need to do, get it done in 10-weeks, get a certificate, and go. In this way we are only able to harness the human potential just as much as we think we need.

However, with InStep we take a different approach. We have 300+ projects on our website. We go and ask the intern which one would you like to work on? Which one do you aspire for? So at least a month or so before the project starts, the intern starts learning about it. They get access to all the materials. This allows them a space to grow in an area of their interest. And we rotate them between projects as well - whatever they want to explore.

High performance enterprises will be the ones who are able to find ways to harness talent as they aspire to be harnessed. That is when they will get 2x results.



**Q. Could you also give us a view on how InStep has worked to minimize the impact of the pandemic on new talent?**

**KG.** When the pandemic broke out, UNESCO indicated that 1.3 billion students were affected globally. Millions of them had their internship offers revoked. We can't blame companies given the circumstances, but it's disheartening and absolutely demotivating for a student to be going through that.

Infosys stepped up at that time and launched an initiative called the summer of ideas – an 8-week immersive experience. We received more than 150,000 applications from over 50 countries from students whose summer internship offers were revoked by their respective organizations. We onboarded 2000 students giving them a platform to learn, engage, get mentored by the best people, and solve something in the real world, rather than feeling that the pandemic has affected their education and their experience. And it continues to make an impact even right now as we speak.

**Q. This new breed of talent that's coming into a transformed workplace – what will their impact be? And how can their 2x potential be unlocked?**

**KG.** The new workforce comes with a different set of priorities - 88% of workers want complete flexibility in hours and location, 69% are more productive when they feel trusted, and 86% prefer to work for companies that prioritize outcomes<sup>iv</sup>.

To unlock the potential of talent we need to create an environment for it to thrive. There are several factors that contribute to this. The first that we've already discussed is the agency to choose and with that comes accountability. The second is to allow the freedom of failure and with that comes innovation. I don't think a lot of organizations really recognize how much your success rate really increases if you allow people to fail or if you give them the option to fail. The third is a focus on problem finding rather than problem solving. People want to do things by choice and because they care. And if enterprises hire the right people, they're going to find the right problems to solve. And that's what is most important at the end of the day.

**Q. How do you align the new talent mindset with existing organizational mentality that is set in old ways of working?**

**KG.** There is a new reality taking shape and adapting is the only way forward. But adapting to change is a cycle – there is societal and economic change, that pushes regulatory change, that drives behavioral change, and so on.

We can already see that the new trends in talent and economy are pressurizing regulations to change. Once regulations change, internal resistance loses steam. They can stay, or they can leave, but they'll have to change.

**Q. What does the future of talent look like? Where are we going and what are some of the things that both academia and enterprise should be conscious of?**

**KG.** There are four key trends I've noticed that academia and enterprise need to work together to embrace. These are:

- **A beautiful surge of cross disciplinary degrees<sup>v</sup>**  
People are choosing multiple credits in different fields. For instance, earlier people chose to do a Bachelor's degree in technology and went on to do a Master's in the same field. Today we have people who do a Bachelor's in Economics and then move on to Master's in AI. Academia is also recognizing this interest and offering interdisciplinary programs. This interdisciplinary approach is creating talent that will be more than just tech talent.
- **The recognition of talent coming from community colleges.**  
These are people who are first generation students, whose parents had never gone to school or college. There is a shortage in the demand-supply paradigm and tapping into this talent can help scale the workforce faster.
- **Decreasing focus on degrees**  
Companies are looking for degrees and more skills and for learnability. They are hiring from high-schools! Google offers career certificates to help people without degrees become job ready.<sup>vi</sup>
- **Rise of the gig-economy**  
More and more people and companies are embracing the concept of talent on the go. Permanent work from anywhere solutions are going to be a need for tomorrow. And that's where you can truly create an organization which is diverse and inclusive not just of external settings, but of thoughts.

Between academia and corporates, it's a give and take, demand supply kind of a relationship. As the market changes from the corporates new degrees and new functions get associated in in academia. Some of our partners like SAP, Salesforce etc. are increasingly looking at talent which is non tech. Not finding the right talent, they backward integrated their courses into universities. Similarly, a lot of times academia pushes forward. The bigger research oriented universities like CalTech are actually working on solutions that will create future jobs, that don't even exist now.

