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**From Then to Now:**

A Special Edition Diving into the  
Transformative Journey

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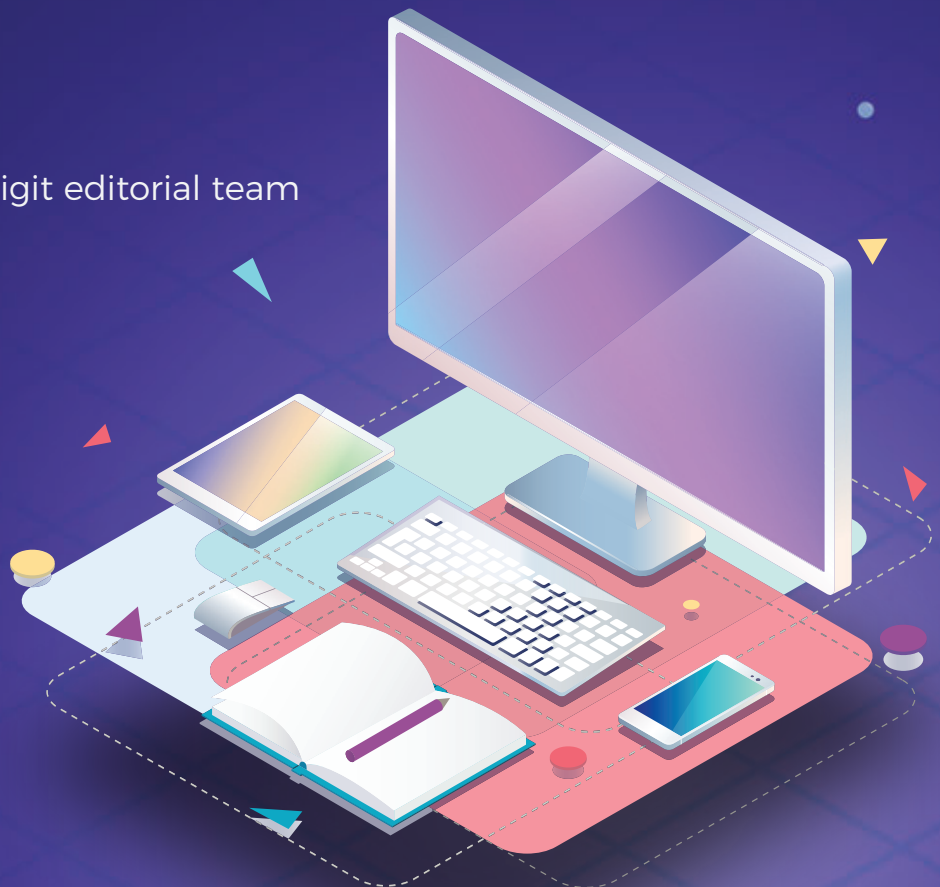


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## 25 Years Journey: Celebrating with You!

**R**eflecting on 1999, during my 9th-grade year, the idea of effortlessly researching key technological milestones over the next 25 years using an AI-driven tool like ChatGPT would have seemed like something out of science fiction. Yet, here I am, leveraging this Gen AI technology to gather insights for our 25th Celebration issue. As we brainstormed topics to cover, the dramatic evolution of the technology landscape over the past quarter-century, its profound impact on the enterprise ecosystem, and the role of CIOs became a central theme. This journey through time underscores the rapid pace of technological advancement and the transformative power of innovation in shaping our professional realities.

From the rise of the internet and mobile connectivity in 1999 to cloud computing's role in democratizing access to technology, the IT and outsourcing boom in the early 2000s, the growth of digital payments and e-commerce in recent years, and the advancement in AI and machine learning technologies, there have been many milestone events in the last two and a half decades that have shaped the way enterprises function. And who would know it better than you? During this time, the CIO

role has transitioned from a focus on IT infrastructure and operations to a broader strategic leadership position, emphasizing innovation, cybersecurity, and digital transformation. This evolution reflects the growing recognition of IT as a foundational element in achieving business objectives.

In this issue, we have tried to capture some of our technology leaders' thoughts as they reflect on their professional journey of the past 25 years, highlighting key technological evolutions, how they dealt with different challenges, and speculating on what the next 25 years may hold for us.

And this is just the beginning of the celebration! We will continue interacting with you and industry stakeholders this year to gain valuable insights and share your experiences with the community. I am delighted to inform you that this year, we'll be celebrating the 25-year milestone with you at our *Annual CIO&Leader Conference* in Goa from August 2 to 4, featuring many new and engaging formats and thought-provoking keynote sessions.

We are excited to celebrate this occasion with you. After all, this is not just our celebration; it's yours too! ■



**CIO&Leader marks its 25th Anniversary milestone! We're delighted to celebrate this occasion with you. After all, this is not just our celebration, it's yours too.**

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**JATINDER SINGH**  
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# Celebrating 25 Years of Leadership

In this anniversary issue, let's reflect on the evolution of enterprise technology and the role of CIOs



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# NEWS & VIEWS



## **Nokia hasn't gone from market, no farewell just yet: Here's why**

There are still two years before both brands part ways. So, the "Nokia" name will most likely be still in the markets till 2026.

By **Mustafa Khan** | [editor@cioandleader.com](mailto:editor@cioandleader.com)

**N**okia smartphone manufacturer, HMD Global launched its own brand, HMD last year. In a recent development, Nokia Mobile's social media handle and website were renamed to HMD. Along with that, HMD also teased its first smartphone, as the brand previously promised to roll out its branded smartphones. This means HMD has decided to manufacture its own branded smartphones. Now, the question arises 'Is Nokia gone for good?' Well, I would like to say, it's not. Not for a few years at least.

### Is Nokia still in the game?

HMD Global and Nokia shook hands in 2016. That's when HMD Global decided to manufacture smartphones for Nokia. It accepted the contract with Nokia for the next 10 years. Now, according to my maths, the contract between the two will end in 2026. This means, there are still two years before both brands part ways. So, the "Nokia" name will most likely be still in the markets till 2026.

Apart from that, HMD also teased its upcoming smartphone. The reports on the internet are saying that it will launch its first smartphone in the first half of this year. The smartphones will be manufactured in India, and the country will be the priority of HMD Global. However, Ravi Kunwar, HMD Global Vice President of India and APAC stated that Nokia and HMD smartphones will co-exist in different regions.

