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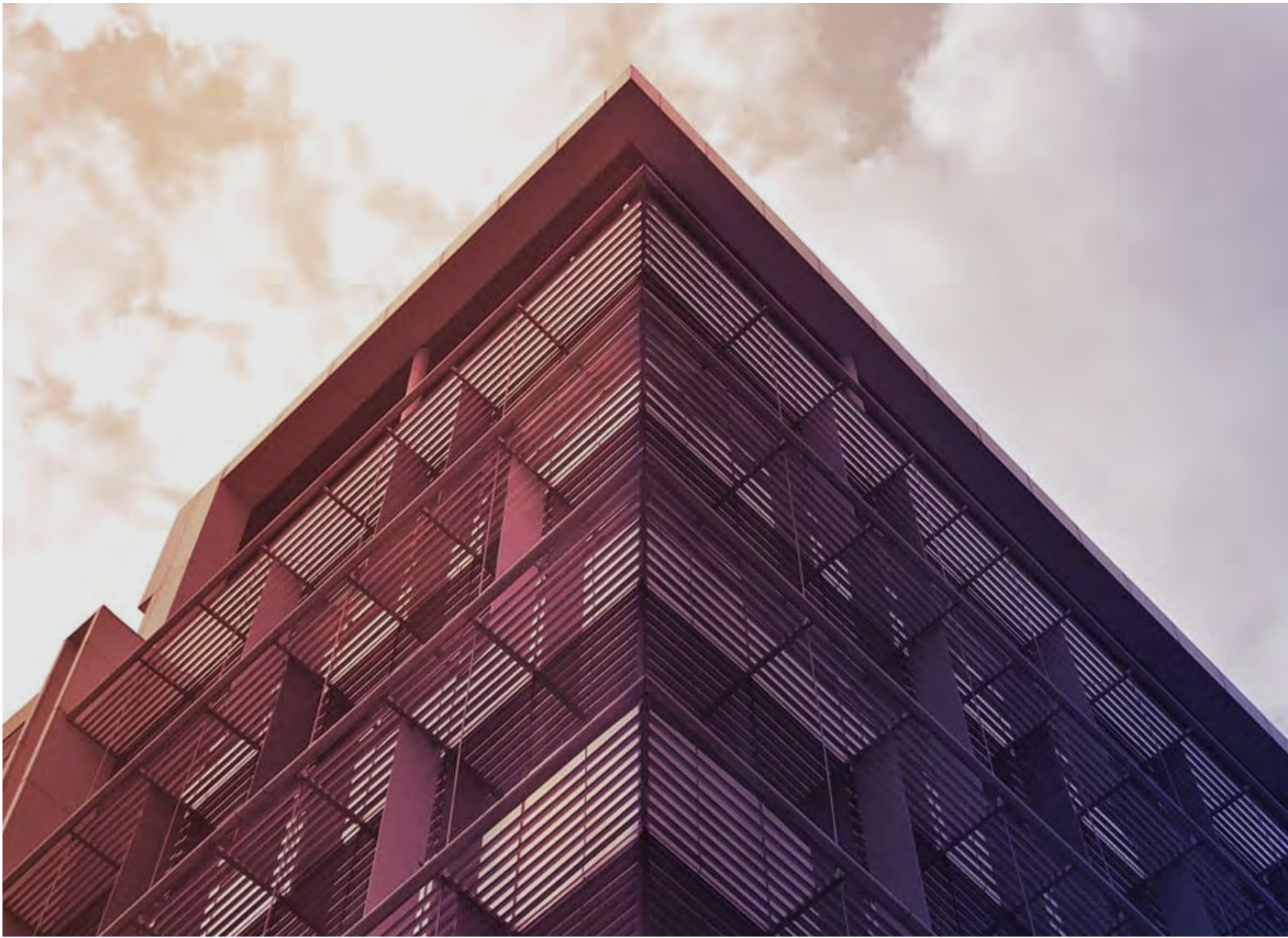
PRACTICAL THOUGHT LEADERSHIP ON AI, AUTOMATION AND SUPPLY CHAIN



AMPLIFYING HUMAN POTENTIAL

UNVEILING NEWER POSSIBILITIES

 **edgeverve**
An Infosys company



EdgeVerve Headquarters, Bengaluru, India

About EdgeVerve

EdgeVerve Systems Limited, a wholly-owned subsidiary of Infosys, is a global leader in developing digital platforms, assisting clients to unlock unlimited possibilities in their digital transformation journey. Our purpose is to inspire enterprises with the power of digital platforms, thereby enabling our clients to innovate on business models, drive game-changing efficiency and amplify human potential. Our platforms portfolio across Automation (AssistEdge), Document AI (XtractEdge), and Supply Chain (TradeEdge) helps inspire global enterprises to discover & automate processes, digitize & structure unstructured data and unlock the power of the network by integrating value chain partners. EdgeVerve, with a deep-rooted entrepreneurial culture, our innovations are helping global corporations across financial services, insurance, retail, consumer & packaged goods, life sciences, manufacturing telecom and utilities, and more.

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Amplifying Human Potential

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From self-driving cars to AI-generated art, technology has ushered us into a brave new world. The world that's emerging is not only shaping the way we lead our lives but also fundamentally changing our relationship with technology. And enterprises are catching up. They are digitizing processes and embracing AI, Automation and Supply Chain technology like never before. This is taking them beyond the insatiable pursuit of ROI and unlocking possibilities that were previously unheard of.

In this latest edition of The Edge Quarterly, we look at how technology empowers enterprises with data-driven insights that not only help improve their revenue and efficiency but also help amplify the potential of their workforce.

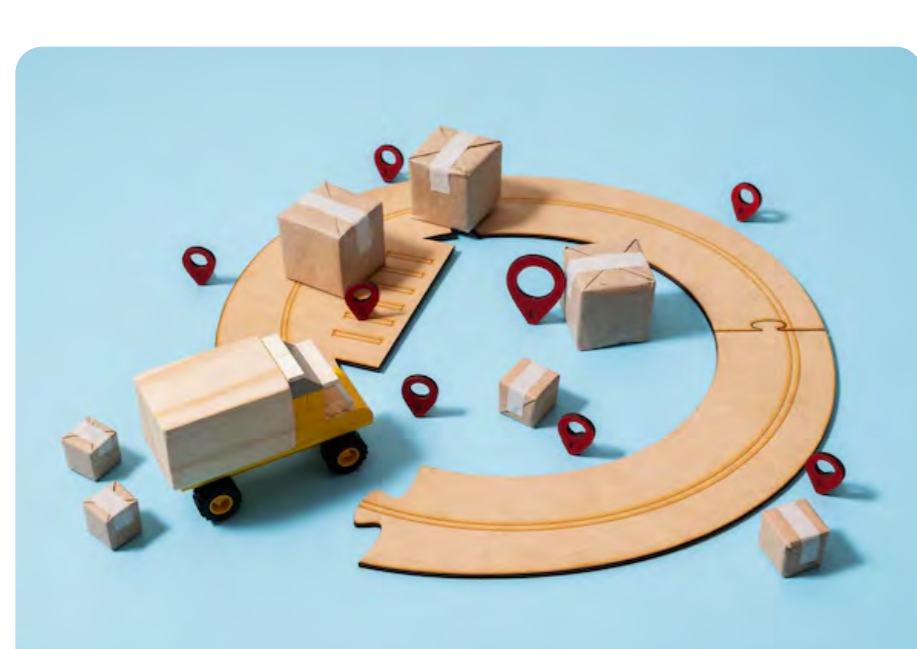
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5 Trends That Will Dictate Supply Chain In 2023



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Summary

Enterprises and industries increasingly recognise the need to revolutionize their supply chains to remain competitive. As ecosystems have gotten more complicated and disruptions have become more prevalent, businesses have shifted their attention toward more resilient supply chain solutions. Read on to know the top 5 trends that will lead the change in supply chain going forward.

Supply chain trends are becoming more important to business strategy than ever before. As supply chains have become more complex and disruptions have accelerated, supply chains need to be able to respond quickly and efficiently to survive. The biggest disruption is the data-driven approach that enables enterprises to understand and optimize their networks. And as we move into 2023, we find that businesses are leaning toward supply chain solutions that prioritize resilience, higher levels of automation, data transparency, and faster fulfilment.

The 5 trends that will shape supply chains

While excellence can be found in upstream automation done directly by clients, automation driven by BPM service providers brings components that can accelerate scale without compromising efficiency. Some features to look for are:

1. Forecasting will be more targeted

Inflationary trends, rising fulfilment costs, and fragmented demand make forecasting more challenging than ever before. If an enterprise can accurately identify a trend before it becomes mainstream, it'll be better positioned to drive innovation in the right direction. Market leaders will likely prioritize technology solutions that combine machine learning and artificial intelligence to predict trends that no one else sees coming. In fact, by 2025, experts estimate that 25% of supply chain decisions will be made using intelligent edge ecosystems.¹



2. Building a Supply Chain Ecosystem will gain prominence

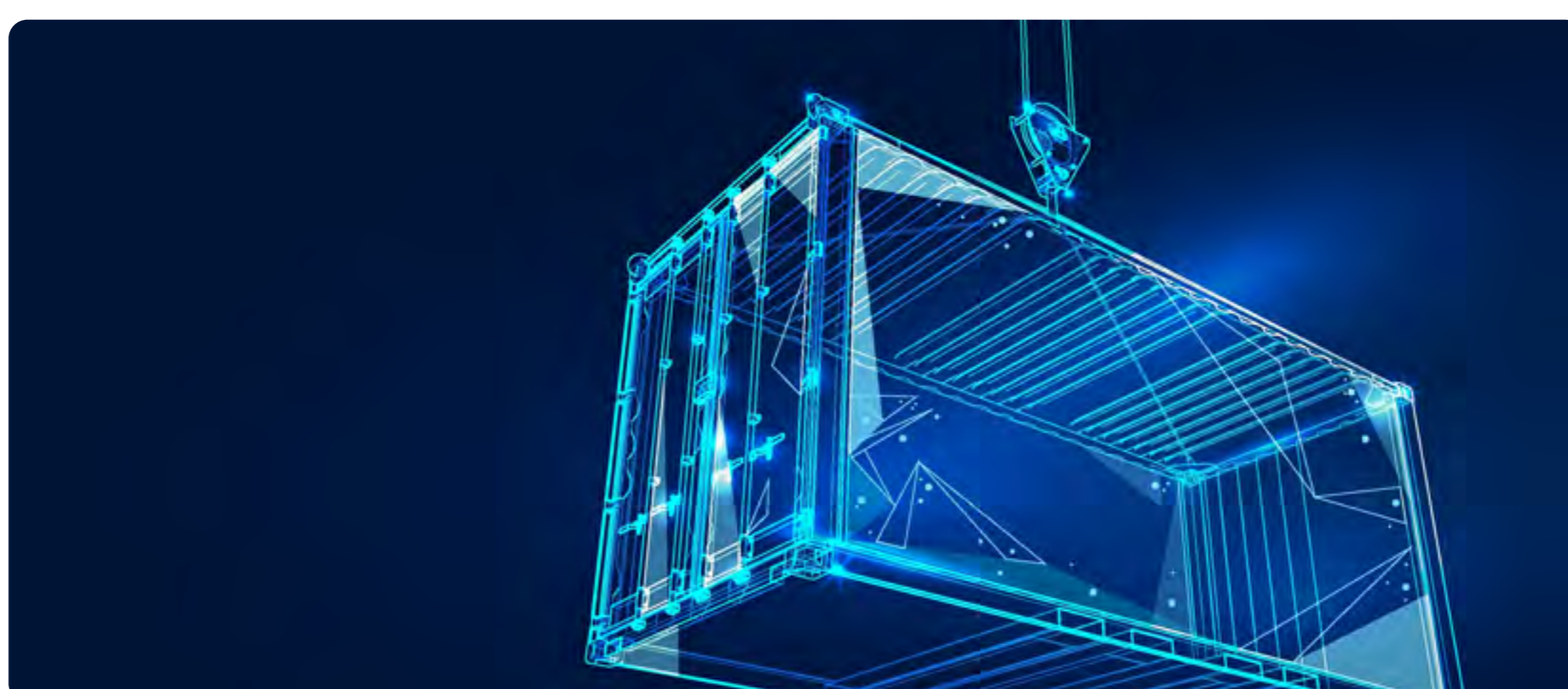
Around the world, supply chains remain broken. The silos created by ERPs mean that any effort to optimize generally results in shifting costs rather than a complete takeout. However, supply chain leaders recognise the need for end-to-end digitalization and higher data transparency to identify and shore up weak links in supply ecosystems. In fact, according to Gartner, over 38% of organizations are investing in supply chain tech that supports end-to-end business processes.¹

Digital twin technology for supply chains is also likely to shine in 2023, as executives understand the importance of interoperable data models to establish a single source of truth in a multi-stakeholder environment. Making sure all value network participants are reading from the same page also means fewer issues with data latency, more accessible analytics, and in the long term, improved stakeholder profitability.

3. Digital Industrial Platforms will become omnipresent

As digital technologies become increasingly prevalent, they are becoming ubiquitous. In fact, the adoption of digital industrial platforms will skyrocket in the coming years as a result of a number of factors.

First, the explosion of technology providers and the near-ubiquity of digital means that everything from point solutions to end-to-end transformations is increasingly commoditized. Second, supply chain executives have a traditionally low-risk appetite when it comes to adopting new technologies, which means that many companies are not looking for a massive overhaul of their existing systems but rather an incremental improvement in efficiency and effectiveness. Thirdly, there is a high-intensity talent war for technologists that has resulted in a scarcity of talent with the appropriate skill set and experience level required for these types of projects; this also drives up costs since companies need to compete against each other for scarce resources.



4. Experimentation with AI will continue

Although automation has emerged as the most disruptive technology of the decade, AI is turning out to be essential to enterprise decisioning. However, we expect that supply chain leaders will still be experimenting with higher-order AI tools, especially in terms of predictive analytics for demand planning. Given the vast number of data points available to modern enterprises, the interpretability of predictions will take centre stage.² Specifically, the ability to arrive at predictions and build models replicating those predictive functions with changing input values will be increasingly important, especially as executives further embrace data-driven decisions.

5. Partnership engagements will lead tech expansions

Among enterprise tech leaders, there exists a tendency to view their business problems as unique. And often, this translates to a higher proportion of bespoke development of solutions. However, while this approach may seem like it gives stakeholders more control over a solution, that sentiment is often counterintuitive.

Partnering with a vendor or acquiring a platform subscription, for example, can often be faster and more cost-effective than building it in-house. As more subscription-based executions come online, mitigating the twin risks of upfront capital expenditure and low adoption, executives will lean toward the tail end of the Build-Buy-Partner equation.

While much of the disruption in supply chain operations was driven by the pandemic, new models are here to stay. Businesses embracing the above-mentioned trends in the coming year will find themselves ahead in creating resilient, flexible, and automated supply chain value networks.

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8 Automation Trends That Will Shape 2023

Build The Enterprise Of Tomorrow

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Summary

Read on to know what are the major trends to look out for in 2023 in the world of Automation. From task mining to enhancing the last mile delivery, automation will only help deliver superior business value.

We have seen a rapid evolution of automation in the last decade, from repetitive process automation to a blend of machine learning, robotics, and artificial intelligence. With this, we have shifted from automating redundant tasks to automating enterprise operations.

