



Automation Singularity
Led by Humans

 **edgeverve**
An Infosys company

Automation Singularity Expanding the horizons of enterprise capability



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Executive Summary

Enterprises are being driven to rethink their business models given the rapidly evolving consumer behavior and the changing dynamics of market competition. Today's consumer expects products and services to be extremely personalized and offered based on their current context. The abundance of choice and ease of access has meant that brand loyalty is on the decline, with customers choosing companies that provide the best experience and price-performance.

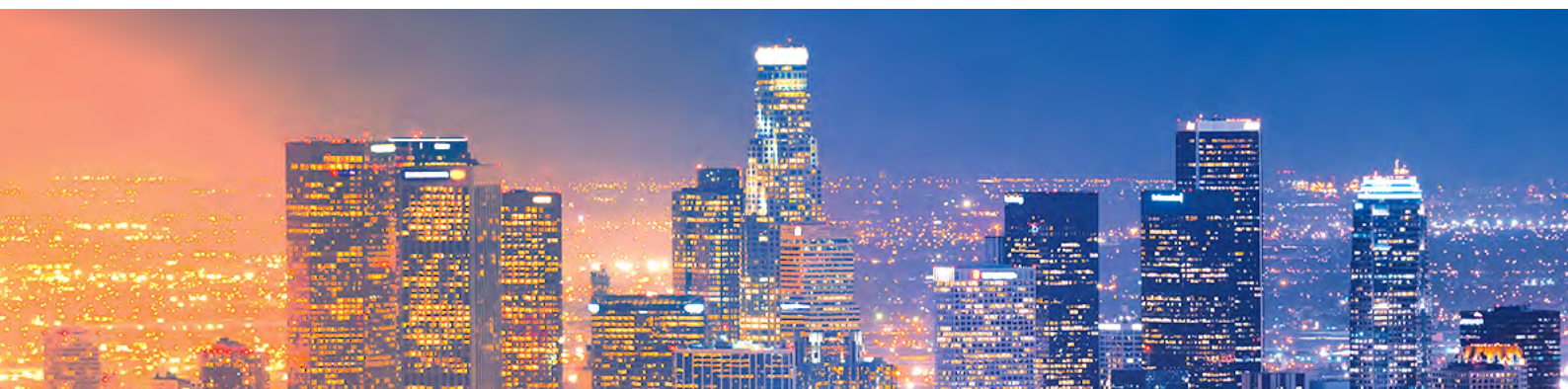
Competition is now global and increasingly vertical-agnostic as evident in the disruption by shared-economy companies such as Uber and Airbnb, and new-economy conglomerates like Amazon. Organizations can no longer compete solely on price, efficiency, or reach. They need to differentiate by reimagining the design and delivery of products and services, and that requires creativity. Given the need to remain customer-centric and competitive, enterprises have to revisit their operating models, redesign processes with a focus on customer journeys, and shift focus from merely efficiency to maximizing business impact.

At EdgeVerve, our experience in deploying intelligent automation to solve business challenges for the world's largest companies shapes our philosophy that enterprises will need to develop new capabilities executed through a unified and coordinated human-bot workforce. Human specialists will drive customer orientation through creativity and empathy, while digital workers complement these efforts through extreme productivity and consistency.

In this white paper, we introduce Automation Singularity, an EdgeVerve concept supported by a framework to guide intelligent automation strategy for enterprises. Automation Singularity represents a highly customer-centric and agility-oriented approach to intelligent automation predicated on three fundamental assertions:

1. Enterprises will need to sketch end-to-end customer journeys and develop an automation strategy that impacts key touchpoints in that journey
2. Ensuring a seamless interaction between the human and digital workforce will need to be front-and-center of every intelligent automation strategy
3. RPA is here to stay and will continuously evolve to become a critical part of enterprise business strategy along with other integration technologies

We first detail the challenges facing the modern enterprise before defining Automation Singularity and delineating the various levels of the concept. The paper also outlines a change management framework so that companies can contextualize their automation strategy to business priorities, market competition, and organizational culture.