- **You can still buy Nokia smartphones, tablets, and more from HMD website.**
- **The contract between Nokia and HMD Global will end in 2026**
- **Nokia Mobile's social media handle and website were renamed to HMD.**



So, the clarity here is that only the names of the Nokia Mobile website and the social media handle have been changed to HMD. Rest remains the same for now. You can buy Nokia smartphones, tablets, and more from HMD's official website (formerly Nokia Mobile). In the press release, HMD even mentioned that "You will continue to see new Nokia phones." However, we don't know whether HMD will continue to sell Nokia devices after 2026 or not. Only time will tell us that. ■



# Interim Budget 2024: Focus on Tech- Driven Innovation, EV Ecosystem



Here are the key highlights of the interim budget presented by India's Finance Minister.

By **CIO&Leader** | [editor@cioandleader.com](mailto:editor@cioandleader.com)



**O**n February 1, 2024, Finance Minister Nirmala Sitharaman presented the Interim Budget in the Lok Sabha. The full budget will be presented later in July this year once the new government is formed after the Lok Sabha Elections.

Named 'Viksit Bharat,' the budget paints a vision of a flourishing nation characterized by a symbiotic relationship with advanced infrastructure and abundant opportunities for every citizen. Here are the noteworthy facets of the budget:

- **Technology and Innovation:** The budget allocates funds for technology-driven innovation, focusing on deep-tech, artificial intelligence (AI), and machine learning (ML). A ₹1 lakh crore corpus with a 50-year interest-free loan has been set aside to encourage private-sector investment in research and innovation.
- **Environmental Initiatives:** The commitment to Net Zero by 2070 includes funding for offshore wind energy, biomass aggregation machinery, and the growth of the e-vehicle sector, aligning with global climate change efforts.
- **Fiscal Policies:** Stability for businesses is maintained through consistent tax rates, including import duties.
- **Infrastructure and Economic Growth:** A significant increase in

capital expenditure outlay to 11.11 lakh crores and a focus on railways, ports, and airports signify a commitment to economic growth. Three major economic railway corridor programs under PM Gati Shakti aim to enhance connectivity and logistics efficiency.

- **Agriculture and Agritech:** Measures to strengthen agriculture value chains, reduce wastage, and support agri-tech through credit access and infrastructure development.
- **Electric Vehicle (EV) Ecosystem:** Actively promote the EV ecosystem through manufacturing support, charging infrastructure, and incentives for e-bus adoption.
- **Skill Development and Education:** Prominent focus on the Skill India Mission, encompassing extensive upskilling, reskilling, and backing for esteemed higher education institutions such as IITs and IIMs. The Skill India Mission has undertaken a noteworthy initiative, aiming to train 1.4 crore young individuals, coupled with upskilling and reskilling endeavors for 54 lakh youth. Additionally, the establishment of 3,000 new Industrial Training Institutes (ITIs) reinforces the commitment to skill development.
- **Cybersecurity and Technology Adoption:** Increased budget allocation from INR 400 crores to

INR 750 crores for cybersecurity projects.

## Industry Reactions:

Industry responses express general optimism, with stakeholders appreciating the strategic vision and alignment with industry goals. Positive comments highlight the budget's potential to drive sustained foreign investment, propel infrastructure development, and address skill gaps, fostering innovation and growth across sectors.

## Quotes from the industry leaders

- **Arun Shukla, President and Director, JK Lakshmi Cement:** The Government's strategic focus on all forms of infrastructure, be it digital, social, or physical, and a strong emphasis on women's empowerment resonates with our forward-looking mission. The significant increase in infrastructure outlay to INR 11.11 lakh crores and the emphasis on green growth shows the Government's pursuit to propel our nation toward economic excellence.
- **Bimal Khandelwal, CFO, STT GDC India:** The noteworthy outlay of Rs 11.11 lakh crores for infrastructure development, focusing on technology, is a promising move. This budget holds the potential to positively impact the data center industry, fostering innovation and growth. The emphasis on technology, innovation, and infrastructure aligns seamlessly with the evolving needs of the data center sector, and we anticipate contributing significantly to India's digital journey.
- **Manoj Nair, Head of India GDC, Fujitsu India:** With 1.4 crore youth upskilled and reskilled, the announcement of higher learning institutions, including IITs and IIMs, will help India address the AI skill crunch and bridge the

**The outlay of Rs 11.11 lakh crores for infrastructure development, focusing on technology, is a promising move.**



**The government plans to actively promote the EV ecosystem through manufacturing support, charging infrastructure, and incentives for e-bus adoption.**

gap effectively. Additionally, the Government’s corpus of Rs 1 lakh crore with a 50-year interest-free loan will encourage the private sector to scale up research and innovation significantly in sunrise domains.

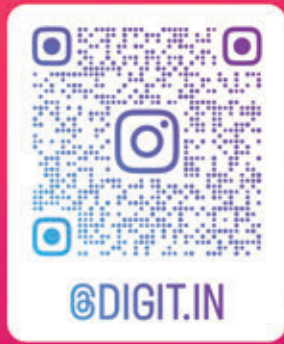
- **Rahul Garg, Founder and CEO, Moglix:** Establishing new infrastructure corridors for ports, energy, minerals, and cement will boost manufacturing and supply chains. Doubling the number of airports to 149 will energize the aviation sector. As a manufacturing-focused company, we welcome the government’s aim to enhance the EV ecosystem through manufacturing and charging infrastructure support. The proposed bio-manufacturing scheme for green growth aligns with our sustainability mission.
- **Puneet Gupta, VP & MD, NetApp India/SAARC:** The Honourable Finance Minister has acknowledged the potential of deep technologies like AI to transform varied industry sectors. In addition,

tion, the GoI’s focus on training, upskilling, and reskilling the nation’s youth through the Skill India mission is likely to place India well on the global map of tech-savvy nations.