As LOB leaders and CIOs work together on identifying and executing enterprise automation initiatives that are in line with strategic business objectives, the focus is moving toward automating critical and innovative operations while concurrently reducing TAT. As the industry moves toward continuous improvement, these processes will be regularly monitored and improved upon to ensure they stay aligned with current business needs.

The goal of this new generation of automation is to deliver faster service levels while reducing costs by eliminating human error through reliance on technology-based systems that can quickly adapt as business requirements change over time.

Let's look at how the automation industry is set to evolve in 2023.



Trend 1: Federated IT development will drive automation success

Automation has become a big part of business operations for both CIOs and LOBs. For the CIO and IT office, automation is about scalability, reliability, and security. But many LOBs are looking for more than just cost control from their automation initiatives – they want to improve their processes as well. One trend we're seeing this year is that citizen developers are building their own automation solutions with low code / no-code components on scalable, secure platforms provided by the IT office. Citizen developers understand the business process better than anyone else, so they can develop automation sets that meet their needs and make work easier.

Automation initiatives will be driven by Federated IT structures where LOB leaders share their business objectives with the CIO's office. By collaborating to deploy automation solutions that meet strategic business needs while complying with enterprise security and scalability policies, organizations can streamline processes while improving data security and scalability.

Trend 2: Looking beyond cost reduction and focusing on driving agility of operations

As organizations adopt automation, they are moving from the early stages of automation to scale—where less than 8-10% of their processes have been automated. The impact on business post the pandemic has seen pressures on costs and margins, while automated processes have delivered from a cost perspective. Still, as businesses see the advantage of automation from a cost perspective earlier, they are now seeing how automation improved agility in both customer-facing operations (e.g., self-service) and critical back-office operations (e.g., Inventory stock management). This agility is helping cost-takeout strategies and reducing pressures on margins.

Automation delivers further on the promise of cost reduction and agility, proving itself to be a recession-proof technology. This resulted in the organization's automation budgets getting accentuated.



Trend 3: Automation at scale = a combination of technologies with RPA

Enterprises have begun to see the benefits of task automation. They are reaping the rewards of scaling these processes and operations to increase the volume and scale of automation. One way companies are doing this is by increasing the number of bots to increase transaction volume. However, as the number of bots increases, so does the complexity of automation. This increased complexity will require a combination of conversational interfaces, low-code components, AI/ML, IPAAAS (Integrated platform as a service), and process orchestration. This allows for seamless handoffs between automated processes and manual interventions with workflow orchestration.

Automation solutions are evolving from automating singular tasks to processes to operations. With this increasing complexity, these automation solutions will consist of multiple technologies, including RPA, IDP, AI, ML, and low-code/no-code, IPAAAS, all working seamlessly to deliver operational and cost efficiencies.

Trend 4: Automation will help to scale and accelerate digital transformation

The pandemic brought with it many challenges to organizations worldwide. However, organizations that adopted automation initiatives before the pandemic has seen a reduced impact on operations. For example, IT service engineers adopted co-browsing technologies to remotely fix customer issues, and many customers used self-service and AI Chatbots to complete online transactions without any other human interactions. Post-COVID, these organizations realize the increased scalability, agility, and other added value that these automation initiatives have brought to the organization's digital transformation journey, which goes beyond just cost takeout.

As businesses increasingly realize the added value that automation delivers beyond just cost takeout, automation initiatives will play a critical role in the digital transformation journey.



Trend 5: Automation done right will deliver amplified value

The recent economic downturn has become enterprises deploy automation initiatives which in turn has delivered amplified value. They have become more agile and could provide services with minimal human interaction. The right automation technology has consistently enabled companies to predict and proactively service their customers rather than respond reactively.

However, automation initiatives must be planned and executed properly:

- Identifying the right technology platform for the business, industry, and scale
- Building the required technology capability in-house that allows you to develop and deploy relevant solutions
- Ensuring that the technology platform deployed is secure and trustworthy and is protected against all vulnerabilities

The right automation solution amplifies value delivery, enabling organizations to be more agile and proactive – this requires the right technology solution, in-house technical capabilities, and a trustworthy, secure platform

Trend 6: Task mining will drive automation scaling and deployment

Large organizations often struggle with scaling their automation and seeing the benefits of their automation initiatives, as automation only amplifies the inefficiencies of suboptimal processes and process variations. Task mining, hence, will help identify the process inefficiencies, in addition to providing empirical data on how each process runs and can be optimized. This helps apply a scientific approach to process automation, which is an essential step to scaling automation.

RPA deployment can be accelerated through a combination of understanding how a process runs through task mining, in-house capability to build context-specific automation, and a platform that is able to cover a diverse application landscape

Trend 7: We will see more humans & machine collaborate

With automation initiatives on the rise, there is a fear that this will lead to the loss of jobs as tasks and processes are automated. The truth, however, is otherwise. The only difference will be the change in the role and nature of jobs. Automation will help us work more efficiently by allowing us to delegate the tasks like analysis and prediction to the machine. This allows us to work on things we want to do or can do better, making us more innovative and efficient.

As machines become more intelligent, humans will become less mechanical, collaborating with AI and automation to complete work efficiently and innovatively. Enterprises will harness this seamless Human-Machine collaboration to deliver improved productivity, engagement, and innovation

Trend 8: Automation will improve user productivity at both individual and enterprise levels

End-users, based on their roles (Finance, IT, Marketing, HR) and organization levels (CXO, mid-level manager), have different expectations of automation technologies that have been deployed. The data collected during automation can be utilized to analyze productivity across people, processes, and technology. This helps identify the causes of bottlenecks in the process, track application utilization and user activity – and address the areas of concern as required.

Automation enables end-users, based on their roles, to amplify their potential through enabling ease of use, integration of information and insights, and automating data and process updates in real time.

The future of automation – What's in store?

Automation is an integral part of digital transformation and is evolving daily. Future enterprises will look at automation not just to improve user, process, application, or enterprise productivity – the focus on automation will now move to how they can improve the user and customer journeys and experience.

Organizational digital twins are becoming a part of the landscape, allowing organizations to map users, processes, applications, and data across the enterprise – providing an integrated virtual view. This helps trace user and customer journeys through the organization and predict future actions, enabling the organization to prepare and address these actions proactively rather than reactively.

From task to process to operations to experience – Automation is paving the way to building a Connected Enterprise, where humans and machines collaborate to capitalize on the power of real-time operational, business, and transactional data and drive improved business value.

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5 Benefits Of Adopting A Multi-Vendor Strategy

Navigate Through All The Complexities



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Summary

Enterprises want to improve their operational efficiency – but how? Quite often, they look for a one-size-fits-all solution for the challenge. But it's a common error in thinking that purchasing automation technology from a single vendor can deliver the best results. In reality, the benefits of a multi-vendor strategy far outweigh its limitations. This article aims to provide an overview of multi-vendor strategies and discuss a few of the most common tactics used to ensure its success.

Robotic Process Automation (RPA) has become a hot topic in the business world, and for a good reason. RPA allows companies to automate repetitive tasks, freeing employees to focus on more value-added work. This can lead to increased efficiency, productivity, and cost savings. Let's first understand what a multi-vendor RPA strategy is.

But with so many RPA tools and technologies available, you may wonder which is best for your company. That's where a multi-vendor RPA strategy comes in.

Simply put, an organisation's IT strategy that leverages the capabilities of multiple RPA tools and technologies is referred to as a multi-vendor RPA strategy. Instead of being constrained by the capabilities of a single tool, this strategy enables businesses to select the appropriate tool for each unique task.

There are several reasons why a multi-vendor RPA strategy is becoming more popular among CXOs. The "two vendor strategy" has proven to offer higher chances of success with optimal results.



Single-vendor RPA strategies can limit automation efficiency

When a company relies on a single vendor for its RPA needs, it can limit the efficiency of its automation efforts in several ways. Analysts estimate that 30-50% of all automation projects fail. Why?

1. The capabilities of a single vendor's tool may need to be better suited to take the divergent directions of the company's specific needs. For example, if a company needs to leverage AI models like ChatGPT to automate its processes and the tool does not provide this as a simple plugin, the organization will lack the latest tools available in the market. This can lead to inefficiencies and added costs as the company works around the tool's limitations.
2. Being reliant on a single vendor can limit a company's ability to scale its automation efforts. For example – an RPA tool that is good in unattended automation may not be good at task mining or intelligent document processing, which is what the company will need to identify the next set of automation use cases. . And any replacement projects can run up from a few weeks to a few months leading to escalated costs and subpar results.
3. Vendor lock-in can limit a company's bargaining power. If the company becomes too reliant on a single vendor's tool, it may be at the mercy of that vendor regarding pricing and other terms. This can result in higher costs and less favourable terms for the company.

By contrast, a multi-vendor RPA strategy allows a company to choose the best tool for each specific task, providing more flexibility and scalability. It also helps the company avoid vendor lock-in, giving it more bargaining power and reducing the risk of being at the mercy of a single vendor.

A well-structured multi-vendor RPA strategy helped a global building products distributor in North America restart its automation journey after facing issues due to frequent bot breakdowns and errors and insufficient support services offered. Post the execution of the multi-vendor RPA strategy, the company was able to identify broken air booking processes with several variations, which in turn resulted in US\$ 184K potential annual savings identified through process improvements



5 reasons organizations are adopting a multi-vendor RPA strategy

A multi-vendor RPA strategy, which involves using multiple RPA tools and technologies from different vendors, can be the best approach for companies in certain situations. This approach allows companies to choose the best tool for each specific task rather than being limited to the capabilities of a single tool.

There are several benefits to a multi-vendor RPA strategy:

1. **Tailored to specific needs:** Different RPA tools have different capabilities and may be better suited for specific tasks. Using a multi-vendor approach, companies can select the tools that best fit their needs rather than trying to make a single tool work for all functions.
2. **Greater flexibility and scalability:** If a company's automation needs change over time, it can easily add or remove tools to meet those needs. This is especially important for companies looking to scale their automation efforts rapidly.
3. **Avoid vendor lock-in:** By using multiple tools from different vendors, companies are independent of a single provider for their automation needs. This can give them more bargaining power and reduce the risk of being at the mercy of a single vendor. You get a clear advantage over vendor resistance to renegotiation at renewal time.
4. **Access to a broader range of expertise:** A multi-vendor RPA strategy allows a company to tap into the expertise of multiple vendors rather than being limited to the knowledge of a single provider.
5. **Increased efficiency and productivity:** By using the best tool for each specific task, companies can achieve higher levels of efficiency and productivity. This can lead to cost savings and an overall competitive advantage.

Getting started on adopting a multi-vendor RPA strategy

A multi-vendor RPA strategy is trending among organizations because it allows a company to take advantage of the strengths of multiple RPA tools and vendors, handle the complexity of modern business processes, reduce risk, and increase flexibility.

As RPA continues to gain popularity, more and more companies will likely adopt a multi-vendor RPA strategy to stay ahead of the curve.

Companies can gain vastly from a mature RPA services provider who can assess their automation maturity levels and recommend the right multi-vendor strategy to adopt.

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Process Discovery Is A Superpower

Use It To Digitally Transform Your Enterprise



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Summary

It is essential to ensure your digital transformation is based on a sound understanding of the processes that matter to your business. Process Discovery, one of the CDP (Customer Data Platform) blueprints, is the first step to Digital Transformation, and here's why: large enterprises have many moving parts, each with its own specifics. Thus, the importance of Process Discovery for unearthing process variations across business units, departments, and job roles so that these can be considered in the design of enterprise platforms. Read on to know how you can implement "Process Discovery strategies" for your enterprise.

An ancient proverb goes, "a journey of thousand miles begins with a single step" – This doesn't need to be a significant step, just a single step in the right direction.

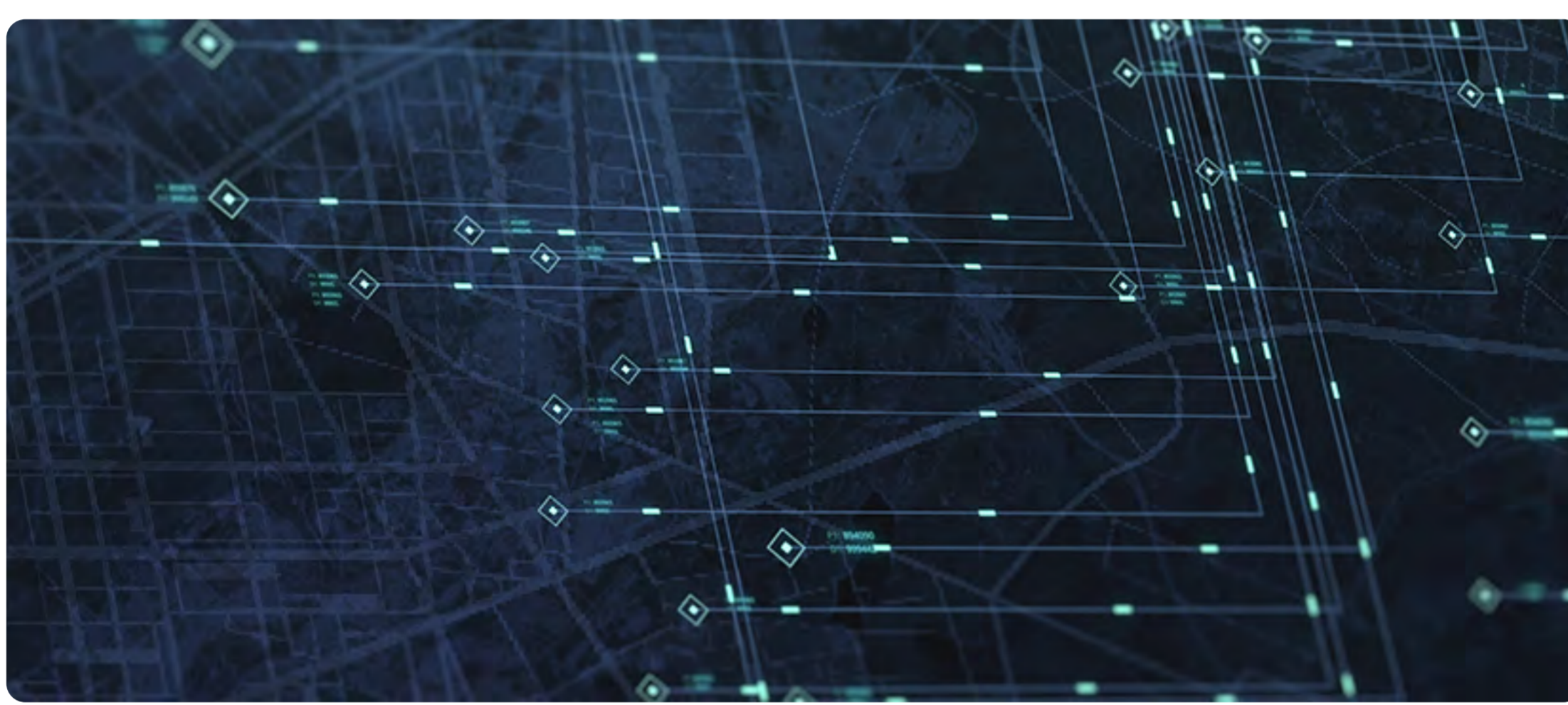
And this holds for the Digital Transformation journey of an enterprise, with the single step in the right direction being Process Discovery. This helps map processes across your enterprise, identify variations and bottlenecks, and prioritize strategies for automation.