A Need for Change

The last decade has seen a drastic shift in the way consumers qualify their needs and make purchases. Customers today prefer experiences over products and see personalization as a prerequisite, not a value-added service. Performance and quality are necessities, not differentiators. That distinction goes to customer experience, which can make a significant difference to business outcomes. A one-point increase in customer experience (CX) scores could spike annual revenues by \$10-100 million⁽¹⁾. 73% of customers cite customer experience as an integral component of their purchase decision⁽²⁾, but less than 50% state that companies do this well. Combine this with the rapidly increasing ease of switching product and service providers, and it's easy to see why customer loyalty is on the decline. On the other hand, enterprises that make CX a strategic priority can build a sustainable competitive advantage.

To compete effectively, companies must reinvent traditional product development. Reduced information asymmetry has opened up competition from different locations globally, and even from completely disparate market players. This aggressive competition has led to declining tenures for enterprises on global rankings - the average time companies have on the S&P 500 will reduce by nearly two-thirds⁽³⁾, from 33 years to 12, as early as 2027. Likewise, a number of industry verticals run the risk of getting 'Amazoned'. From retail, healthcare, pharma and media, the behemoth has taken on (and in some cases wiped out) entire market segments.

What does that mean for enterprises? Enterprises with the intent to be market leaders must combine agility, flexibility, and cost-efficiency with rapid product and service development.

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- Agility – adapt to economic, technological, and industry changes quickly
 - Flexibility of Scale – scale up or down as required without affecting quality or profitability
 - Cost-Efficiency – use processes and technology to eliminate waste and increase the effectiveness of resource utilization
 - Rapid Product and Service Development – build and nurture a culture of continuous innovation to create high-quality products, services, and deliver models



Companies need to be more efficient while augmenting their ability to innovate at speed, delivering high-quality experiences to a demanding consumer base. Intelligent automation enables enterprises to push the automation boundary with higher levels of accuracy, costs and efficiency making it critical to this transformational change.

Businesses have already shifted from rule-based automation towards smart automation powered by data and algorithmic decision-making. This technical capability is crucial to meeting consumer demands, and this explains why 92% of enterprises are adopting RPA with improved CX as the primary driver⁽⁴⁾. A recent Forrester report⁽⁵⁾ found that 55% of respondents, (business and IT decision-makers in companies across the UK, US, China, France, and Australia) would choose RPA solution providers based on their ability to create and execute a cognitive AI roadmap. This shift in thinking is one of the main factors driving the growth of the RPA software market from \$500 million in 2017 to \$2.9 billion as early as 2021⁽⁵⁾.

At EdgeVerve, with the experience of building and implementing automation solutions for companies across verticals and geographies, we have seen RPA maturing and playing a transformational role in business growth. We believe that two aspects are central to this contribution:

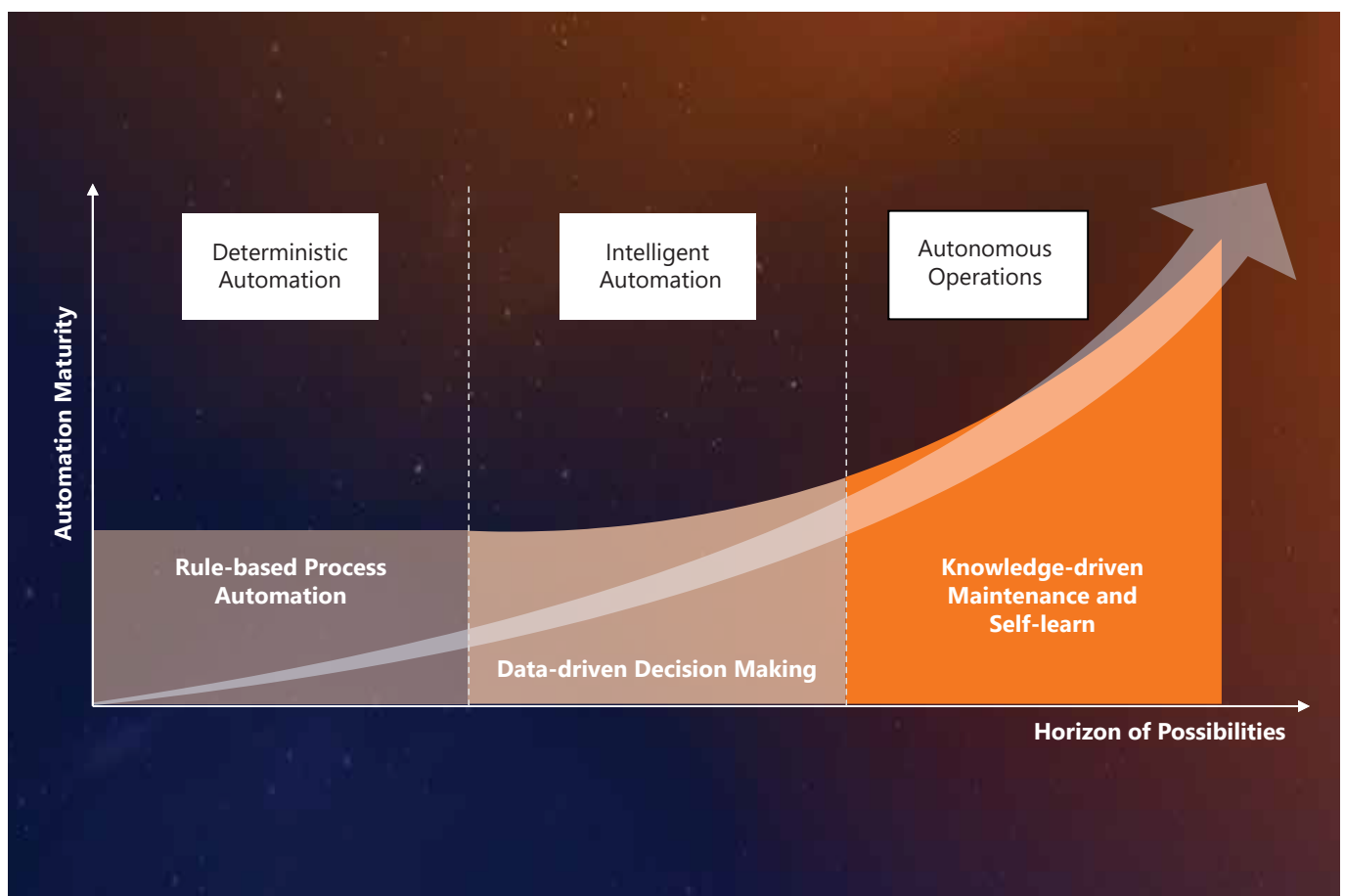
- Criticality of dovetailing the automation initiative into the overall business strategy
- Ensuring the primacy of the human workforce in the automation ecosystem

Although every organization may have its approach to this journey, the overarching focus remains the same – creation and deployment of a unified workforce comprising humans and bots, where creativity and empathy from the human experts blend with productivity and consistency from the digital bots. It is here that the concept of **Automation Singularity**, referring to the seamless synergy of human and bot workers, becomes essential to consider.

What is Automation Singularity?

Automation Singularity refers to a highly customer-centric and agile oriented state of constant improvement and optimization through the future workforce, opening up an expanded horizon of possibilities. Human specialists drive customer orientation using their creativity and empathy and are complemented by digital workers with extreme productivity and consistency.

Automation Singularity serves as a beacon for enterprises to conceive, design, structure, and deliver products and services. The idea of Automation Singularity is a journey where a variety of automations (including attended and unattended automation) along with AI capabilities will unleash unprecedented value touching every process, every employee, and every system in the enterprise. The evolution of the enterprise to Automation Singularity will traverse the journey from rule-based automation with efficiency at a task level towards a state of Autonomous Operations where decisions on task, task allocations, and process design are crafted based on data and optimization algorithms. In due course, the future worker will take center stage in thinking, recrafting, and delivering on the possibilities ahead.