- **Debashis Chatterjee, MD & CEO, LTIMindtree:** The Skill India Mission has helped in building a highly skilled workforce, and the Rs. 1 lakh crore corpus with interest-free loans for tech-savvy youth will be a true game-changer. This will fuel innovation and entrepreneurship, fostering the next generation of tech leaders. As we strive towards achieving the goal of “Viksit Bharat” by 2047, LTIMindtree stands committed to partnering with the government in its digital transformation journey.
- **Sunil Sharma, VP-Sales, Sophos India & SAARC:** The government’s steadfast commitment to increasing the cybersecurity budget from INR 400 crores to INR 750 crores within a year is a noteworthy development within the industry, and promises to address cyberse-

curity threats that may endanger the rapidly digitizing nation

- **Sachin Panicker, Chief AI Officer, Fulcrum Digital:** Finance Minister Nirmala Sitharaman’s sixth consecutive budget presentation sets a decisive course for India’s future, rooted in the vision of ‘Viksit Bharat’ by 2047. The government’s emphasis on GDP – Governance, Development, and Performance- lays a stable framework for sustainable growth. With a focus on empowering youth and fostering innovation, the budget outlines a roadmap for unprecedented development over the next five years.
- **Anand Sri Ganesh, CEO, NSRCEL IIM Bangalore:** The encouraging surge of 28% in female enrollment in higher education over the past decade demonstrates women’s growing role in shaping India’s entrepreneurial landscape. We are excited about government support for green growth for the ventures in EV infrastructure and climate tech entrepreneurs too. ■



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# INDUSTRY MOVEMENTS



## **Krishnakant Gaitonde at KPMG India**

**Next100 Winner Krishnakant Gaitonde** has started a new position as Director of Technology (Head of Enterprise Applications & Delivery) at KPMG India. Before this role, he served as Senior Vice President of IT at Edelweiss Tokio Life Insurance.



## **Anuprita Daga at Angel One**

**Anuprita Daga** has joined Angel One as Group's Chief Information Security Officer (CISO). She transitions from her role as President and Chief Information Security Officer at YES BANK.



## **Trupti Purandare at Wipro**

**Trupti Purandare** has commenced her new role as Head of Business Information Security Management at Wipro. Previously, she served as Assistant Vice President and Head of Infrastructure & Chief Information Security Officer at Godrej Capital. She also has experience at Bharat Petroleum Corporation Limited.



## **Anurag Jain at Yum! Brands**

**Anurag Jain** has joined Yum! Brands as Chief Digital & Technology Officer (CDTO) for India & Partner Countries. Previously, he contributed as a DeepTech Mentor & Advisor at NASSCOM.



## **Ashish Pandey at Dabur**

**Ashish Pandey** has assumed the role of Global Chief Information Officer (CIO) at Dabur. Before this, he held the positions of Head of Digital & Technology for the India Subcontinent, CIO, and Chief Digital & Technology Officer at GSK Consumer Healthcare India.



## **Pankaj Srivastava at Brookfield Renewable**

**Pankaj Srivastava** has taken on the role of Director of IT at Brookfield Renewable. Before this, he held the position of Head of IT within the same organization. He has prior experience at Nayara Energy, Essar Oil, Tata Motors, TI Automotive, and Almac Machinery.





**Ashish Khanna at Evalueserve**

**Ashish Khanna** has been promoted to Global Chief Information Security Officer (CISO) and Head of IT at Evalueserve. Previously, he served as CISO at the same company. He has also worked with The Oberoi Group, Taj Group, and Mahindra & Mahindra. He is a recipient of the NEXT100 2011 award.



**Shivkumar Pandey at Adani Group**

**Shivkumar Pandey** has joined Adani Group as Group Chief Information Security Officer (CISO). Before this, he held the position of Group CISO at BSEIndia. His previous roles include leadership positions at the National Payment Corporation of India, Reliance Jio Infocomm Ltd, and Star Union Dai-ichi Life Insurance Company.



**Sudhir Sharma at Somany Ceramics Ltd**

**Sudhir Sharma** has joined Somany Ceramics Ltd as Chief Information Officer. Before this, he served as General Manager of IT at Signature Global. He previously worked at Hero Steels.



**Nikhil Chaturvedi at Liberty Steel Group**

**Nikhil Chaturvedi** has started his new role as Chief Information Technology & Digitalization Officer (CIDO) at Liberty Steel Group. Previously, he held the position of Executive Vice President & Global Chief Digital Officer (CDO) at JSW Group.



**Ronak Desai at Onida**

**Ronak Desai** has begun his new role as Chief Information Officer at Onida. Before this, he served as Head of IT within the same organization. His earlier experiences include roles at Godrej Tyson Foods, D'DECOR HOME FABRICS, Nirmal Datacomm Training Center, VJive Media, Suashish Diamonds, and Encore Natural Polymers.



**Sandeep Jamdagani at Central Park**

**Sandeep Jamdagani**, recipient of the NEXT100 2016 and NextCSO 2017 awards, has joined Central Park as Head of Information Technology. Before this, he served as Head of IT & IS at Ashiana Housing. He has also worked at GroupMega, Moksa Technologies, Globberian India, Network Solutions, and NSEiT.

—Information compiled by Atul Pandey

**25**  
*Years*  
ANNIVERSARY EDITION

**From Then to Now:**

A Special Edition Diving into the  
Transformative Journey

## In this anniversary issue, let's reflect on the evolution of enterprise technology and the role of CIOs

By CIO&Leader Team

**A**s CIO & Leader (originally CTO Forum) celebrates its 25th anniversary, we thank you for your continuous support, perspectives, and engagement. This anniversary is a chance to reflect on the critical developments in enterprise technology and the evolving role of CIOs. To celebrate this milestone, we're adding a special section to the magazine from this issue onward, focusing on the significant events and trends of the past 25 years. This section will include exclusive interviews with CIOs, discussing their experiences, key projects, and the changes they've seen.

We'll also revisit some impactful articles previously published by CIO&Leader, showcasing technology leaders and the main themes of their times, adding a retrospective element to our celebration.

### The evolution of CIOs and enterprise technology

Reflecting on history, introducing the "CIO" title in the mid-1980s marked a significant shift, elevating Information Systems (IS) executives to C-level stature within leading organizations. Even before this transformation, the role of the Electronic Data Processing (EDP) manager was prevalent, beginning around the 1950s and extending into the 1980s. During this era, the growth of mainframe computers reshaped business environments, pushing organizations to increasingly rely on electronic data pro-

cessing for essential tasks such as accounting, payroll, and inventory management.

### Navigating operational responsibilities: the early days of IS roles

Initially, these IS Executives roles, whether titled as EDP managers or later as CIOs, focused on operational responsibilities, including managing computer systems, networks, and data storage. Despite the evolution of titles, the fundamental objective remained consistent: leveraging technology to streamline business operations and drive efficiency. Early CIOs encountered the formidable challenge of demonstrating the tangible value derived from investments in information technology, marking a critical juncture in the evolution of organizational technology leadership.

### Technological revolution and strategic leadership

In the Indian context, 1986 was a critical year that witnessed a computing revolution catalyzed by the successful implementation of the computerized ticket reservation system by Indian Railways. This automation replaced traditional manual registry entry methods, fundamentally changing perceptions of the relevance and impact of computers in everyday life.