Everyone wants to go the digital way

While Digital Transformation has been high on every boardroom agenda, the pandemic saw successful companies accelerate their DX initiatives and develop various technology-related capabilities. 67% of participants in a McKinsey' survey said they were adopting technology faster than their peers during the pandemic, and 72% said they were the first movers to experiment with digital technologies in their industry.

Successful digital transformations are rare, though, with only 30% of modifications² succeeding in achieving their objectives.

Large complex enterprises need help to deliver change at scale, with the parameters of org structure, operating model, processes, and culture being as important as the digital platforms being adopted.



Knowing where you want to go in your Digital Transformation journey

Large complex enterprises must respond to changing markets and consumer needs quickly, bringing speed, scale, and customer-centricity – the essential ingredients for success. These enterprises take an incremental approach to transformation over time, with a vision of where they want to go and what they want to achieve.

Digital transformation starts with process transformation, which begins with knowing the current situation. Enterprises need to understand how their business works at the process level.

We need to see how each process works and how people interact with these processes. We need to look at improving and optimizing human-system interfaces and interactions as the initial steps in effective digital transformation and increased ROI.

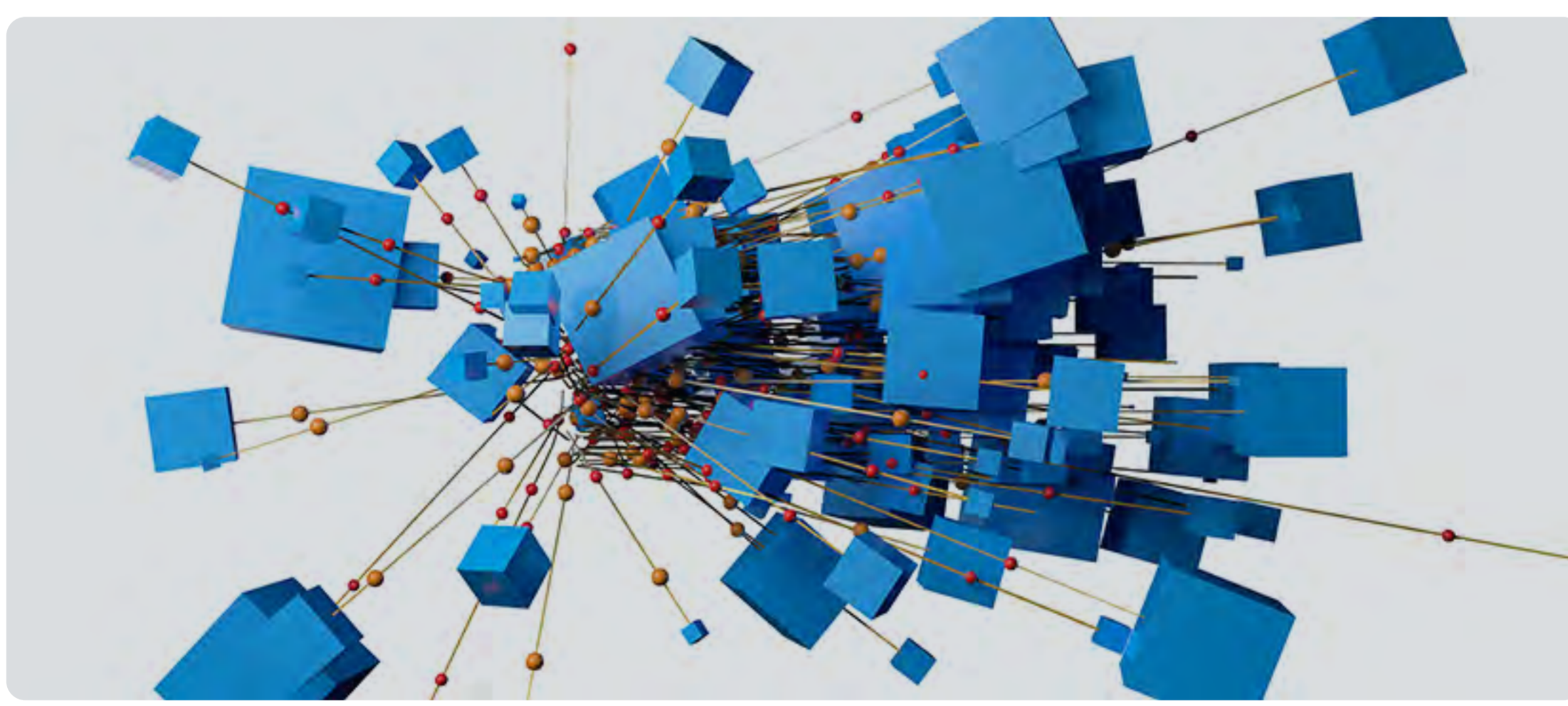
Process understanding maps the milestones of your Digital Transformation journey

Business processes directly influence the enterprise's ability to sense, synthesize and respond to market changes. And the more complex the business, the more complex the processes become. These processes need better integration, faster synchronization, and seamless connection between multiple systems and functions to respond faster to stimuli. Most enterprises have their processes documented. However, how many enterprises can genuinely say these documents are updated to the latest process adaptations or that the functions are followed as documented? With over 70% of documented business processes needing to be followed, enterprises can find it quite challenging to get an accurate process blueprint.

Large enterprises start with continually finding opportunities to identify, prioritize and then digitize complex processes. Each digitization iteration allows them to learn the metrics to include, the assumptions to review, the business models change to adopt, and the change in market dynamics and position.

It is not just a matter of migrating the process to a digital platform and expecting to achieve your results. To unlock their hidden potential, processes need to be analyzed and redesigned with a digital-first perspective.

And therein lies the actual challenge – identifying, mapping, and analyzing processes in an enterprise.



Process discovery – the first steps of your Digital Transformation journey

A leading global beverage company with operations spread over 20+ countries was seeing a continuous rise in the cost of operations. Adhering to local business market requirements and complying with each country's regulations introduced undocumented process variations. They started mapping their processes across countries to understand the variations and even identify best practices that could be adopted globally. This mammoth task could not be done accurately through manual efforts.

A Process Discovery tool was deployed across 50 user-representative systems covering various business processes across locations, functions, and roles. This tool helped create detailed process and task maps with 3480 automated recordings over a 2-week period which were over 90% accurate. This granular and step-by-step view helped identify over 300 process variations, allowing them to design optimal process flows, leading to over a million dollars in annual savings.

Process Discovery helps look for what may not work as required in your operations. These tools let you map where process workarounds are being adopted or processes stopped while awaiting information or requiring manual interventions.

With these process areas being identified as areas that digitization can improve, we can now optimize and redesign operations and adapt technology that adds value to deliver better, faster, cheaper, and, most importantly, human-centric processes.

Process blueprints developed through process discovery have uncovered multiple applications for enterprises. A financial product company decided to re-engineer its process with a human-centric and digital-first perspective rather than automation in transformation—and finally, reaching the milestones of increased customer satisfaction and improved ROI.

Take the correct first step in your Digital Transformation journey

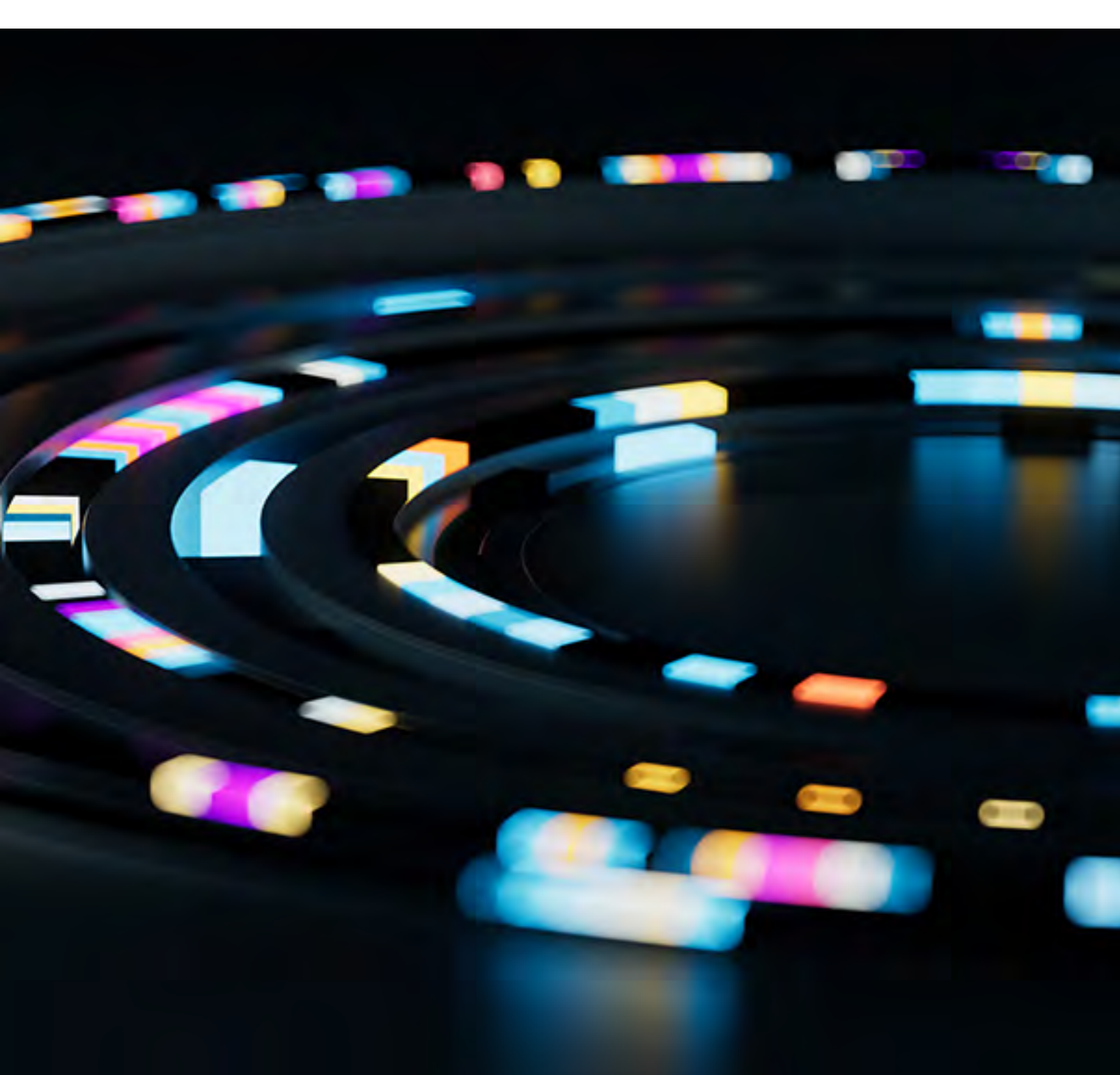
Taking that right first step in your digital transformation journey is essential to success. Process discovery lets you know what's happening at a process level, identify challenges and roadblocks, and the actual process outcomes.

This helps you build your digital transformation roadmap, overcoming these challenges or roadblocks, and where necessary, even taking an entirely new path to transformation—and finally, reaching the milestones of increased customer satisfaction and improved ROI.

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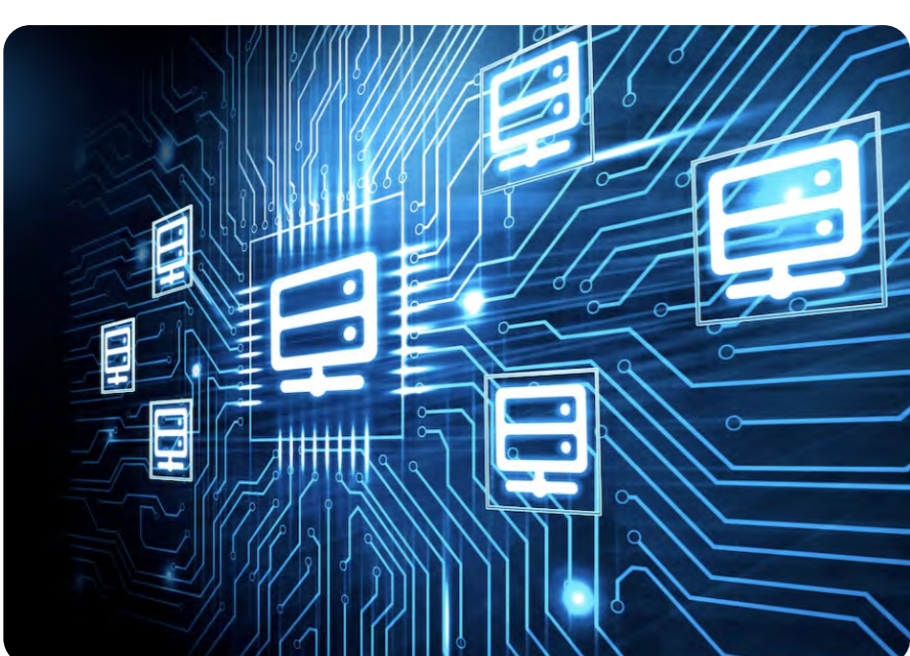
Build A Connected Enterprise

And Bridge The Information Gap With A Data-Driven Mindset



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Summary

Enterprises today are embracing a data-driven mindset. But why? The answer is complex, but the benefits are simple: data provides actionable insights across all enterprise silos to inform real-time decision-making. Data-driven companies are better suited to face the ever-changing demands of the marketplace. They can make faster, more informed decisions benefiting their bottom lines and profitability. Read on to know how your enterprise can use data for growth.

Due to the rapid acceleration of digitalization, enterprise analytics engines are receiving an increasing amount of data from the buffers of our digital lives. Despite dramatic growth in structured business data over the past 20 years, an overwhelming majority of digital data still seems unorganized and fragmented due to extensive digital transformation projects.

But being a data-driven, connected organization today entails more than just relying on an analytics suite to fuel your insights. It involves leveraging every available piece of data to produce larger, richer, more in-depth perspectives of your clients, operations, personnel, and successful frameworks.

A considerable 70% of the most valued organizations in the world adopt data-driven strategies and approaches as the mainstay of their growth prospects.