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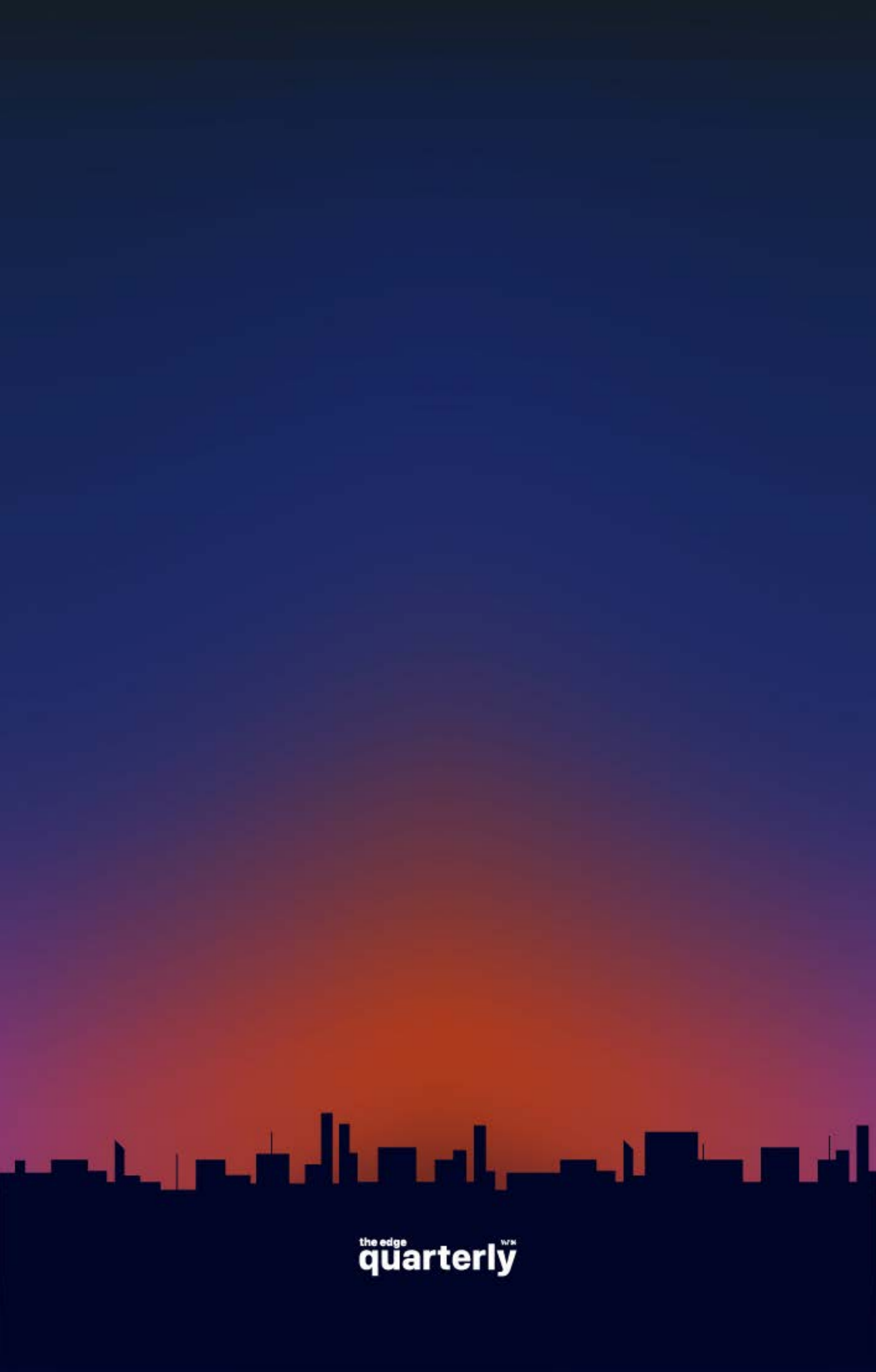
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