The 1990s marked a transformative period in computing, characterized by the increasing pervasiveness of technology. Lotus quickly emerged as a dominant

force in the spreadsheet market and later played a pivotal role in shaping the enterprise collaboration software market. This transformation elevated the role of the CIO, turning them into catalysts for technological enablement.

### Expanding horizons as computing becomes pervasive

In the earlier days, computing was confined mainly to corporate environments, with individuals needing widespread access to personal computers. However, starting around 1995-96, there was a significant shift as more people began to acquire home computers. This increase in personal computing capabilities led to higher expectations for technology at home and in the workplace. In offices, the intranet concept began to take shape, allowing for internal communication and collaboration.

During this period, the roles of CTOs and CIOs began to gain greater importance, with technical expertise becoming increasingly valued. In some organizations, the title of CTO held particular significance as information became recognized as more powerful than hardware, and software began to surpass hardware in relevance. CIOs and CTOs emerged as critical pillars bridging the gap between technology and business solutions.

Leaders like Intel dominated the hardware space, while servers from Sun and HP became ubiquitous in digital environments.

### The Rise of digital technologies: transforming business dynamics

From the early 2000s, as the internet became mainstream and the dot-com boom took hold, CIOs led the charge in digital transformation, integrating internet technologies into business models and operations. With technology increasingly becoming a

key driver of competitive advantage, operational efficiency, and customer engagement, the role of the CIO has gained more prominence. This evolution highlighted the shift of IT from a support function to a central, strategic pillar within organizations.

### The 2010s: navigating the digital landscape

The 2010s marked a pivotal era characterized by the rapid expansion of social media, the widespread adoption of smartphones, and the exponential growth of e-commerce. During this period, organizations began acknowledging the importance of engaging in in-depth consultations with Chief Information Officers (CIOs) to gain insights into the 'Big Picture' and formulate comprehensive digital strategies.

The complexities of cybersecurity and compliance further added depth and responsibility to the role of CIOs. Moreover, the 2010s saw a significant evolution in the role of business intelligence within organizations. The explosion of data analytics tools equipped CIOs with the means to leverage vast amounts of data for informed decision-making. This shift

allowed decisions based on targeted insights and analytics, moving away from dependence on intuition or broad-based metrics.

### Adapting to unprecedented change: the era of rapid transformation

The onset of the 2020s ushered in a new era of rapid transformation and digitalization, driven by unprecedented acceleration in response to the once-in-a-century health crisis of the pandemic. Organizations and business leaders turned to technology and relied heavily on CIOs and IT Leaders to navigate unparalleled challenges, ensuring their businesses' survival and humanity's well-being.

Over the past four years, we've witnessed significant milestones, including a widespread shift to remote work, exponential growth in e-commerce, a surge in telemedicine and virtual healthcare services, and accelerated digital transformation initiatives across industries. Additionally, there has been an increased dependence on virtual communication and collaboration tools.

In this transformative era, CIOs confront their most daunting task. Beyond managing technology, they must spearhead strategic initiatives and foster business innovation to push organizations forward and strengthen them against future crises of unprecedented magnitude.

While their strategic role has always been present, it was previously constrained. However, in the AI-dominated era, as organizations focus on becoming more and more intelligent, CIOs have a greater responsibility to influence and reshape the organization's future using tech, facilitating expansion, diversification, exceptional user experiences, innovation, and ultimately driving revenue.

They are more than just technologists; they are today's visionaries and enablers, driving strategic direction and innovation! ■

“  
**During the period 1995-96, the roles of CTOs and CIOs began to gain greater importance, with technical expertise becoming increasingly valued.**  
”



# Building Personal Connections and Fostering Trust are the Cornerstone for Leadership

By Nisha Sharma  
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**ABHIJIT CHAKRAVARTY**  
SVP, Core Networks & Security  
Operations, HDFC Bank



**Abhijit Chakravarty**, SVP of Core Networks & Security Operations at HDFC Bank, shares his journey from electronic communication to leading digital transformation.

Here are the excerpts from our recent interaction with Abhijit Chakravarty, whose distinguished tenure as the Senior Vice President of Core Networks & Security Operations of HDFC Bank has been characterized by remarkable achievements and groundbreaking innovations.

## The journey of a tech visionary

Abhijit's career spans an impressive 29 years, beginning when emails and faxes were considered groundbreaking technologies. Reflecting on his early days, he notes, "It's been a remarkable journey, from supporting electronic fax systems to leading network and security at HDFC Bank. The evolution from dial-up connections to today's sophisticated networks illustrates the transformative power of connectivity."

## Navigating challenges with customer-centric solutions

A significant challenge in Abhijit's

career has been understanding and catering to diverse customer needs. Drawing on his experiences at Airtel, he highlights the importance of customizing solutions to fit various requirements. "Identifying and catering to those unique needs was both a challenge and a learning curve. It's like making parathas; not everyone prefers the same filling."

"Every customer's needs are unique, much like their preference for parathas. Tailoring our solutions to meet those needs has been key to our success." – Abhijit.

## Building strategic partnerships

When it comes to vendor management, Abhijit emphasizes the distinction between vendors and partners. "For long-term technology strategies, you need a partner who's willing to invest in your success," he explains. This approach ensures shared commitment and alignment with business outcomes, fostering long-term strategic partnerships.

## Proudest achievements in IT leadership

Among his proudest achievements, Abhijit cites the large-scale implementation of SD-WAN at Axis Bank and the early adoption of collaboration technologies. These initiatives set new standards within the banking industry and prepared HDFC Bank for digital transformation challenges, especially evident during the pandemic.

## Leading high-performing IT teams

"Personal connection and trust are paramount," Abhijit states, discussing his philosophy on team leadership. Knowing each team member's aspirations and challenges helps build a cohesive unit, motivating them to deliver without micromanaging every step.

"Trust and personal connection form the cornerstone of a high-performing team. It's about empowering each member while steering them towards our common goals." – Abhijit.

## The fascination with space technology

When asked about the technological advancements that have amazed him the most, Abhijit expresses his admiration for space technology. "The level of accuracy and collaboration needed is a testament to human ingenuity and the boundless possibilities of technology," he marvels, showcasing his appreciation for the field's complexity and innovation.