Intelligence Capability in Automation

As stated earlier in this paper, the ability to embed intelligence in the process is crucial to driving improved business outcomes. It is helpful, therefore, to divide the journey into various levels based on the sophistication of intelligence and the outcomes achieved thereof:

Level	Capability	Outcome
Level 1 Basic Automation	<ul style="list-style-type: none"> - Handles only structured data - Pre-defined rules with no ability to handle ambiguity - No learning capability 	<ul style="list-style-type: none"> - Pre-defined task execution
Level 2 Enhanced Automation	<ul style="list-style-type: none"> - Handles limited degree of unstructured data - Leverages external intelligence to digitize data and provide decision assistance 	<ul style="list-style-type: none"> - Automate rule-based tasks and provide leaders with data for decision making - Guidance to reduce errors - Increased productivity
Level 3 Advanced Task Augmentation	<ul style="list-style-type: none"> - Handles varying forms of unstructured data - Operates in most scenarios autonomously with user intervention for exceptions - Typically, user defines process parameters and approves process changes 	<ul style="list-style-type: none"> - Significant productivity gains - Ability to create new business variants - Predicts outages and SLA failures
Level 4 Sub-Autonomous Operation	<ul style="list-style-type: none"> - Significant context awareness and understanding of business process - High degree of reliance on AI inputs for decision-making - Data plays central role in process definition 	<ul style="list-style-type: none"> - Self-heal to address unplanned outages - Process automation for most situations - User involvement limited to approving model changes and exception management
Level 5 Autonomous Operation	<ul style="list-style-type: none"> - Complete context and business process awareness - Ability to understand business priorities and risks, and make necessary tradeoffs - Ability to adjust process parameters for optimization/ modify processes to achieve end objective 	<ul style="list-style-type: none"> - Complete automation and ownership of business process - User role limited to defining high-level business objectives and constraints

Irrespective of the sophistication achieved, it must be noted that this contextual intelligence is derived essentially from past transactions and corresponding human interventions, with an intent for the algorithm to replicate human decision-making.

For meaningful intelligence, it is vital to capture a variety of data including business parameters (such as amount, currency, vendor category), details on context (like timestamp, requestor, approver) along with reasons for decisions and exceptions. However, accessing data at this level of granularity can be very difficult for many organizations, limiting the ability of artificial intelligence.

An effective automation solution should aim to capture rich transaction-level data while performing the automation and make it available for subsequent learning. The current wave of AI has seen organizations empowered with access to high-performing algorithms and computation power, along with the declining cost of data storage. In this Big Data environment, it is advisable for organizations to be biased towards capturing more data than they might have considered necessary today, given the option of leveraging historical data over time.

It must be noted that this data must be managed carefully, factoring risk and compliance requirements - in terms of capture, storage, processing, and consumption. Privacy must be central, especially while capturing personally-identifiable information. Likewise, the usage of this data must be constrained by regulatory guidelines to ensure that the algorithms do not make decisions, directly or by proxy, using fields that are deemed discriminatory.

Key Disciplines of Automation Singularity

At EdgeVerve, we believe that organizations undertaking the journey need to invest in three key disciplines - **Discover, Automate, and Orchestrate**. Organizing the journey into these disciplines brings specificity to assessment and implementation while adding structure to the change management process. **Discover** is primarily a business-process led activity concerned with redesigning customer journeys and identifying process automation opportunities. It helps align business priorities to specific areas that need work.

Automate deals with identifying and implementing the right technology stack and will eventually influence every part of the employee-process relationship. **Orchestrate** aims to ensure that there is coordination in the allocation, prioritization, and management of tasks in an environment powered by a unified workforce of human specialists and digital workers. The data captured through this process is critical to driving process visibility and feedback for continuous optimization through human insights and algorithms



How Automation Singularity Will Guide Enterprise Progress

As enterprises develop the capability to deploy future workers, i.e., human-digital twins working in sync, at scale, they will realize immense potential alongside several complexities that need to be navigated. In progressing on this journey towards Automation Singularity, companies in the sector can pre-empt and address customer requests contextually and effectively, while significantly transforming execution capabilities.