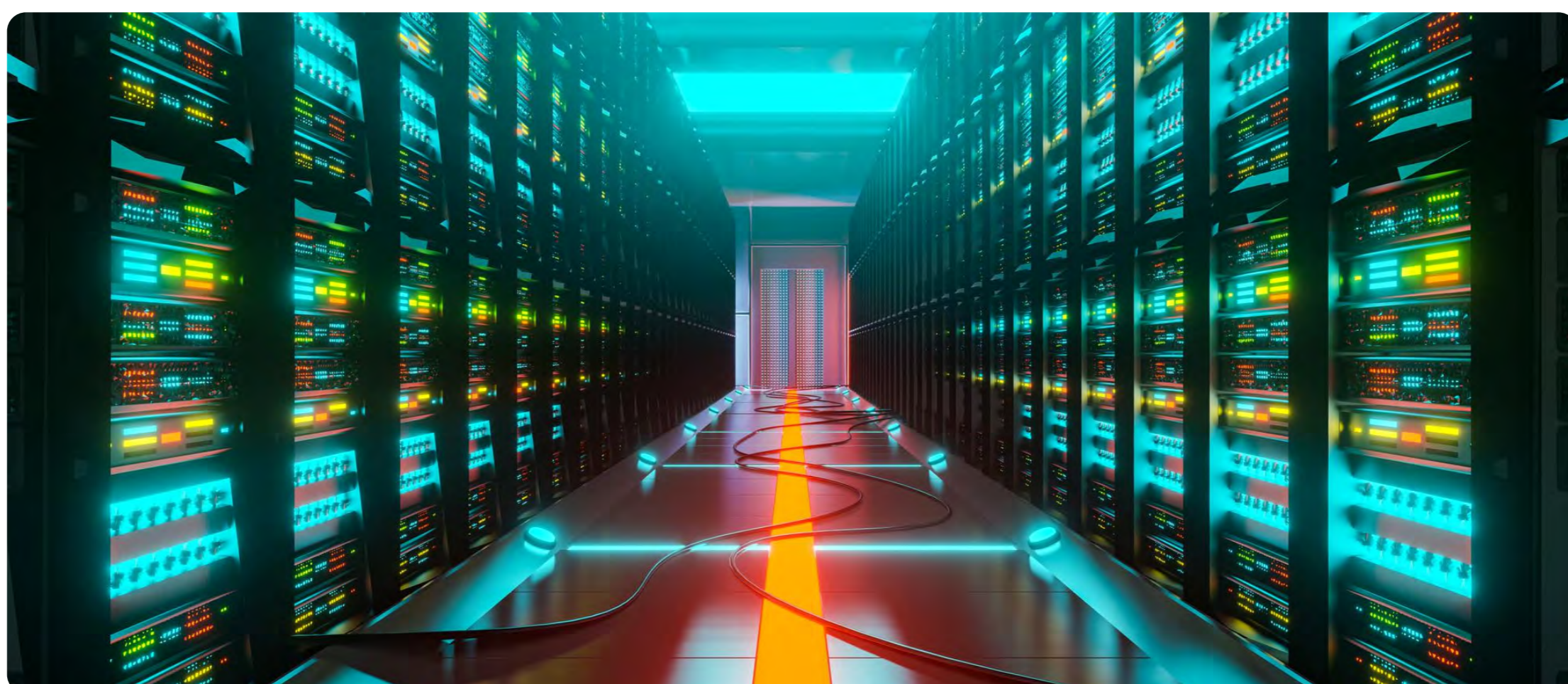


How does a data-driven approach influence an enterprise's growth potential?

This method of organizational leadership has value because it allows for quicker adaptation to shifting market conditions, more rapid innovation, and the creation of experiences that benefit all stakeholders equally.

The distinctive capabilities of the modern connected enterprise include aptly utilizing the data and insights from a wide range of sources, such as edge device networks, customer interactions, employee tool usage, process throughput, and more; simulating business outcomes and operational processes under various conditions such as automated data extraction and processing platforms or AI and machine learning.

Immediately deploying a workforce that has been educated to use AI and data technologies to tackle problems that would take months or even years to solve using conventional approaches; by connecting partner, vendor, and consumer data into value networks, all ecosystem stakeholders'1 visibility and data sharing would be smooth.



How smooth is the transition from a digitally enabled to a data-driven enterprise?

A wise man once said, "All change is hard at first, messy in the middle, and so gorgeous at the end."

British Telecom, Openreach sought to update its internal procedures to guarantee always-on connectivity for each customer during the pandemic. Being one of the largest telecom entities in the UK, maintaining nearly all the public digital infrastructure in the country, they faced a significant roadblock, the legacy IT infrastructure. Openreach staff members utilized over 150 programs for every customer, frequently interleaved with laborious manual procedures. To solve the problem, they produced specific task and process maps and automated more than 200 processes utilizing tens of thousands of bots. To hasten the identification of fresh automation opportunities, Openreach additionally included an ML engine in its RPA.

Their method allowed Openreach to do away with 90% of their process documentation while reducing the average time spent on customer service by over 65%. As a result, they were able to switch the jobs of their customer service representatives from troubleshooting to up- and cross-selling.

It wasn't just one instance of imaginative thinking; the data they obtained from this change enabled their staff to match solutions to consumer needs quickly.

Royal Philips implemented a similar transformation roadmap to automate its entire finance & accounting function, saving over \$16 million and 770,000 person-hours. Mars deployed a value network platform to break down distribution data silos and reduce inventory traceability time from 4 days to a mere 2 hours, vastly reducing the impact of product recalls. A global American multinational corporation dealing in shoes, clothes, and accessories uses AI/ML demand sensing to provide its sales network with 90% more visibility into demand and inventory data across ten nations.

How to get started?

The battle for businesses to capitalize on data-driven differentiation is already well underway. They first acknowledge that the data derived from cognitive operations, powered by AI will form the basis for future processes and the productivity enhancement. Additionally, they maximized human potential by using AI and ML solutions that take on the responsibility of menial jobs and provide pertinent real-time information to each employee. They invest in value networks that are enabled by technology, enhancing supply resilience and optimising value for customers and ecosystem players.

In marketplaces where disruption is the norm, and even decades-old businesses need help to stay up with customer expectations, it is well known that data-driven organizations grow on average 30% faster than their traditional counterparts.

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From Cost Center to Gold Mine

How to Unlock Rapid Returns in Intelligent Document Processing



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Summary

Today, organizations wield AI for document processing in much the same way that 18th-century miners used hydraulic pressure to extract gold from rock. By creating a document processing pipeline, advanced AI platforms use a combination of technologies from NLP to OCR to 'wash away' the fluff and extract granular and macro insights from raw, often unstructured, document data. How can your enterprise turn this cost centre of digitization into a gold mine of information? Read on to know how.

In 1849, when the California Gold Rush was beginning to peak, independent and itinerant miners still used panning techniques to sift river gravel for nuggets of gold. But as mining consortiums replaced individual miners, it became evident that panning was unlikely to yield a profit at scale. Instead, companies began excavating tons of gold-bearing rock and used large high-pressure water hoses to blast the impurities from the ore.

Similarly, in industries like insurance, banking, logistics, and even telecom, where core processes still involve physical paperwork, Intelligent Document Processing (IDP) can fast-track data digitization and save hundreds of thousands of person-hours every month.

With gains like those, it's easy to see why so many enterprises view intelligent document processing (IDP) as a panacea for their data management hurdles. But the reality is that many IDP projects unlock only a fraction of their potential value.

Why do so many IDP projects fail?

Part of the reason is a technology-first approach to IDP implementation that fails to consider end-user needs and business value creation. Customers often equate IDP with optical character recognition (OCR), assuming that the results should drive consistent business value as long as the tech works as intended. By taking this stance, enterprise leaders set themselves up for failure and effectively deny themselves the opportunity to maximize returns on their IDP investments.

While undoubtedly concerned with extracting data from documents, the IDP process aims to convert data to structured information that can be contextualized to various business use cases. And what makes IDP different from run-of-the-mill AI deployments is the sheer complexity and variations involved with document-based data extraction.



What enterprises don't understand about IDP complexity

Industries and even individual enterprises mature and grow at different rates. Therefore, part of the challenge in implementing IDP is building a data extraction and contextualization system that is flexible enough to address evolving business cases, especially in disrupted and emerging markets.

Complicating matters are the hundreds of variations within the spectrum of enterprise documentation.

Documents often have multiple layers of information that include several different elements, including different fonts and font sizes, annotations, font styles, images, logos, checkboxes, tables, charts, diagrams, handwritten text, signatures, and more.

In addition, each document's layout can differ widely, with some documents laid out in a top-to-bottom schema while others have data laid out horizontally. Mining data from all these elements mean deploying a bevy of technologies and techniques, including NLP, deep language learning, OCR, AI analytics, and neural networks.

Since much document-based data is unstructured, training IDP data models can feel like a shot in the dark. In many cases, the initial sampling strategy has a disproportionate impact on the success of the project. For instance, a significant shipping consultancy company limited the scope of their IDP project to english-only PDF purchase orders. In reality, the company received POs in multiple languages, formats, and regional compliance variations. To affect a sampling strategy based solely on english-based text would limit the program's ability to drive value across every customer engagement.

Greasing the wheels in an IDP deployment

Conceptualizing and deploying an IDP program that delivers consistently accurate results across various document formats doesn't have to be an uphill struggle. However, enterprise leaders must stop viewing IDP as a simple point solution and acknowledge that IDP has many moving parts, all of which need to be orchestrated across the value chain.

Harness AI-Enabled document discovery

Using AI tools to find patterns in large document databases quickly keeps your document pipeline running smoothly. Contract review affords an excellent example of how AI can be used to make document discovery easier. For example, training an AI solution to tag different clauses within specific contract sets makes it much easier for contract review specialists to flag high-risk documents for review at scale.

Organizations should leverage AI to ensure that the document sample set used for IDP model training accurately reflects real-world documents. This is a non-trivial activity which cannot scale when done manually – it has to be supercharged by infusing AI in the process along with domain intelligence.



Choose pre-trained models over from-scratch builds

Building a custom AI model isn't just time-consuming and can make model-building harder down the line when document formats change. However, pre-trained models have a running start when understanding data markers and can be optimized much faster. They usually require much fewer data than a custom build to get started on document workloads.

Working with a leading US bank to automate their KYC document processing, we pre-trained a model in our environment while installing an IDP application on their on-premise hardware. Once the application was up and running, we lifted and shifted the pre-trained models to the bank's infrastructure and put it to work. The result was that they began to see returns in just three months instead of the year-long training time that many complex, custom-built AI models typically incur.

Prioritize a unified framework for testing and deployment

A unified framework makes automated testing easier, improves development traceability, and makes for shorter release cycles. A unified framework is almost essential to ensuring every cog turns in unison for complex IDP deployments that use a mélange of technologies to identify page layouts, character variations, and non-standard language use.

Building a unified framework for AI model deployment can also make extending IDP operations to new LOBs and enterprise functions easier. For example, suppose a bank wants to automate loan application data extraction. In that case, it's easier to augment an AI already trained to process data from contract review than to build a new AI model from scratch.

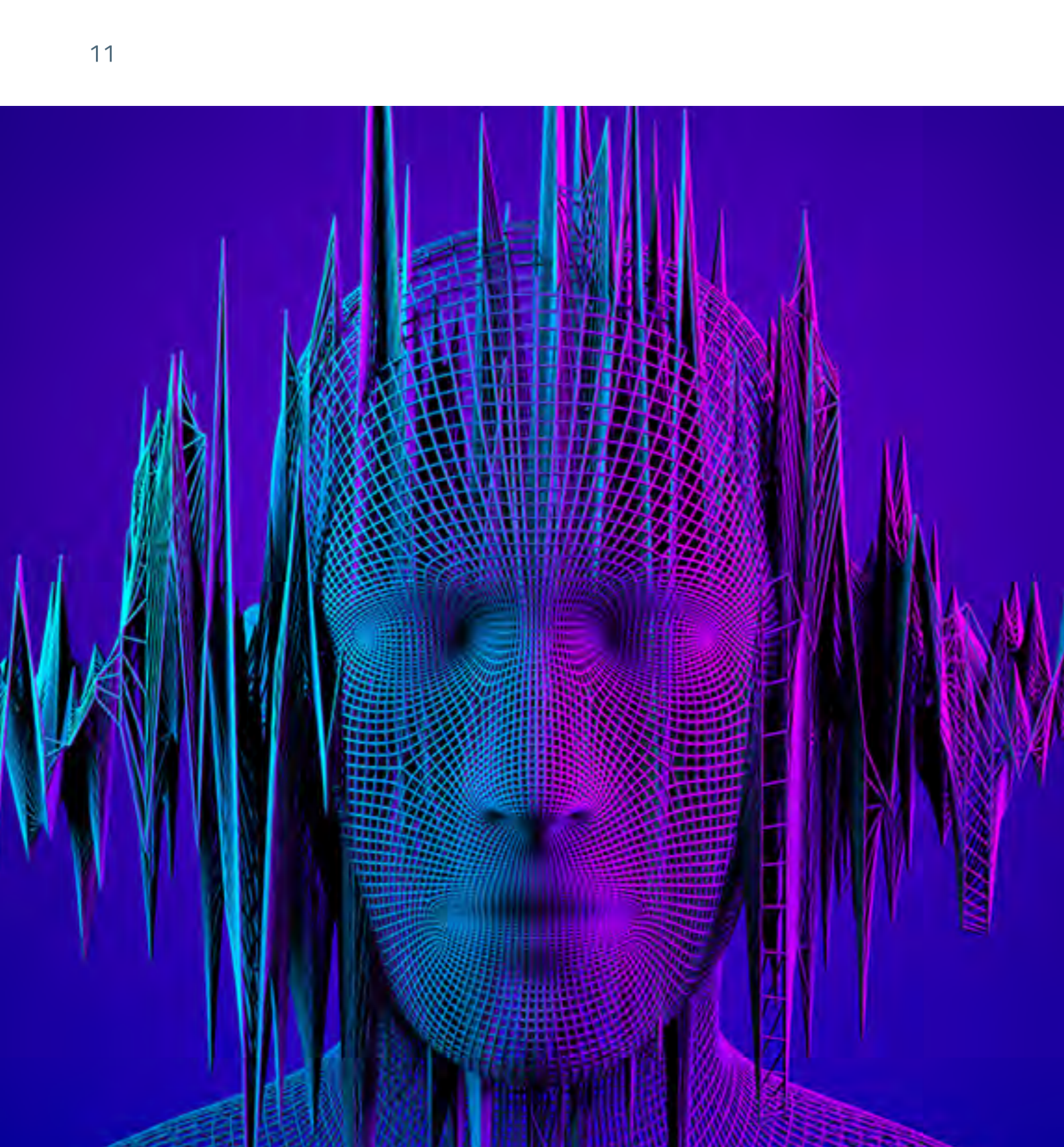
Leverage existing business process partnerships

A faster route to IDP deployment involves partnering with your BPM providers to create a domain-based sampling strategy for AI models. For example, when we worked with a major US telecom provider to automate their contract review process for tower leases, their BPM vendor provided invaluable assistance in labelling data and layout variations and validating our model predictions. By harnessing their domain expertise and our solution capabilities, the firm's contract review teams improved productivity by a whopping 60% while raking in \$21 million in savings.

Great IDP projects take a user-first approach

Successful IDP projects can improve decision speed and data visibility for business units, teams, and individuals alike. But enterprises must create a strong alignment between IDP project goals and desired business outcomes to get there. The trick is to focus on end-users – what are their needs from documentation, and how can an IDP platform deliver on those needs accurately and seamlessly? Organizations that successfully answer that question will have taken the first step toward IDP, continuously driving better outcomes instead of turning into a low-value cost centre.