Abhijit Chakravarty's insights from our conversation highlight the dynamic nature of technology and the visionary leaders who steer its evolution. His journey from the early days of electronic communication to spearheading digital transformation efforts at HDFC Bank is a testament to the innovative spirit that drives the IT industry forward. As we celebrate the past 25 years of leadership, we also look forward to the future innovations that leaders like Abhijit will bring to the IT landscape. ■

# Tech Transcendence: Waves of Change in 25-Year Journey

By Nisha Sharma  
nisha.sharma@9dot9.in

**MEHJABEEN TAJ AALAM**  
Chief Information Officer  
Raychem RPG



**Mehjabeen Taj Aalam**, Chief Information Officer at Raychem RPG, underscores the importance of agility, strategic vision, and the relentless pursuit of excellence in the face of technological evolution.

In a recent conversation, we interacted with Mehjabeen Taj Aalam, the Chief Information Officer at Raychem RPG, to learn more about her experience in IT. We talked about how technology has changed over time, memorable moments in her career, and the ups and downs she's faced along the way.

## Innovative beginnings

Mehjabeen's career inception was marked by an innovative project at Mahindra and Mahindra aimed at unifying customer databases. Reflecting on this, she notes, "It was about seeing beyond the technology itself, to its potential in transforming how we understand and interact with our customers."

## BFSI sector and the leap of transformation

Transitioning to the BFSI sector, Mehjabeen led a pioneering Virtual Desktop Infrastructure (VDI) project

with Fullerton India, exemplifying technology's transformative power. "This project was not just about technological innovation; it was about reimagining how resources could be optimized and costs reduced," Mehjabeen recalls.

## Visionary leadership at Raychem RPG

Under her leadership, Raychem

“**The real challenge has always been in demonstrating the strategic value of technology, not just as a support mechanism but as a pivotal driver of business growth**”

RPG embarked on a significant ERP transformation, moving to a SaaS-based model. Mehjabeen describes this journey as "a testament to the power of strategic vision and the relentless pursuit of modernization and efficiency in our technological practices."

## Navigating challenges with strategic foresight

Discussing the alignment of technology with business goals, Mehjabeen highlights, "The real challenge has always been in demonstrating the strategic value of technology, not just as a support mechanism but as a pivotal driver of business growth."

## Empowering teams through leadership

Mehjabeen's leadership philosophy centers on building a continuous learning and empathy culture. "Fostering a team that is innovative and resilient requires more than just technical skill development; it requires building a supportive environment where each member feels valued," she emphasizes.

## The transformative impact of AI and beyond

Reflecting on AI's transformative impact, Mehjabeen shares, "AI and its derivatives have not only changed the landscape of industries but have also redefined what is possible, ushering in a new era of innovation and opportunity."

## Looking ahead: emerging technologies and their potential

On the horizon of emerging technologies, Mehjabeen expresses cautious optimism. "While blockchain and Web3 present intriguing possibilities, their true impact remains to be seen. It's about keeping an open mind and staying adaptable to the changes these technologies may bring," she asserts. ■

# Y2K taught me adaptability and resilience

By **Jatinder Singh**  
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**YATISH SHIVAPRASAD**  
Managing Director & Head  
of Corporate Functions  
Technology, Societe Generale  
Global Solution Centre



**Yatish Shivaprasad**, Managing Director & Head of Corporate Functions Technology at Societe Generale Global Solution Centre, in a conversation with **Jatinder Singh**, Executive Editor, CIO&Leader.

**B**eginning his journey at Siemens in 1998, Yatish Shivaprasad now serves as the Managing Director and head of Corporate Functions Technology at Societe Generale Global Solution Centre, where he directs a team of over 1,300 specialists. His leadership spans India and Romania, emphasizing the development of IT solutions and strategic offshoring operations for finance, risk, and HR applications.

With over two decades of tenure in the tech industry, Yatish has managed a diverse array of technologies, including open source, big data, AI/ML, UX/UI, data warehousing, and traditional tech stacks. His academic credentials from IIM Calcutta and NIT Karnataka highlight a robust foundation in technology and business management.

Renowned for his people-first leadership and keen understanding of complex business issues, Yatish advocates using varied technologies

and process improvements to drive efficiency and innovation.

In a recent conversation with Jatinder Singh, Executive Editor of CIO&Leader, he shared insights into his career, detailing the challenges he has overcome, the technological evolution he has observed, and his approach to leadership over the past two decades.

Excerpts from the interaction.

**CIO&Leader: How has the evolution of technology from the dot-com era**

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**At the onset of the IT boom, we witnessed rapid advancements, with new technological models emerging every two years.**  
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**to the era of AI shaped your perspective? Which specific projects have left a profound impact on your understanding of technology during this transformative period?**

**Yatish:** It's been a transformative journey, spanning about 22 years in the industry. We witnessed rapid advancements at the onset of the IT boom, with new technological models emerging every two years. The relevant skills then have evolved, requiring constant adaptation to emerging technologies.

**CIO&Leader: What were the key moments that have shaped this journey?**

**Yatish:** I've experienced moments like addressing the Y2K problem and navigating through the dot-com and digital transformation eras. The integration of social media and mobile platforms further accelerated technological evolution, culminating in the rise of AI. Each wave brought challenges and opportunities, keeping us on our toes in the IT landscape. One standout project from my early career was during the pivotal period around 2000. At that time, I had just graduated from engineering, and the industry was grappling with the Y2K problem and transitioning away from mainframe dependency.

This period marked a significant transformation in how businesses approached technology, and participating in projects aimed at modernizing legacy systems was both challenging and rewarding. It taught me the importance of adaptability and resilience in the face of technological change, setting the stage for my ongoing professional growth.

**CIO & Leader: You mentioned the shift from technology being an enabler to becoming a pillar for businesses. How has this transition impacted your approach to technology?**

**Yatish:** Initially, technology served

Initially, technology served as a facilitator for business operations. However, it has now become indispensable, forming the backbone of modern enterprises.

as a facilitator for business operations. However, it has now become indispensable, forming the backbone of modern enterprises. This shift has compelled us to adapt and innovate continuously, ensuring that technology aligns seamlessly with business objectives. We've witnessed the emergence of new languages at the forefront of technological evolution. While some languages may lose relevance, staying updated and embracing emerging technologies is essential. Adapting to these changes ensures that we remain agile and equipped to tackle evolving challenges in the IT industry.