For a shipping company, operating across 139 countries on multiple systems and interfaces, we deployed over 400 bots to offer price quotes and booking management within minutes as opposed to the previous 24-hour lead time. A mid-tier bank was able to recover nearly \$10 million annually through low dollar credit card chargebacks previously considered unrecoverable. An example of automation-enabled customer centricity is our work with a telecom major where RPA reduced process cycle time by 25% and customer wait time by 30% while powering a 98% first-call resolution (FCR).

For others, Automation Singularity opens up new process possibilities maximizing scalability, resilience, security, and decision-making in an enterprise scenario. The result - consistent better quality and faster turnaround with a more significant and consistent impact on the bottom line.

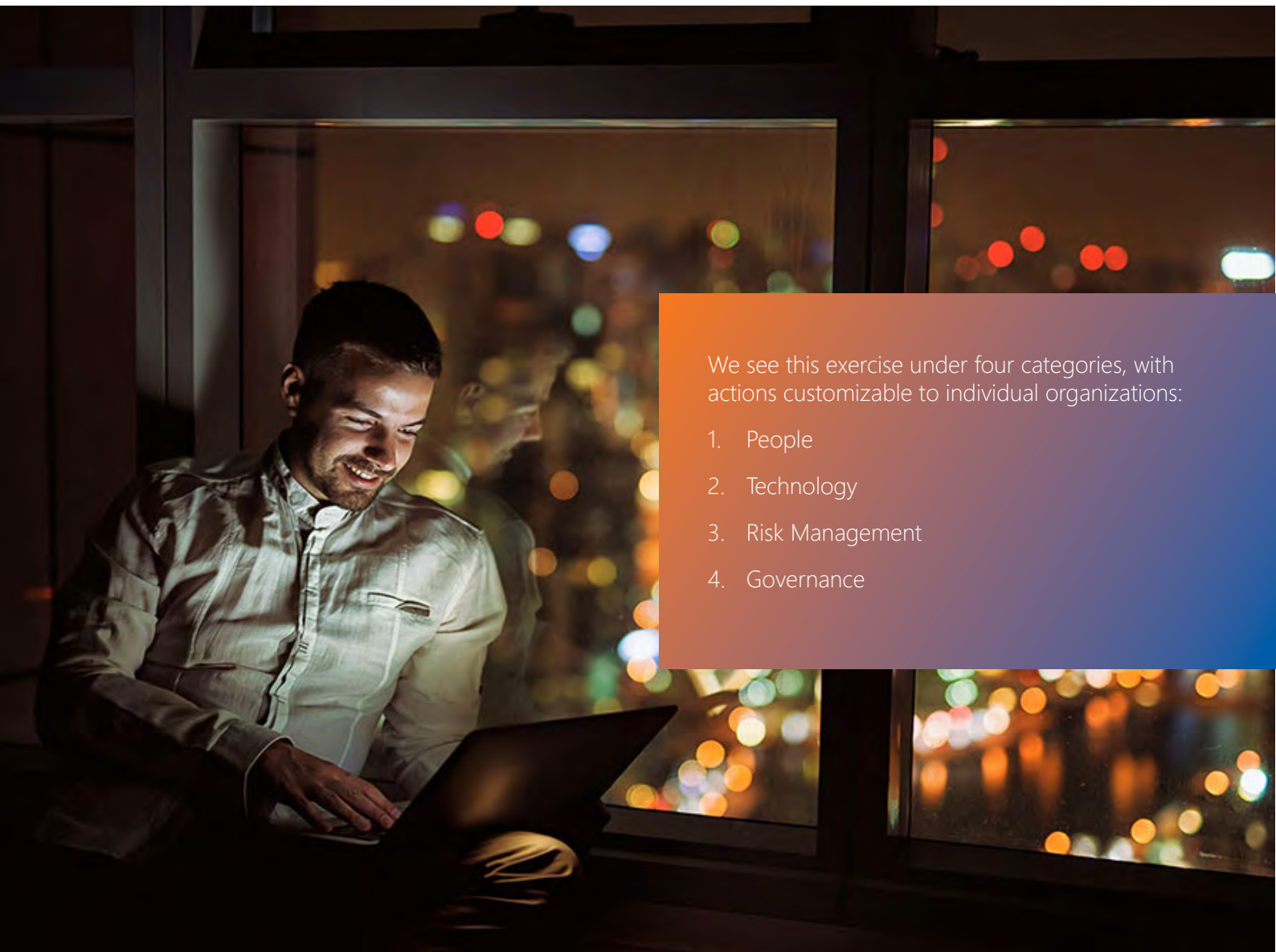
For a Dutch multinational in the healthcare space, we were able to automate 139 processes, including 35 complex use cases, saving more than 23,500 work hours spent on deterministic tasks. Another example is that of a leading financial services company in the US, which saw EdgeVerve RPA deliver \$500,000 in savings and an 8X increase in productivity in six months by reconceptualizing business processes with a digital-first approach.