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Sound AI For Sustainability

Analyzing The Symphony Composed By Our Rainforests



Kiran V Holla
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Summary

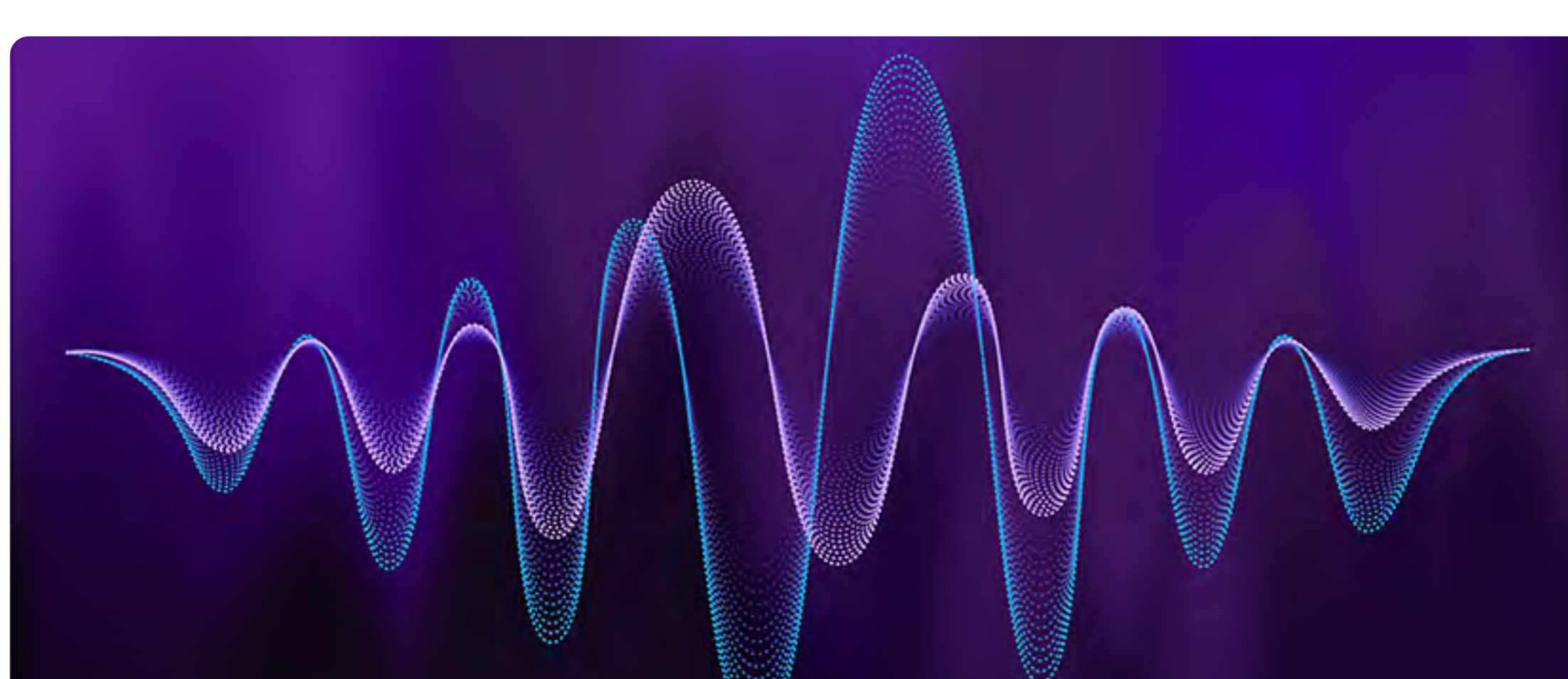
AI today is helping us re-imagine our future in this world. It is helping us unlock our true potential and imagine the unimaginable. In this interesting read, Kiran will take you through a technical rundown of how AI tech has evolved and how it can eventually help us lead a sustainable life.



On a busy Monday morning at the peak of the second Covid wave, I dialed into a client meeting from home when a drilling noise began. Possibly, it was some neighbour carrying out urgent repairs. The sound, thankfully, faded into the background after a few minutes, but from thereon, a part of me was always on alert. In case that drilling sound manifested itself again, I was ready to mute my presentation and send a real-time signal to a colleague who was also in the meeting so that she could take over. This incident triggered a faint memory of rainforests and the efforts of a man named Tophir White, who set out to invent a low-cost monitoring system to protect them!

Back in 2011, when White was volunteering at a gibbon reserve, there was a major issue with illegal logging. The account had a few guards, but it was hard to monitor the vast forests using traditional methods, which involved patrolling the jungle continuously while attentively listening for a particular sound frequency—the noise made by electric chainsaws which were used to fell trees. White resolved to do something about it.

He hung a few old mobile phones on trees at different places. Each was powered by a small solar panel and connected to a microphone to record the sounds of the forest. This data was sent to a server where an AI model analyzed them to detect noises such as chainsaws or trucks and send real-time alerts to the guards.



Sound – perception versus reality

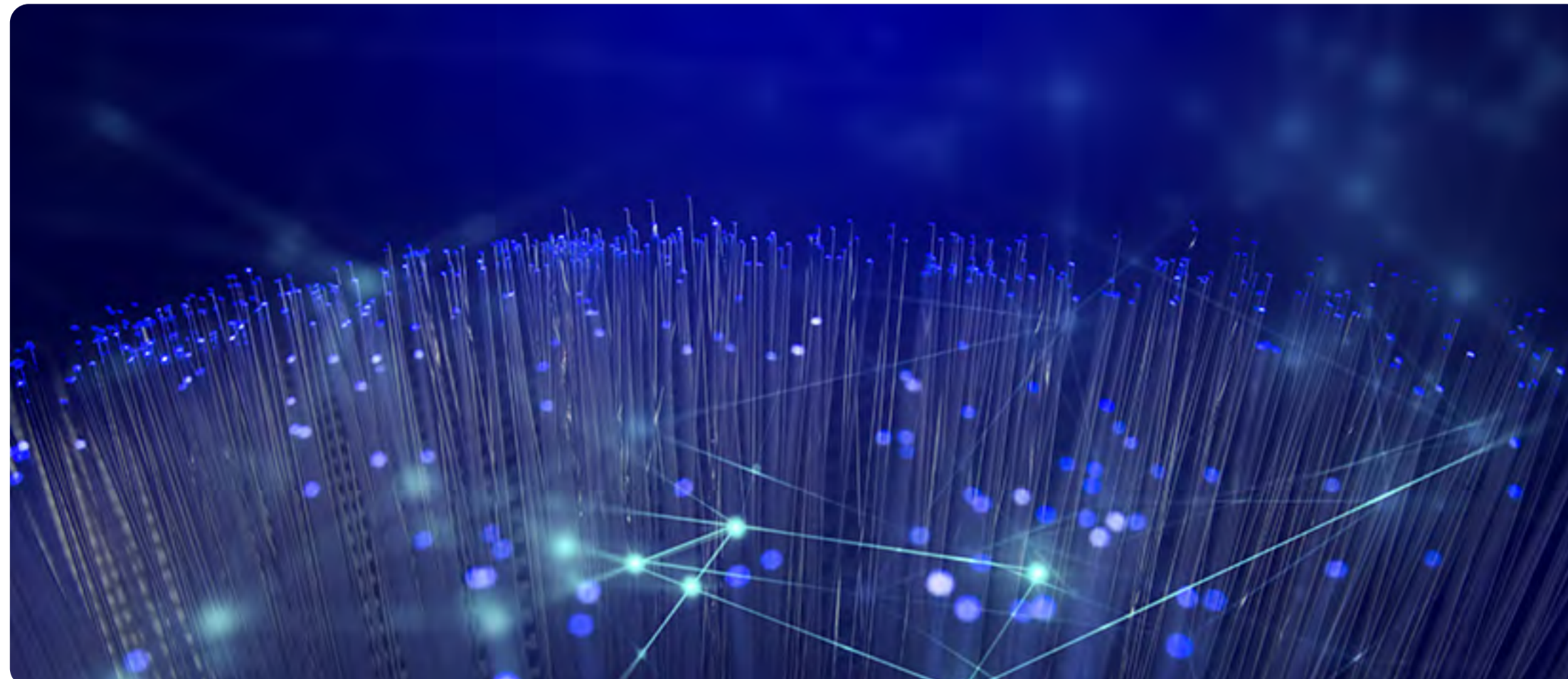
Sound AI is an insanely exciting subject. Say, we pluck the string of an acoustic guitar. The string's vibration, amplified by the wooden top plate, causes air molecules around it to vibrate. These knock into neighbouring molecules, which in turn start shaking. These cause variations in air pressure, and we call this a sound wave. When these vibrations reach our ears, we “hear” things. When these waves strike our delicate eardrum, they cause it to vibrate. This, in turn, causes ripples inside the fluid in our ears. There are hair-like cells present there which then convert these into nerve impulses which are then processed by our brain, and we “hear” sounds.

So, the sound that humans perceive is not the “real” sound in that sense. It is merely our interpretation of the actual sound wave. If an ear and brain were not around when a cracker explodes, there would be no “sound”! Now consider the opposite situation.

When we think of our favourite music tune, we can actually “hear” that tune play in our minds. Of course, this time, there is no concept of air pressure or vibrations. Our brain entirely conjures up the sound from its archives even though we may have heard the tune only once.

It seems to have evolved the ability to capture changes in vibrations across a range of frequencies over an entire time, archive it and easily replay it when necessary. While it would be interesting to speculate on how the brain achieves this miracle, let us analyze how music is traditionally stored.

Sound waves are no different from the waves on the beach or the rope waves generated in the gym. They have an amplitude and a frequency. The amplitude is simply the maximum displacement from the centre, and the frequency is the number of waves that pass a fixed point in each interval of time. In the golden era of cassettes, microphones typically had tiny magnets that vibrated with the movements of air, producing an electrical current. This current caused (other) magnetic particles on the tape to align in proportion to the strength of the signal, thereby recording sound in an analogue fashion. But nowadays, we digitize sound by ‘sampling’ the power of the wave at short intervals of time. CDs store music that is sampled 44,100 times each second. Such a 1-second sound clip can be stored in a NumPy array of 44.1K.



Blending & un-blending sounds with Fourier's Math

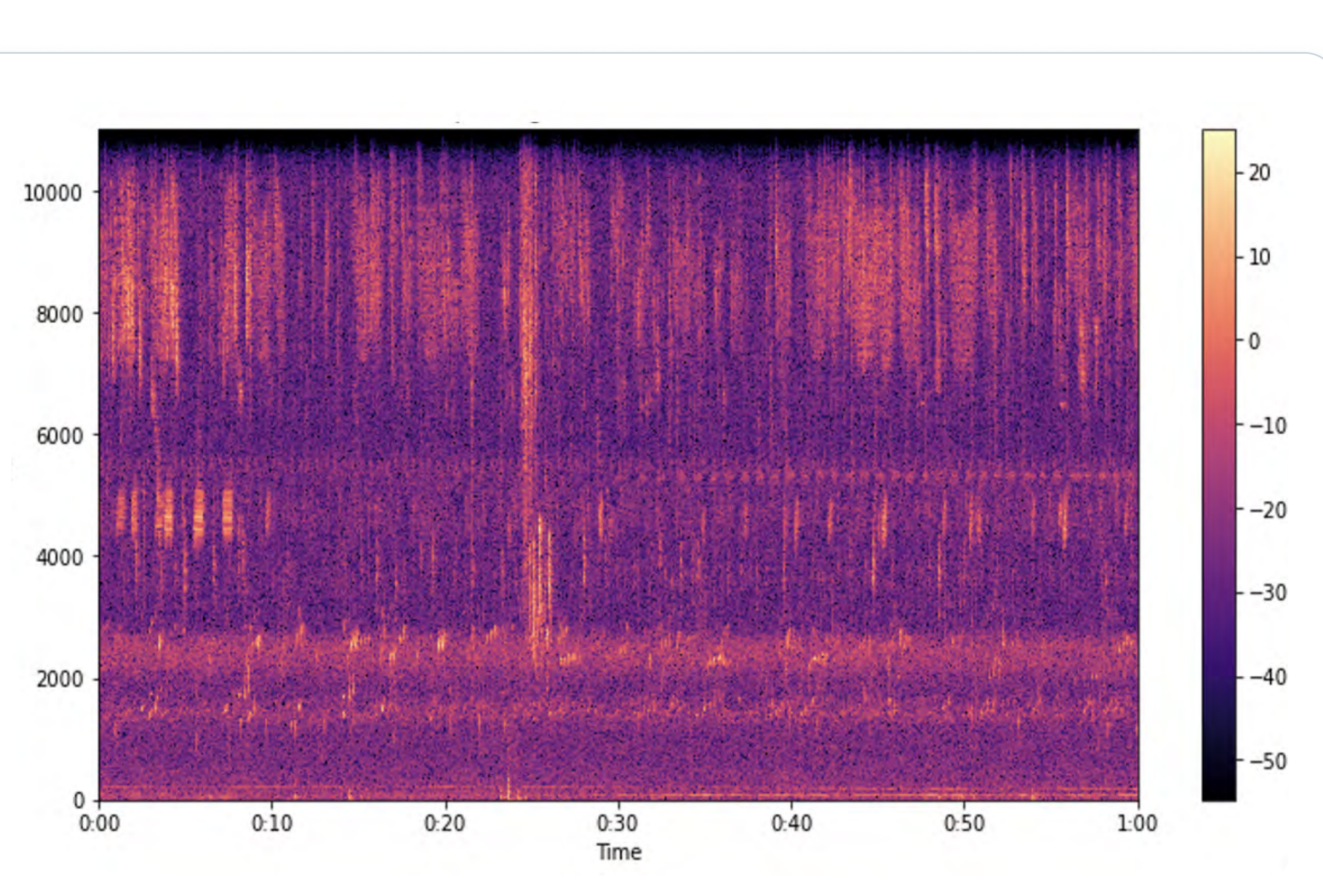
Every sound in this universe is either an individual sound wave or a combination of sound waves. E.g., the sound of music in an orchestra is just the sum of the sound waves of all the instruments being played. It would be much simpler to manipulate sound if we could find a way to “unblend” it into respective constituent frequencies—like how a prism unblends light.

This is done through Fourier Transforms (FT). With FT, you can break down any complex signal into a sum of regular sine waves. This is essentially done by applying different filters on the original signal.

Each filter corresponds to a different frequency. Imagine multiplying the original sound with a wave of a specific frequency. Closer the match, the higher the resulting summed product value. By measuring how strong the output of each filter is, we get an idea of the sound's key frequencies.

Our ears have a natural FT machine built-in. When doctors listen to heartbeats via stethoscope, (at least) 2, different sounds can be heard. Heart conditions can be detected by simply listening to the heart sound (and internally breaking it up into individual frequency constituents). While our ears do this in real-time, traditional FT was time-consuming and impractical for a long time. Things began to change rapidly when mathematicians at Princeton developed a high-speed algorithm to do FT, significantly reducing computation time. They gave it the simple name of Fast Fourier Transform (FFT). Now one could generate FTs in real time!

FTs are like a snapshot in time. We get a glimpse of sound & its constituents at a particular moment. It would be nicer to see how these sound constituents change over time. It is possible to do this using STFT (Short-Time Fourier Transform), a sliding-frame FFT. We first take the signal and split it into overlapping slices (the overlapping is done to capture the continuity). We then apply FFT to each piece. We can now plot the (logarithm of) result—with time along the horizontal axis, frequency along the vertical axis, and pixel colour showing the intensity of each frequency. The resulting heat map is an image called a spectrogram.



Example, the above spectrogram results from applying STFT on a FLAC file containing the natural sounds of a rainforest. We observe the sound repeating in patterns over time.

Also, at any single instant in time, the sound at that instant of the rainforest (which could be the sound of several insects and birds) is broken into several prominent frequencies with differing amplitudes. An image like the above can be automatically analyzed by an AI program to detect unwanted patterns, like the pattern of frequencies made by a chainsaw and immediately flag the same.

The time-series data composed of individual FTs can also be directly analyzed by an AI program. E.g., we could detect the rhythmic frequency of a chainsaw if present directly from the time-series discrete data instead of stitching together FTs and converting them into a spectrogram image. But this is done only sometimes. It is far more convenient for the AI to analyze images rather than raw data. The reason for that lies in 2012 when a student named Alex Krizhevsky and a colleague under the guidance of Geoff Hinton competed in the ImageNet competition using an unconventional architecture that beat every other competitor by a considerable margin. The architecture (later) named AlexNet harnessed CNN's (Convolutional Neural Net) effectively and advanced the field of computer vision by leaps and bounds. It, therefore, made sense to use these ready-made SOTA architectures to analyze spectrogram images. This arrangement worked surprisingly well... considering that CNNs, by nature, are translation equivariant. For CNNs, a ‘face’ is a ‘face’ irrespective of where it appears on the image. Spectrograms are not invariant in that sense. The y-axis is the frequency. Hence, a pattern at the bottom of the spectrogram is not invariant to the way at the top. Yet, they work far better than time-series techniques. Perhaps, the sheer amount of innovation that has gone into developing CNN architectures and the scope for transfer learning seems to have helped.