**CIO&Leader: How do you suggest managing the potential skill gap and talent challenges posed by rapid technological advancements?**

**Yatish:** Addressing the skill gap and talent challenges requires a comprehensive approach. Firstly, organizations must invest in robust upskilling, reskilling, and cross-skilling programs to ensure their workforce remains relevant and adaptable. Secondly, fostering a culture of continuous learning and exploration within the organization is crucial. This includes mentorship programs, learning opportunities, and creating an environment where employees feel empowered to explore new avenues. Finally, recognizing and valuing individuals' diverse experiences and expertise is essential. Everyone brings unique strengths; organizations should leverage this diversity to drive innovation and growth.

**CIO&Leader: Do you foresee a potential threat to traditional skill sets due to the rise of AI and automation?**

**Yatish:** There are multiple facets to consider in addressing this question. Firstly, it's essential to recognize that disruptive transformations, like the growth of AI and automation, are inevitable and here to stay. Therefore, adaptation is critical. Secondly, we must carefully apply these technologies where they are essential, considering factors such as confidentiality, security, impact, and value. Thirdly, there's an ethical dimension to be mindful of.

We should approach these disruptive technologies with an ethical framework, ensuring they are applied responsibly and aligned with our values. It's essential to remember that when someone writes a paper or contributes content, we're seeking their unique insights and perspectives, not

In the next few years, we'll witness a significant shift towards automation, with machines increasingly handling mundane tasks.

merely a summarized output from AI models. Hence, context greatly determines where and how we deploy these technologies.

**CIO&Leader: What advice would you offer to young professionals entering the IT field amidst these rapid technological changes?**

**Yatish:** For young professionals entering the IT field, I would offer the following advice:

- Embrace opportunities as they come; every experience contributes to your growth and development.
- Be adaptable and open to change as the IT landscape evolves rapidly.
- Practice patience and resilience, as success often requires perseverance through challenges and setbacks.
- Value every experience, regardless of its immediate outcome, as each experience offers valuable lessons and insights for your career journey.

**CIO & Leader: How will technology impact enterprises in the next few years, and what strategies do you recommend for navigating this future landscape?**

**Yatish:** Looking into the future, the next few years are expected to witness more profound changes driven by automation, AI, and technological advancements. We'll witness a significant shift towards automation, with machines increasingly handling mundane tasks. Human expertise will be directed toward tasks that require creativity, critical thinking, and emotional intelligence. Organizations must prioritize adaptability, agility, and ethical responsibility to navigate this future landscape. This includes investing in technologies strategically, fostering a culture of innovation and continuous learning, and prioritizing ethical considerations in technology deployment. Additionally, staying abreast of regulatory developments and industry trends will be crucial for staying ahead in this rapidly evolving technological landscape. ■



# Financial Crisis of 2007–08 Catalyzed Enterprise Adoption of Mobility Solutions

By Jatinder Singh  
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**KRIPADYUTI SARKAR**  
Group CIO  
Ambuja Neotia



**Kripadyuti Sarkar**, Group CIO at Ambuja Neotia, discusses his 25-year journey and the evolution of enterprise technology with CIO&Leader.

**K**ripadyuti Sarkar is an IT veteran with over two decades of experience in global IT leadership roles. Presently, he holds the position of Group Chief Information Officer at Ambuja Neotia, a leading conglomerate headquartered in Kolkata with diversified interests in real estate, hospitality, healthcare, and education. Sarkar is at the forefront of driving digital transformation efforts, focusing on augmenting fundamental enterprise applications' performance, reliability, and security.

Having worked in a leadership capacity at organizations like RUPA & Co. Ltd., ABP Pvt. Ltd., Reliance, and Adani, Sarkar's extensive experience enriches his role at Ambuja Neotia.

In a candid conversation with Jatinder Singh, the Executive Editor at CIO&Leader, Sarkar reminisced about memorable episodes from his illustrious career and delved into the evolution of enterprise IT. He shed light on the challenges faced during several industry upheavals, such as the dot

com bubble, the financial crisis, and the COVID-19 pandemic, highlighting the instrumental role of IT in adapting and thriving through these periods.

**CIO&Leader:** As we embark on this journey down memory lane, could you share some of the key areas of technological adaptation and evolution with us?

**Kripadyuti Sarkar:** Back in the late 1990s and early 2000s, what we now refer to as the IT team was previously

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Back in the late 1990s and early 2000s, what we now refer to as the IT team was previously known as the EDP team.”

known as the EDP team. Over time, the IT team has evolved into a more structured framework, divided into four key pillars. Firstly, the applications pillar focuses on software solutions to meet business needs. Secondly, the network and infrastructure pillar manage the underlying technology backbone. Thirdly, we have the cybersecurity pillar responsible for safeguarding against digital threats. Lastly, there's the analytics pillar, which has gained prominence, especially around 2015-2016, with the exponential growth of data and the advancement of analytics tools and techniques. The dot com bubble brought significant changes and challenges that I remember vividly. Those were the years that genuinely transformed our approach.

**CIO&Leader:** Truly fascinating. How did enterprises navigate the turbulent waters of the dot-com era?

**Kripadyuti Sarkar:** The dot-com era posed unique challenges and opportunities for enterprises. Initially, we focused on streamlining transactional processes, but as the technological landscape evolved, so did our strategies. By the mid-2000s, the emphasis shifted towards ERP migration and consolidation, marking a critical operational transition. This journey, often guided by the waterfall model, demanded meticulous planning and execution, with projects spanning months, if not years, to complete. The early days of the dot-com bubble, when technology was mainly used for recording transactions, saw initiatives like the offshore on-site model digitizing all enterprise transactions, focusing solely on efficiency rather than broader business growth.

As a result, challenges arose during the dot-com era, particularly in transaction recording, due to significant changes in database architecture brought about by the new millennium. This led us to a phase where we first grasped rational databases and linear programming scenarios. Soon

after, the ERP era took off. Companies shifted from separate HR, finance, and procurement systems to integrated ERP solutions. Big players like Oracle and SAP led this migration to ERP systems, which became the norm for many businesses. With the rise of cloud computing, cybersecurity became paramount as data became the new currency, driving the need for robust security measures.

**CIO&Leader: Moving forward, how did the emergence of mobility and agility reshape organizations' technological fabric?**

**Kripadyuti Sarkar:** In the aftermath of the 2008 financial crisis, enterprises recognized the importance of empowering employees with mobil-

**Kripadyuti Sarkar:** The explosion of big data and analytics marked a significant shift in organizational decision-making processes. Enterprises leveraged advanced analytics to derive actionable insights from vast datasets, empowering informed decision-making and driving competitive advantage. Data emerged as a strategic asset, enabling organizations to gain deeper insights into customer behavior, market trends, and operational efficiencies, thereby driving innovation and growth.