Before we delve into details of making the transition, there's merit in looking at the change in frame-of-reference achieved through thinking about Automation Singularity. This makes the technology conversation central, not supplementary, to delivering business value. Therefore, discussions about technology and automation should be made accessible to and informed by business stakeholders. Also, every organization is

unique as is every individual within it, and the right blend of human and bot in the workforce will be contextual to the company, type of process and its priorities - speed, cost, consistency, differentiation or scale. Decisions in an intelligent automation ecosystem will be made based on the strategic value they create, not the liability they help avoid, moving the enterprise from a scarcity mindset of marginal gains to a growth mindset of incredible value.

Change Management in the Age of Automation Singularity

A development of this magnitude requires a carefully planned and executed change management exercise. Just the way technology needs the humanities, bots need humans, and **the reason why EdgeVerve believes 'Automation Singularity - Led by Humans'**. Reskilling employees while revising performance measurement metrics, redesigning processes to capitalize on a new set of capabilities, and revamping IT landscape management are just some of the challenges that companies must tackle. This change is complex and needs both a top-down and bottom-up approach to ensure stability and openness within the organization. The C-Suite should endorse this initiative, and it must include a detailed strategy to educate and inspire employees.



We see this exercise under four categories, with actions customizable to individual organizations:

1. People
2. Technology
3. Risk Management
4. Governance

People

- Enterprises must recognize that since the transition to Automation Singularity is focused on maximizing the potential of their human resources, it must be led by human expertise. Companies should empower people to lend their expertise to opportunity identification and to leading the automation agenda.
- Silos should be eliminated by facilitating more data and knowledge sharing between groups.
- The workflows should be redesigned with a laser focus on the customer journey.
- Automation Singularity will also require reskilling and upskilling, which makes it crucial for employers to support their teams through the transition.
- For existing hires, companies must look to run a sensitization exercise educating employees about the change and what it means for them. They should also revisit their expectations of new hires and reorganize processes to optimize the delivery of work.
- It is equally important to educate company leadership on the impact of the Automation Singularity journey, so that job roles, processes, results, and evaluation are in line with this changed mindset.

Technology

- Our research, in partnership with Forrester, has found that 55% of organizations are looking to work with 3-5 vendors for their automation requirements, which makes interoperability an essential feature of any implementation.
- The definition of 'user' and its implications across other enterprise systems must be contemplated.
- Investment in resilient IT change management and supporting technology is a must to ensure automation reliability.
- Bot governance must be enhanced for better resource allocation and utilization to drive cost-efficiency.

Automation is the first step to consuming various cognitive services along the way, and this application makes it essential to work with vendors who de-risk AI investments through cloud capabilities. As stated earlier, Automation Singularity is a journey, so companies should look to work with solution providers who have a demonstrable record of delivering scalable automation solutions.