Rise of the transformer architectures – non-equivariant spectrogram analysis

The spotlight shifted away from image processing towards Natural Language Processing (NLP) with the publication of a 2017 paper by Vaswani/team where they harnessed the power of transformer architecture. The following 4 years saw tremendous interest in NLP, but starting in 2020, Vision transformers were introduced. We can now leverage the robust transformer architecture in Computer Vision instead of CNNs with better results. The SOTA in vision as of 2021 was the Swin transformer by Microsoft. Exciting times are back in Vision, and like before, the field of Sound AI can piggyback on this bandwidth. Transformers in vision are more apt for Sound AI than CNNs because they are generic and have significantly lower inductive biases (like translation equivariance), unlike CNN. This should make spectrogram analysis more effective.

We can also use Fourier's equations to “re-blend”, i.e., recreate the original sound from its constituent frequencies. We could choose to omit specific frequencies when re-blending. Had I captured the audio of my client meeting that day, I could have used FTs to split the sound into its constituent frequencies, isolate the sound frequency made by my friendly neighbour's driller, and re-blend all frequencies barring that one. I would end up re-creating the original sounds of the meeting without the drilling sound. Doing that in real time would mean we could take client calls with a driller in full blast behind us without the client becoming aware of it.

But I am more excited about applications of this technology in the field of sustainability—be it conserving rainforests, preventing illegal poaching, identifying whale song patterns to track their movements across the deep seas, or monitoring endangered species.

The sight and sounds of a rainforest are like a pleasant assault on our senses. If listening to it gives you an instant high, then hearing the faint monotonous sound of a chainsaw intermingled with it might bring a look of consternation on your face. Illegal logging strips this planet of millions of acres of natural forest annually. Thanks to the development of technology and the will of people like Tophir, we can now develop automated solutions to detect and flag unusual sounds when listening to the beautiful symphony sung by our rainforests.

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Building The Supply Chain Of The Future

Why Connected Value Networks Are Replacing Linear Chains



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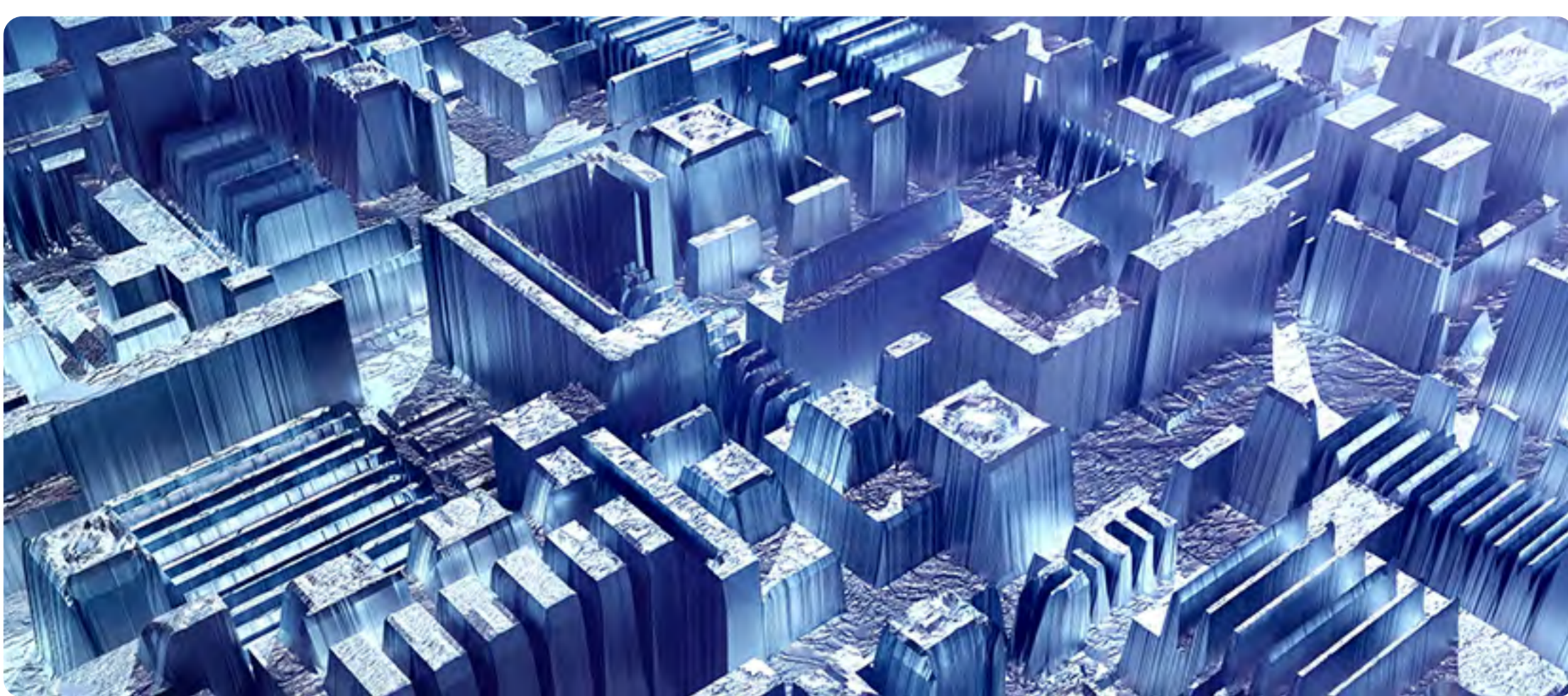


Summary

Global supply networks are under tremendous pressure, especially in the retail and consumer goods (CPG) industries. As they face unprecedented demands and rising consumer expectations, global supply networks rapidly evolve to deliver more convenient, faster, and frictionless customer experiences. This is where a connected Value Network helps drive greater efficiency, agility, and responsiveness. Read on to learn how replacing traditional linear chains are delivering greater value and building the supply chain of the future.

Throughout the pandemic, global supply networks faced a barrage of problems, particularly in the retail and CPG industries. Ongoing demand fragmentation, the ensuing supply chain disruption, and a renewed focus on resilience and flexible distribution have spurred enterprise leaders to rethink how supply chains work.

In two years, successive lockdowns triggered a spike in e-commerce adoption, and trends show little sign of receding even as the pandemic abates.¹ With the onset of demand fragmenting from stores and shopping districts to individual households, the goalposts have well and truly shifted for demand planners everywhere. And as fulfilment expectations skyrocket, brands need help to fight an onslaught of logistical challenges. Reports show that global retail stockouts rose an unprecedented 325% between 2019 and 2021, leaving store shelves empty and consumer loyalty eroded.²



Supply chain leaders should demand more from digitalization

Lack of real-time supply chain data can mean more than occasionally delayed shipments. In markets like the US, where 73% of shoppers altered brand preferences amidst COVID-fueled retail disruption, a poor response to evolving consumer behaviour can heavily impact the enterprise's bottom line.³

Given the scale of the disruption, it's obvious that supply chain leaders have earmarked demand planning, supply planning, and inventory optimization as core areas for digitalization in the coming years. But intentions aside, many in the industry are still playing catch-up.

Gartner surveys show that 70% of supply chain executives need help to align strategy and execution plans, partly due to the need for more data visibility across the value chain. In addition, most supply chains today still use legacy tracking tech and manual processes to manage their operations, especially in developing economies. With digitally connected systems, extracting insights from fragmented databases across the value chain is efficient and effective. A new strategy is needed.

How connected enterprises build more intelligent, more resilient supply networks

Discarding linear supply chain models in favour of an 'always-on,' always-connected ecosystem of manufacturers, warehouses, logistics partners, and distributors can go a long way towards easing the shock of volatile demand swings. But this approach means deploying integrated platforms to monitor, process, and share data with every ecosystem participant.

To create a foundation for the future supply chain, enterprises need to rethink how they use AI to amplify human potential and retool systems to support cognitive operations while harnessing the agility and resilience of value networks. This includes,

1. Using automated ETL and computer vision to scan and digitize data from documents quickly
2. Creating real-time data visibility and info-sharing capabilities for every stakeholder within the supply network
3. Taking an automation-first approach to operations, reducing human errors, and boosting efficiency
4. Leveraging AI to extract insights that accelerate and enable data-driven decision-making at every level



Intelligent supply ops are a force multiplier for success

The trick to building flexibility, scalability, and product traceability into supply networks is having access to accurate data at every node, milestone, and touchpoint. And that means making the infrastructure zoom in from a global view to individual SKUs. The proof is in the pudding – reports from consulting firm McKinsey show that enterprises that capture and leverage end-to-end supply chain data are much less likely to be hamstrung by disruption in 2022.

The business benefits of intelligent supply operations are undeniable. When we worked with a globally renowned algo-bev distributor to enhance their supply chain visibility, we saw stockouts drop by over 15% within multiple geographies. And this isn't an isolated case of success. The leading apparel manufacturer that improved demand decisions and employee satisfaction across a worldwide distribution network; a consumer food firm that slashed product trace times from 4 days to 2 hours; the CPG company that used real-time channel data to improve case fill rates by 8-10% – these stories stand testament to the competitive advantage that digitally connected supply networks can deliver.

Enterprises can build a truly intelligent value network by connecting the stakeholders using digital platforms. A network that functions as a self-optimizing system gathers data from every node to paint a single-pane view of the larger whole. Using the insights to create engaging, hyper-personalized experiences for every stakeholder.

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Reframing Fragmented Demand

How AI Can Unify CPG Demand Signals

This article is based on a CGT webinar with Suresh Prahlad Bharadwaj (AVP, Lead Platform Manager, EdgeVerve), a reputed Supply Chain Analyst from IDC and Lisa Johnston (Sr. Editor, CGT)

Summary

CPG companies are increasingly adopting 'omnichannel thinking' that delivers a consistent experience across all channels. With a surge in online shopping, this is becoming an essential differentiator for them. To succeed in the omnichannel world, however, you must create a unified demand signal and a unified data foundation for your entire enterprise. Read on to know how you can do that for your enterprise.



It can be spectacular to see a maverick soccer player manoeuvre his team out of a losing situation and drive a victory almost single-handedly. These moments are celebrated, immortalized, and turned into an enduring cultural legacy in sports. What viewers often disregard, though, is the coordinated team effort that helps the star player set up every goal.

But what if every player independently formulated a goal-scoring strategy and set out to execute it? The results would likely end in a subpar performance, regardless of the team's talent roster. This is often the state of affairs in departmental enterprise operations, especially in the CPG industry.

The time-honored operations planning route in most CPG companies has traditionally been siloed and involves high levels of data latency. Supply chain, marketing, sales, and merchandising departments have their data sources, each creating an independent demand forecast to fuel operational planning. The result is that purchase decisions, fulfilment planning, and pricing strategies all dance to their departmental tunes, with minimal (if any) intra-enterprise data sharing.

Traditionally, each of these forecasts tracks products, geographies, and channels. But as 'omnichannel thinking' gained currency, CPG leaders realised that consumers didn't necessarily shop within specific channels. Instead, they tend to be channel-agnostic and shop with their preferred brand. This set the stage for unified commerce, where omnichannel is table stakes, and brands seek to engage consumers wherever they might be.

Successful unified commerce, however, depends on creating unified demand signals and establishing a common data foundation for the entire enterprise.



Tackling CPG demand volatility and fragmentation with AI

A lot has been said about supply chain resiliency since 2020, but comparatively little on demand sensing. But the disruption of the past three years has led CPG companies to take a sharper look at their forecasting methods. Exponential e-commerce growth means that demand signals no longer originate entirely from stores but also from individual households and organizations.

However, creative enterprises have the means to make demand fragmentation work to their advantage. Back in 2020, a few CPG companies found a way to quickly derive accurate demand insights by correlating demand fluctuations with the rise of COVID infections in a given geography. While this technique didn't yield highly precise, granular results, it gave these enterprises a broad view of how and where to position their production inventory – much more than their competitors had to work with at the time.

Although every supply chain leader dreams of the mythical 100% accurate demand forecast, it's no secret that traditional forecasting leans heavily on historical data. Throw in black swan scenarios like a global pandemic and the war in Ukraine, and long-term forecasts go out the window, along with any S&OP strategies that relied on them.

To leap the hurdle, savvy supply managers use demand sensing tools to make short-term demand predictions via AI and a constant stream of real-time data. The technique is beneficial when supply chains must quickly adapt to the volatile demand changes common to disrupted markets.



Connecting visibility to agility

A familiar story in CPG is the disastrously high data latency when measuring the performance of sales promotions. For example, a major cosmetics brand that leverages coupon-based promotions regularly needed more POS data visibility. At the same time, their data latency for promotion performance was measured in months. This meant that real-time promotional interventions were impossible to effect and that all insights were effectively delivered in hindsight.

Their solution was to deploy a demand sensing tool that automated sales data captured across every channel and harmonized it using AI/ML technology. By the end of the implementation, they could access 100% of coupon-based promotion performance data within just 72 hours, as opposed to 3 months.

For many in the industry, it's clear that adding a demand sensing platform to their suite of forecasting tools is undoubtedly the way forward. But the question then arises, can they react fast enough? Do these enterprises have the infrastructure to adjust their plans based on a near real-time stream of insights?

In a post-pandemic world, CPG enterprises are turning to complex, interlinked value networks instead of linear supply chains.

Developing the agility to take advantage of demand sensing rapidly means creating unprecedented collaboration and data visibility along the entire value chain. Within these ecosystems, unified data visibility for every internal and external stakeholder isn't just good to have but the cornerstone of competitive advantage.

Connected enterprises have taken this lesson to heart. By linking every source of internal and external data to a master data management system, connected CPG enterprises can achieve a unified picture of demand. In turn, the MDM creates a unified data foundation, helping departments synchronize operational planning while enabling swifter pivots in production and logistics.



Measuring sustainability across the supply chain

Cost is undoubtedly a significant priority in sourcing decisions, and rising concern around ESG metrics has forced CPG manufacturers to rethink their focus.

Timely deliveries are essential, but so is ecological impact. Sourcing a supplier today means taking a long hard look at their resource consumption, labour practices, waste generation, and carbon footprint, in addition to cost and efficiency metrics.

And instead of simply reporting this information, visionary CPG enterprises are looking to operationalize ESG data. This means only choosing to work with suppliers that conform to eco-friendly emissions, sourcing, and consumption standards. But finding transparent data on ESG can be difficult and is highly dependent on voluntary disclosure.

Interestingly, among connected enterprises, the same tools used to create visibility among Tier 1 and Tier 2 suppliers are coming to the rescue. Alongside inventory statuses and production rates, value networks can be extended to track Scope 3 emission data and ESG impact at various nodes in their supply network. The data can then be fed into a system that ranks suppliers on ESG performance in real-time, making it effortless to contract with the right partners.