**CIO&Leader: And what about the era after 2010?**

**Kripadyuti Sarkar:** Previously, our growth was organic, steadily climbing from 2000 to 2019. We transitioned

into an analytical platform capable of predictive analytics, machine learning, and AI integration, which began around 2013-2015. This marked a 360-degree shift in our approach as we started presenting derived insights to the business community. IT offered organizations a glimpse into their data's potential, inviting their input and perspectives.

However, the onset of COVID-19 drastically altered the trajectory, pushing us to a level never seen before. During this time, IT ceased to be merely an enabler; it became integral to our survival. Our entire transactional framework had shifted to digital platforms, with infrastructure residing on the cloud and fortified by cybersecurity measures. Multi-factor authentication protocols ensured secure access to business transactions, eliminating the concept of standalone IDs. Rapid scalability became imperative, particularly with the sudden shift to remote work practices during lockdowns. During this period of upheaval, organizations allowed innovators to redefine the role of IT in the coming decade.

As consumers and beneficiaries of IT solutions, we began scrutinizing offerings more closely. No longer content to passively accept products, we actively engaged with providers, offering insights on product development and functionality. Business leaders recognized that IT was no longer a supporting function; it had become the driver of organizational success.

The COVID era accelerated the adoption of technologies like AI, fundamentally transforming our approach to IT. As we move forward into 2022-2023 and beyond, we recognize that IT is not merely a department but an integral part of every facet of our operations, transcending traditional headcount metrics to become deeply ingrained in our organizational DNA. ■

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**The dot-com era posed unique challenges and opportunities for enterprises. Initially, we focused on streamlining transactional processes, but as the technological landscape evolved, so did our strategies.**  
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ity solutions. This heralded an era of extending office capabilities beyond traditional boundaries, embracing mobility as a catalyst for enhanced productivity and accessibility. The enterprise technology landscape underwent a paradigm shift, with agility and adaptability emerging as critical drivers of success in a rapidly evolving digital ecosystem.

**CIO&Leader: With mobility came new challenges, particularly in the domain of cybersecurity. How did organizations navigate these evolving threat landscapes?**

**Kripadyuti Sarkar:** The proliferation of cloud adoption and remote

accessibility posed unprecedented cybersecurity risks for organizations. Consequently, cybersecurity assumed a paramount role, with dedicated teams tasked with fortifying defenses and safeguarding critical data assets against potential breaches. This era witnessed a heightened emphasis on proactive risk mitigation and robust cybersecurity frameworks to mitigate emerging threats effectively.

**CIO&Leader: Indeed, data security remains a cornerstone of modern enterprise strategy. How did the advent of data analytics further revolutionize technological strategies within organizations?**

# From Typewriters to AI: A Tech Guru's 25-Year Journey Through Digital Evolution

By Nisha Sharma  
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**ATANU PRAMANIC**  
COO & VP – IT  
RPSG Ventures



In the fast-moving world of technology, **Atanu Pramanic**, COO & VP – IT, RPSG Ventures, sheds light on how businesses have changed because of tech advancements.

Over the past 25 years, technology has moved at an incredible pace. This change has transformed not just how companies work but also the role of CIOs.

In a candid conversation with CIO&Leader, Atanu Pramanic, COO & VP – IT, RPSG Ventures, with decades of experience, shares his journey through the evolving landscape of technology. Starting from the early days of his career to the current era dominated by artificial intelligence (AI), his story offers a unique perspective on how technology has transformed the workplace and the world.

## Early beginnings and the digital dawn

Atanu's career began in an era when computers were a rarity, guarded like treasures within his university's mechanical engineering department. "Back then, getting a couple of hours on a computer was considered a privilege," he recalls, reflecting on a time without personal email, relying instead on face-to-face communica-

tion and physical documents. These were the days of electronic typewriters, a far cry from today's digital tools.

## The Dot-com era and ERP systems

The late '90s brought the dot-com boom and the introduction of Enterprise Resource Planning (ERP) systems, such as Oracle and SAP. Atanu notes the value of ERP knowledge during this time, which marked his transition from mechanical engineering to becoming an IT expert. "Those who understood ERP were the hotcakes in the market," Atanu observes, highlighting a period crucial for tech professionals, setting the stage for the digital transformations to follow.

## The rise of the Internet, SaaS, and Cloud Computing

With the 2000s came the widespread adoption of the internet, alongside the emergence of Software as a Service (SaaS) and cloud computing. "Oracle's attempt to merge traditional ERP systems with cloud technology signaled a new chapter in digital solutions," Atanu points out. His career evolved

in tandem, focusing on application development, business process management, and, ultimately, leading digitalization initiatives as a CIO.

## Digitalization and the importance of security

Reflecting on the shift towards digital technologies, Atanu emphasizes the reimplementing of ERPs and the adoption of digital tools. "The digital landscape has transformed drastically, with security becoming a cornerstone of technological evolution," he explains. The discussion also highlights the evolving landscape of information security, moving from basic firewall protection to sophisticated data and application security in response to the challenges posed by a connected world.

## Managing workforce transitions

One of the most significant challenges Atanu faced was guiding teams through the uncertainties of automation and AI. He stresses the importance of viewing technology as an enabler, not a replacement. "Empowering employees to embrace change rather than fear it has been key to our success," he shares, outlining strategies for building confidence among employees wary of change. By focusing on education and the benefits of technology, he has successfully navigated the complexities of modernization.

## The future of AI and intelligent enterprises

Looking ahead, Atanu contemplates the role of AI in shaping the future of business. "AI's potential for innovation is boundless, yet its ethical use remains a paramount concern," he asserts. While acknowledging the potential for innovation, he also calls for regulatory measures to ensure the ethical use of AI. The conversation touches on the need for a unified standard for AI deployment, highlighting the balance between leveraging technology and safeguarding human interests. ■

# Reflecting on 25 Years of Game-Changing Tech Moments

Here, we explore the 25 most significant technology milestones of the past 25 years, examining their impact and the trends they represent.

Over the past 25 years, we have witnessed remarkable technological advancements that have profoundly reshaped every aspect of human life. Among the many milestones that have influenced and shaped enterprise technology during this period, several defining tech areas stand out for their significant impact on businesses and their operations.

Here, we explore the 25 most significant technology milestones of the past 25 years, examining their impact and the trends they represent.