Risk Management

- Automation represents more than a shift in work; it represents a shift in trust. Intelligent automation systems operate at scale and can be hacked.
- The flip side of the scale and speed of intelligent automation is that improper functioning can cause significant issues in a short period. Robust monitoring systems must be in place to identify any concerns before they spread.
- Data capture, processing, and data-center decision-making remain core to the intelligence philosophy as maturity increases. Unstructured data could take the form of images, text, and voice, which could result in different levels of complexity.

Governance

- Organizations should consider establishing a dedicated CoE for automation-led transformation to initiate projects and manage innovation.
- There may be security and performance concerns that arise from the transition, and this can be addressed with detailed guidelines and documentation detailing security and governance frameworks.
- Companies should revise their approach to customer journeys, relying on actual data instead of inward-facing ideas of an ideal customer journey.
- Every automation exercise should be directed at achieving clear strategic priorities and backed by greater process visibility and data access for better decision-making.
- The strategic direction should be informed by and measured against business priorities.

Criticality of Interoperability for Automation Singularity

Manageability will take center stage as intelligent automation becomes pervasive, and the journey of Automation Singularity presses on. As enterprises de-risk their strategy with digital workers from multiple automation vendors, the need to seamlessly integrate these to a unified orchestration will grow. Integration of digital workers to process workflow engines and simplified ways to move workload between digital workers from multiple vendors will become a necessity. Developing standards to drive interoperability is imperative to drive scale. It is hard to think of automation singularity-led value expansion and sustenance without an earnest effort towards establishing interoperability. Interoperability will help the enterprise:

- De-risk by exploiting the flexibility to shift workloads between digital workers.
- Drive increased efficiency in communication and knowledge sharing across users.
- Manage multi-provider systems through a system of intelligence that transcends vendor silos.
- Integrate technologies with proof of interoperability from multiple sources, creating new reference architectures⁽⁶⁾
- Deploy stringent security standards across the entire intelligent automation Suite through a centralized point of management.
- Empower automation CoEs with the ability to scale without compromising on flexibility and agility.



Begin the Journey towards Automation Singularity

Given the magnitude and impact of the transition, the enterprise journey towards Automation Singularity must be a CXO-driven initiative. Automation Singularity needs to be at the core of business strategy and every digital transformation journey. The organization-wide buy-in will require leadership support, intent, and inspiration. It is important to note that the transition can be challenging. In our experience, scaling and restructuring these models requires careful planning and implementation because the speed and autonomy of work can also mean that errors, if any, are amplified faster than traditional methods. Setting a clear intent, creating a core team of SMEs, and establishing risk and governance frameworks for this ecosystem are the key steps enterprises can take to ensure their progress is smooth.

In the near future, human and digital workers will collaborate seamlessly, unobtrusively, and intuitively to co-create the future of the enterprise. Enterprises that understand and start working towards gaining this competitive advantage will not only thrive but also earn the opportunity to lead the next business (r)evolution.

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AssistEdge is a leading cohesive automation platform built with a holistic suite of automation and AI capabilities. From automating repetitive manual tasks and improving data quality, to enhancing better customer experience, AssistEdge enables enterprises to realize the full potential of automation by assuring scalability, security, Intelligence, and Innovation.

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EdgeVerve is a global leader in AI and Automation, assisting clients thrive in their digital transformation journey. Our technology is deeply integrated into the heart of 350+ Global 2000 companies, medium and small enterprises across 140+ countries, enabling them to derive entrenched value in their business.

Our mission is to create a world where our technology augments human intelligence and creates possibilities for enterprises to thrive in disruption. Our team at EdgeVerve is central to this mission and continuously strives to make it happen for enterprises across the world. We are making constant strides towards transforming enterprises by providing products and solutions across the AI & Automation continuum.

EdgeVerve Systems Limited, a wholly-owned subsidiary of Infosys Limited, through its leadership, employees, and partners, is transforming the AI and Automation industry. Visit us to know how enterprises across the world are thriving with the help of our technology.

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