Don't drown yourself in data

Given the amount of information that demand sensing incorporates, it's easy for the unseasoned analyst to be overwhelmed by the sheer volume of incoming data. And the sort of data engineering and rearchitecting demand sensing calls for is often too complex for the average IT department. Via strategic IT partnerships, CPG organizations can access a wealth of expertise that may not be readily available in-house. In addition, data engineering partners often deliver faster implementations and a richer automation footprint than can be achieved by an internally orchestrated demand sensing operation. And besides, spending hours and days sifting through data aren't what most CPG organizations are built for – sticking to core CPG competencies and partnering with a data engineering firm is almost always the smarter choice.

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How To Monetize Information Locked In Your Documents

A Go-To Playbook For Media & Telecom Enterprises To Capitalize On Intelligent Insights

Badri Devalla
Senior Director & Head – AI & Automation Solutions, EdgeVerve



Summary

Do you have a substantial amount of unstructured information sitting within documents on your intranet? If so, you are not alone. Although unstructured data is a major contributor to information overload, it cannot be ignored. There is a need to realize that the story is not about document structure and kind; but about the unstructured data and insights trapped in these document types. Read on to know how insights from these documents can help deliver greater value.

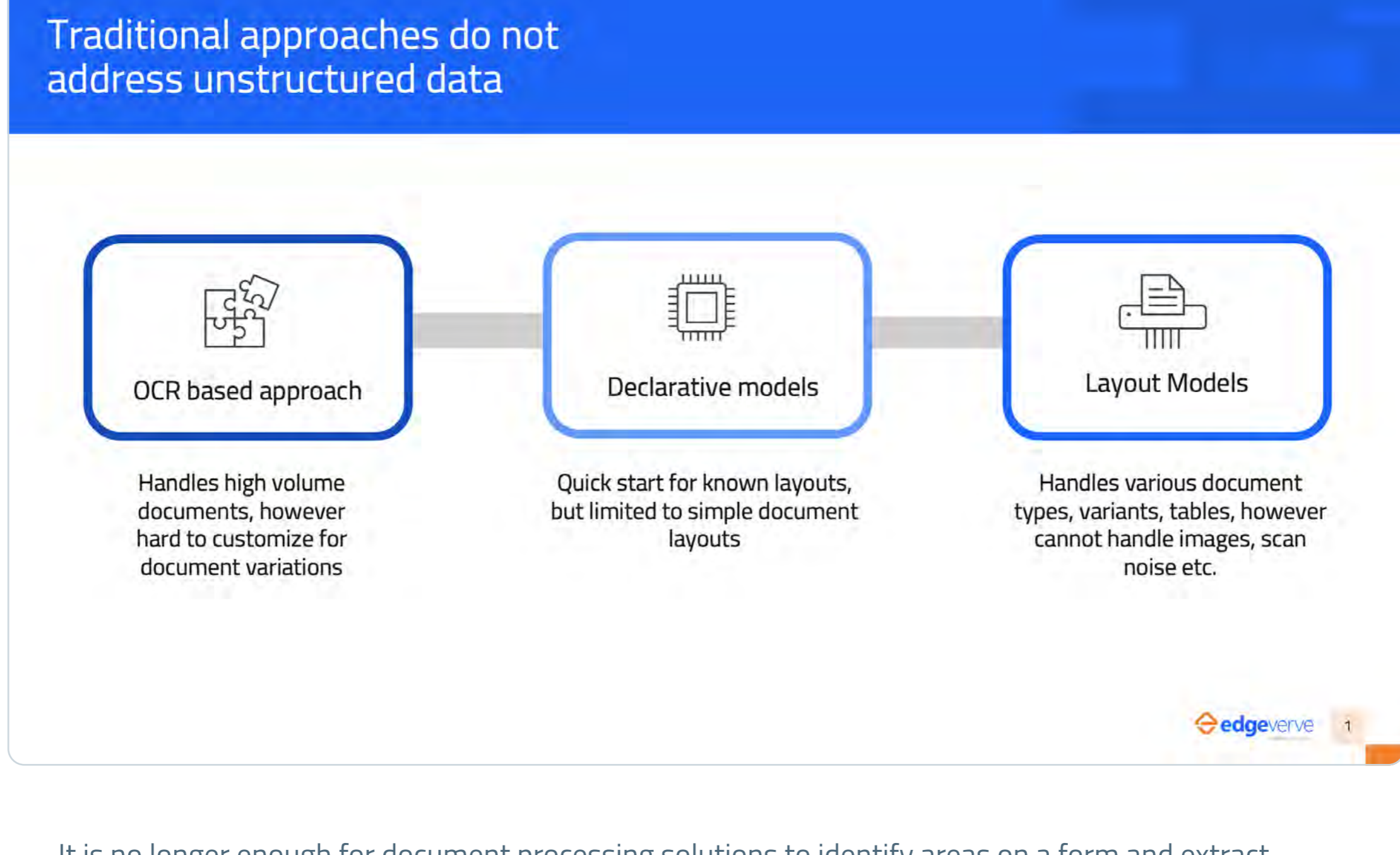
Media and telecom (M&T) leaders are waking up to the value of unused unstructured data in their organizations. Moving beyond the traditional use cases of document digitization, such as invoice processing, order form processing, etc., they have started looking at unstructured documents in a new light. They want to uncover new insights from millions of these documents to find answers to pressing business issues such as:

- How do we reduce costs on legacy network operations?
- How do we optimize power tariffs or tower lease rentals?
- What is the revenue assurance for enterprise billing is given decades-old contracts with 100s of amendments?
- How do we respond efficiently to subpoenas?
- How do we ensure contract compliance with and from our partners?

Unfortunately, unstructured data's unique properties make extracting relevant, accurate, and timely insights challenging. Recently, we had a conversation with a telecom company that wanted to understand the threat of eviction based on their tower lease agreements. They had three million documents of 32 document types. It was almost impossible for them to get any usable insights from the more commonly used OCR-based methods.

Why traditional extraction models don't work anymore

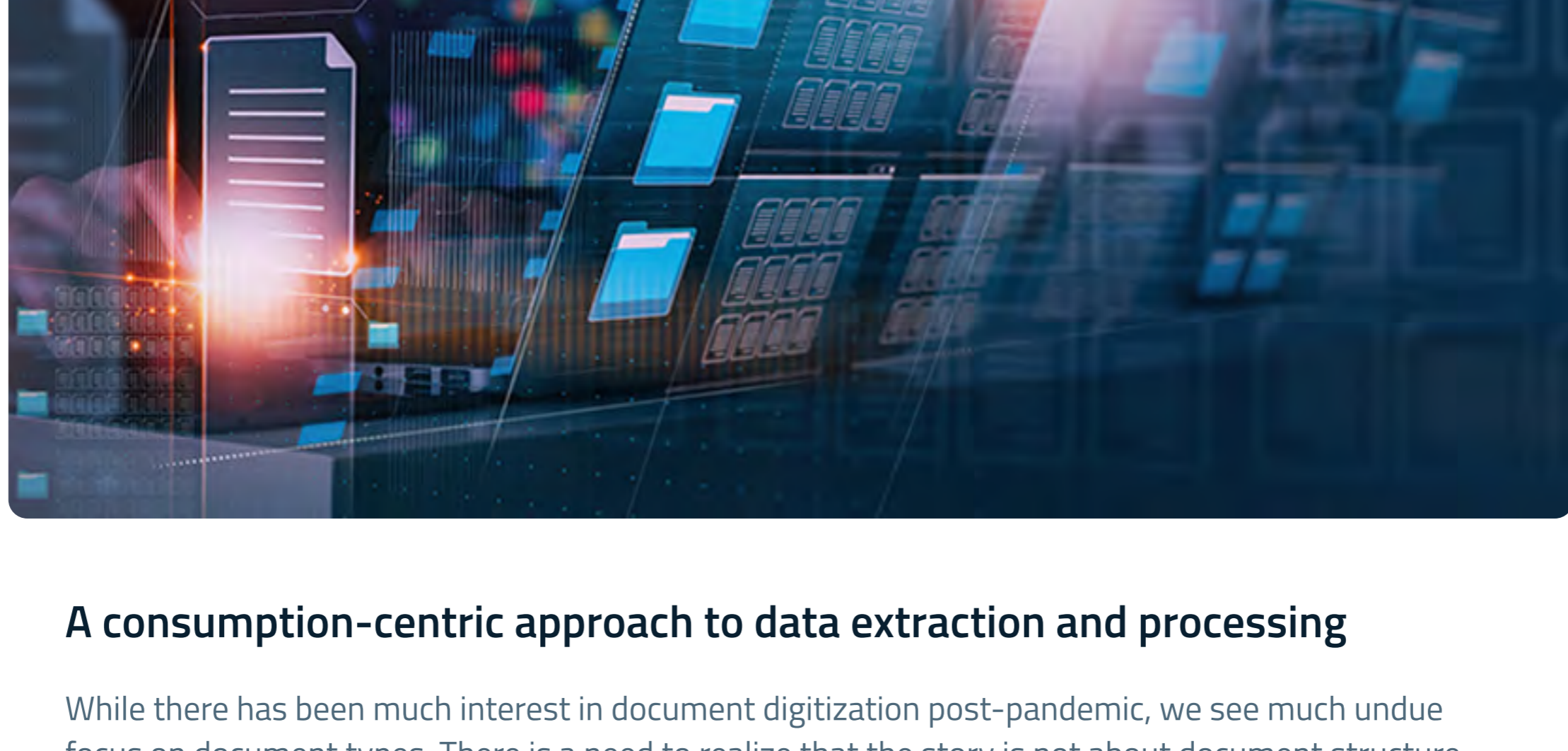
Traditional OCR-based approaches are suitable for text extraction but fail when presented with tables, charts, logos, etc. In addition, document volumes amplify the need for high accuracy and straightforward processing. Poor-quality legacy documents become even more challenging for traditional document digitization models to process.



It is no longer enough for document processing solutions to identify areas on a form and extract individual fields – even when documents are natively digital. Taking a layout-based approach to determine field values isn't a scalable option. It fails quickly in the face of unstructured data such as logos, images, multimedia files etc.

With unstructured data volumes growing 3x faster than structured data, these challenges will only escalate if enterprises look at new approaches.

To be business-relevant, data processing solutions need to extract the right sentiment and fields with the right context so that a downstream human, bot, or system can consume it. For example, a billing system needs to know the relevant pricing terms for a specific service to generate an accurate invoice. A bot will need to have a trigger to execute any action. And even a human will need the right information to take appropriate action. For instance, to plan a PR campaign, the public relations team for an entertainer will need to know the audience's sentiment – what the news and media are saying, are the reviews positive or negative etc.



A consumption-centric approach to data extraction and processing

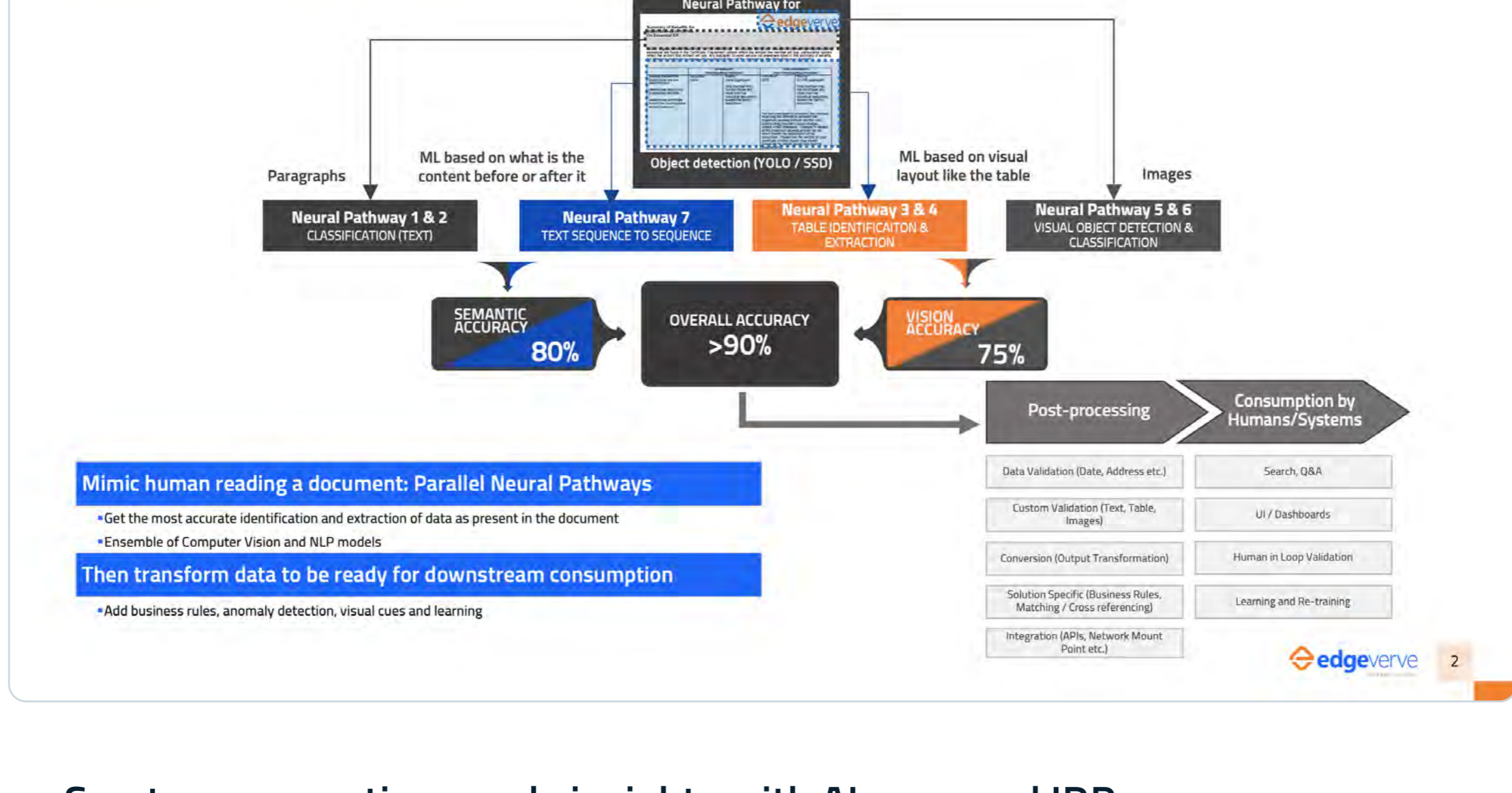
While there has been much interest in document digitization post-pandemic, we see much undue focus on document types. There is a need to realize that the story is not about document structure and kind; but about the unstructured data and insights trapped in these document types.

The right technique enables faster extraction of relevant data to the highest level of accuracy by optimizing for:

- Volume** – number of documents processed for a use case
- Variety** – variations of document structure, location of information, info hidden across documents, types of unstructured data like checkboxes, tables, lists, logos etc
- Velocity** - how fast can relevant data be extracted - from real-time to batch

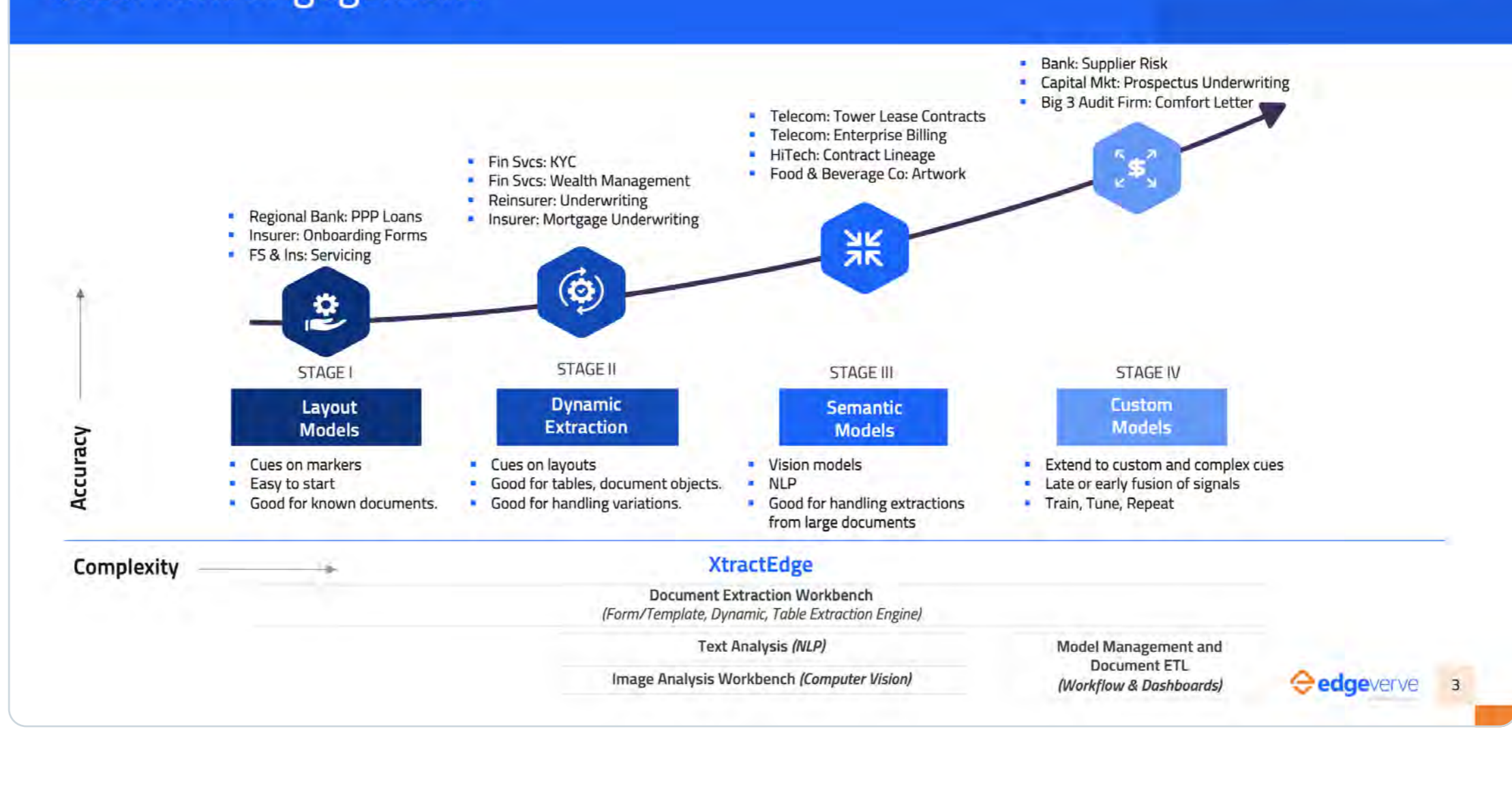
To get downstream benefits or impact revenue, unfortunately, most systems cannot use this extracted information in the native form; it usually needs some transformation. For instance, a system, human, or bot will seek insights on "what is my supplier risk based on existing contracts?" or "Why didn't the client pay the billing invoice?" To answer these questions, the extracted data must be post-processed for downstream systems. This is where the ROI is.

The critical thing for scaling these solutions is to remember not to mix extraction and consumption – don't apply rules for end consumption during extraction.



Create consumption-ready insights with AI-powered IDP

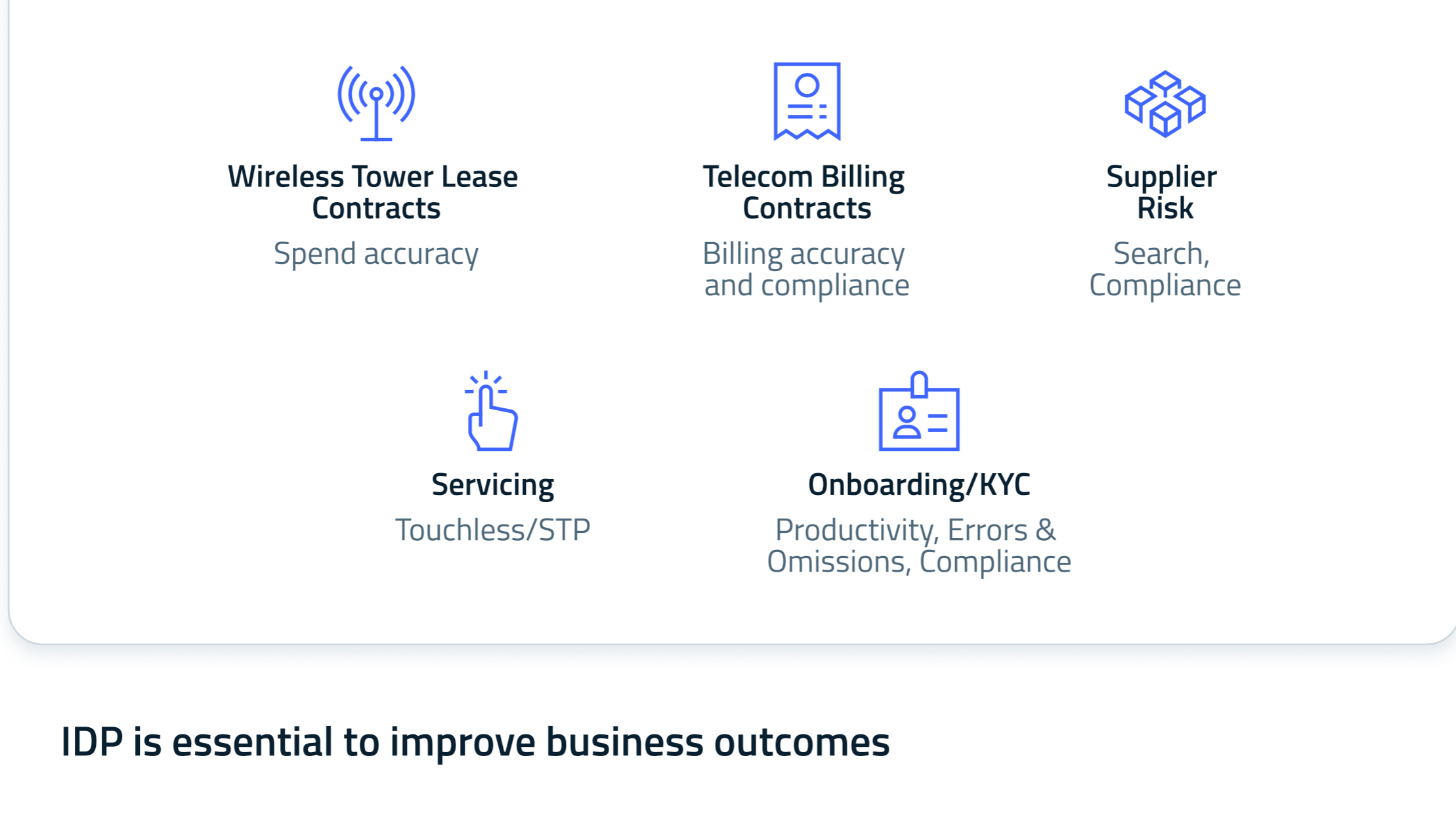
AI-based document processing should mimic human behaviour. Think about how you process unstructured data. Let's say, for example, you look at a contract at work. You don't immediately start reading it word by word. You look at the entire document structure, determine where the information is, gauge which parts of the contract are critical to you, and how different colours, imagery, logos etc., are used. You comprehend the document through multiple neural pathways. Extracting unstructured data with AI-based IDP is similar.



In AI-based IDP, an ensemble of models – computer vision models, natural language processing models, table extraction models, etc. – are simultaneously applied to the document. An ideal platform would:

- Tune the output of each of these models across different extractions to get the highest accuracy extraction of one element – a logo, a table, an image etc.
- Constantly validate everything it extracts to meet high accuracy expectations
- Post-process this data with domain, company, and use-case-specific rules and make it suitable for downstream consumption.
- Provide telemetry to improve performance and accuracy – at what level do you need more inputs, is the accuracy trending lower, or do you need to train the human or the machine?
- Be domain-agnostic, highly trainable, and flexible enough to mould outcomes for any use case.
- Should be able to add human-in-the-loop to manage exceptions easily and, over time, improve the system's performance.
- This info is already covered above. Have added a bit on post processing.

The right platform will solve the unstructured data problem end-to-end – from different ingestion techniques, sources, and how businesses consume it.



IDP is essential to improve business outcomes

Relying on human interventions to unlock insights from unstructured documents creates productivity issues, revenue leakage, compliance concerns, and impacts speed to revenue. Automated extraction of consumable information can go a long way in solving these problems.

The next step for your business

Document digitization is the stepping-stone to scale automation across your enterprise. In a world that is rapidly moving to end-to-end automation, the right solution for document processing is going to be crucial for holistic digital transformation. The need of the hour is a solution that can process millions of business documents to deliver the desired outcomes quickly, efficiently, and economically.

To really unlock business value with IDP, look beyond traditional use cases and dig deeper to uncover use cases embedded in business operations that can improve revenues or costs. And then look for a technology that can support all these various use cases.

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



Embracing Emerging Technologies

For Business Success And Competitive Advantage



Andrew Duncan
CEO & Managing Partner, Infosys Consulting



Summary

The advent of technology has enabled businesses and organisations from all verticals to improve the execution of their operations efficiently. From healthcare, business & financial services, retail, etc. – emerging technologies can be leveraged strategically to gain a competitive advantage. Increasingly more organizations are using diverse technologies such as big data and analytics, robotics, artificial intelligence (AI), Internet of Things (IoT), automation and cognitive computing for operational efficiency. Read on to know the impact of embracing these technologies for your enterprise growth.

Every day, we see new technologies emerging to solve organizational challenges. Choosing the right platform has become an intricate process, as determining whether it matches the business needs precisely can be difficult. Leveraging the right technology in the right way can help companies of all sizes address current and emerging challenges, increase market outreach, and gain a competitive advantage.

Leveraging emerging technologies for business planning

We live in a technology-dominated and fast-paced world. Businesses are debating how investments in technology and its programs can usher us into the new digital transformation era.

Predictability is critical in many business decisions, and technology that offers this precision can help key decision-makers call the shots more confidently.

We help our customers determine today's concerning factors and strive to generate solutions for tomorrow's challenges by harnessing futuristic technologies. These challenges could be potential problems or opportunities that still need to be distinguished. However, vanquishing them will enable your organization to enter new markets and create a power shift in the industry. Technological advancement is one crucial aspect that business leaders actively engage in for effective business planning.

Emerging technologies influence business readiness

The efficiency of an organization's innovation, operational resilience, customer experience, and overall success are all significantly influenced by emerging technologies. Executives must strategize and embrace adopting new technology to future-proof their organization and guarantee a stable operating model.

Several market-leading businesses are intersecting business strategies with technology to take robust action on significant investment decisions. An organization that considers technology part of its core business will always have a competitive advantage.

Companies are now changing their market approach because of emerging innovations in business-focused technology. The implementations are causing dynamic growth in solving complex business issues, enhancing resilience, and gaining insights for immediate client planning.



Overcoming tomorrow's problems today

There are as many risks as opportunities in the present business world, if not more. Organizations of all stature across industries are facing challenges out of their control, such as inflation, rocketing energy costs, interest rate hikes, supply chain disruptions, changing customer interests, cyber threats, and workforce reskilling.

Additionally, companies are increasingly adopting a sustainability focussed approach that delivers value for themselves and society at large. A common denominator is how to utilise data to fuel robust performance. It is startling to see how massive the data is in quantity.

2.5 quintillion bytes of data are produced each day, a rate that is only snowballing because of the interconnectedness of digital items (e.g., the Internet of Things). 90% of the world's data has been created in the past 2 years alone. Google currently handles over 40,000 searches every second, reaching just about 3.5 billion daily searches. In a single day, a connected automobile generates 4 TB of data. In addition, the global e-commerce market will touch \$6.7 trillion within the next two years.

Businesses can now build their risk-free future. This newfound wealth of data created by organizations and consumers will redefine how business is done forever, thanks to those pioneering in capitalizing the new-age gold. Maximizing today translates directly into solving crucial challenges and discovering new opportunities for all stakeholders. Emerging technological innovations remain the central aspect of all action while also playing a significant role in future decision-making.

Data-driven insights helping navigate business risks and opportunities

Emerging technologies like AI, ML, augmented reality, IoT, and quantum computing assist organizations in scaling as needed, enhancing resilience, optimizing infrastructure investments, and accelerating new product or service launches. These cutting-edge technologies help companies significantly change their operations to increase revenue and surpass competitors. The vast amounts of data generated enable organizations to establish a circular economy within their supply chains and the products they produce, leading to new business models.

Organizations are leveraging insights from connected products (IoT), implementing new servitization-based business models, and transforming product-based companies into service-oriented organizations.

For example, the integrated production shopfloor uses AI and prediction-based models, enabling manufacturers to shorten design-to-delivery cycles and modify products in near real-time to stay ahead of customer demand. This allows them to offer new or improved products, enable on-demand inventory through supply/demand forecasting and maximize sales possibilities while addressing sustainability objectives. The renewable energy sectors are fuelled by advanced digitalization – opening up unlimited opportunities for new energy sources critical to our future.

This is just the beginning of how the latest tech-enabled innovations will help organizations become powerful enough to disrupt the entire industry. There is no other time now to run a business or be a technology expert, as the stakes are compromising for a sustainable future. Solving today's yet-to-be-known challenges can completely alter how the company runs.

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SAFE HARBOR

Certain statements mentioned in this release concerning our future growth prospects are forward-looking statements regarding our future business expectations intended to qualify for the 'safe harbor' under the Private Securities Litigation Reform Act of 1995, which involve a number of risks and uncertainties that could cause actual results to differ materially from those in such forward-looking statements. The risks and uncertainties relating to these statements include, but are not limited to, risks and uncertainties regarding fluctuations in earnings, fluctuations in foreign exchange rates, our ability to manage growth, intense competition in IT services including those factors which may affect our cost advantage, wage increases in India, our ability to attract and retain highly skilled professionals, time and cost overruns on fixed-price, fixed-time frame contracts, client concentration, restrictions on immigration, industry segment concentration, our ability to manage our international operations, reduced demand for technology in our key focus areas, disruptions in telecommunication networks or system failures, our ability to successfully complete and integrate potential acquisitions, liability for damages on our service contracts, the success of the companies in which Infosys has made strategic investments, withdrawal or expiration of governmental fiscal incentives, political instability and regional conflicts, legal restrictions on raising capital or acquiring companies outside India, and unauthorized use of our intellectual property and general economic conditions affecting our industry. Additional risks that could affect our future operating results are more fully described in our United States Securities and Exchange Commission filings including our Annual Report on Form 20-F for the fiscal year ended March 31, 2018. These filings are available at www.sec.gov. Infosys may, from time to time, make additional written and oral forward-looking statements, including statements contained in the company's filings with the Securities and Exchange Commission and our reports to shareholders. The company does not undertake to update any forward-looking statements that may be made from time to time by or on behalf of the company unless it is required by law.

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