## THE DAWN OF A NEW DIGITAL ERA

**1 The birth of Google (1998):** Google's launch began a new era that has revolutionized information retrieval, transforming how we access knowledge and data online. Its algorithms have continually evolved, making search results more relevant and spawning new industries around search engine optimization and digital marketing.

**2 Wi-Fi becomes standardized (1999):** The standardization of 802.11b Wi-Fi enabled a wireless revolution, liberating internet access from the confines of physical connections and facilitating the rise of mobile computing.

**3 The introduction of the iPod (2001):** Apple's iPod changed the music industry forever, signaling the shift from physical media to digital formats and paving the way for streaming services.

**4 The advent of social media (the Early 2000s):** Platforms like LinkedIn (2003), Facebook (2004) and Twitter (2006), Orkut in 2004, and Instagram (2010) launched, creating new avenues for communication and fundamentally altering the social fabric of the Internet professionally and personally.

**5 Launch of SharePoint (2001):** The launch of SharePoint by Microsoft revolutionized how busi-

nesses operate by providing a centralized platform for collaboration, document management, and workflow automation.

**6 The smartphone era begins (2007):** The release of the iPhone heralded the smartphone era. It combined internet connectivity, multimedia, and apps into a single device, profoundly impacting daily life and business.

**7 The App Store concept (2008):** Apple's App Store introduced a new model for software distribution, fostering an app economy and transforming mobile phones into versatile tools for everything from entertainment to productivity.

**8 Bitcoin and cryptocurrency (2009):** The creation of Bitcoin introduced blockchain technology, challenging traditional financial systems and sparking a wave of innovation in digital currencies and decentralized finance.



**9 The rise of cloud computing (2010):**

Services like Amazon Web Services democratized access to computing resources, enabling startups to scale rapidly without significant upfront investment in hardware.

**10 Social media's role in politics (2010s):**

Social media's influence became evident in political movements worldwide, demonstrating its power to mobilize, inform, and sometimes misinform.

**11 The tablet computer takes off (2010):**

The iPad's success made tablets a mainstream technology, affecting publishing, education, and entertainment.

**ACCELERATING INNOVATION AND CONNECTIVITY****12 The proliferation of IoT devices (the 2010s):**

The Internet of Things connected everyday objects to the Internet, creating smart homes and cities and raising concerns about security and privacy.

**13 The emergence of big data (2010s):**

The explosion of data generation and collection enabled new insights and innovations in healthcare to market, highlighting privacy and data protection issues.

**14 Advances in AI and Machine Learning (2010s):**

Breakthroughs in AI, such as deep

learning, have applications in image recognition, language processing, and beyond, raising ethical questions about automation and job displacement.

**15 Wearable technology (2010s):**

Devices like Fitbit and Apple Watch brought health monitoring to the masses, merging technology with personal wellness.

**16 The commercialization of drones (2010s):**

Drones found uses in photography, delivery, and agriculture while prompting discussions on privacy and airspace regulation.

**17 Virtual reality goes mainstream (2016):**

The consumer release of VR headsets like the Oculus Rift opened new frontiers in entertainment and education despite slow adoption rates.

**18 The Cambridge Analytica scandal (2018):**

This event underscored the dark side of social media, revealing how personal data could be exploited for political manipulation.

**19 The global GDPR enforcement (2018):**

The General Data Protection Regulation set a new standard for data privacy, influencing global legislation and business practices.

**20 The advent of 5G (2019):**

The rollout of 5G networks promised faster internet speeds and lower latency, critical for advancements in IoT, autonomous vehicles, and mobile technology.

**EMBRACING A FUTURE SHAPED BY TECHNOLOGY****21 The rise of remote work technologies (2020):**

The COVID-19 pandemic accelerated the adoption of remote work, highlighting the importance of digital collaboration tools and cloud infrastructure.

**22 The expansion of E-commerce (2020s):**

The pandemic also boosted e-commerce, leading to innovations in online shopping, delivery services, and digital payments.

**23 Quantum computing breakthroughs (2020s):**

Advances in quantum computing suggest a future with significant impacts on cryptography, material science, and complex problem-solving.

**24 The rise of Generative AI and LLMs (2020s):**

Gen AI and LLMs marked a new frontier in AI, with technologies like GPT-3 revolutionizing natural language processing, content creation, and beyond. These developments pose new questions on creativity, copyright, and AI ethics. Deepfakes and generative AI have raised concerns about misinformation, copyright, and the nature of truth in digital media.

**25 Space exploration and commercialization (2020s):**

The involvement of private companies in space exploration, exemplified by SpaceX's achievements, marks a new era in humanity's relationship with space. ■

# Transformative technologies- shaping India's digital landscape

India's technological landscape has seen remarkable transformations over the last two and a half decades, with several vital technologies profoundly impacting its economy, society, and daily life. Beyond the global milestones, certain technologies have uniquely influenced India, reflecting the country's specific needs, challenges, and opportunities.

Here are some noteworthy technologies and initiatives:

## 1. The Aadhaar digital identity program

Launched in 2009, Aadhaar is the world's most extensive biometric ID system, providing a unique 12-digit identity number to Indian residents based on their biometric and demographic data. Aadhaar has revolutionized access to government, banking, and telecom services, making it a cornerstone of India's digital infrastructure. It has facilitated digital inclusivity, direct benefit transfers, and simplified KYC (Know Your Customer) processes, although it has also raised privacy and data security concerns.

## 2. Unified Payments Interface (UPI)

Introduced in 2016 by the National Payments Corporation of India (NPCI), UPI is a real-time payment system that allows instant money transfers between banks via mobile platforms. UPI has been a game-changer in promoting digital payments across India, significantly reducing reliance on cash and fostering financial inclusion. Its simplicity and ease of use have led to widespread adoption, making India one of the world's leading countries in digital payment innovation.

## 3. Digital India Initiative

Launched in 2015, the Digital India initiative aimed to transform India into a digitally empowered society and knowledge economy. It focused on three core components: developing secure and stable digital infrastructure, delivering government services digitally, and universal digital literacy. Digital India has significantly improved internet connectivity, e-governance, and digital literacy, particularly in rural areas.

## 4. Jio's telecommunication revolution

In 2016, Reliance Jio Infocomm Limited (Jio) entered the Indian telecom market, offering low-cost data plans and free voice calls. This move disrupted the telecom industry and significantly increased internet accessibility and usage across India. Jio's aggressive pricing strategy forced competitors to lower their prices, making high-speed internet services affordable and accessible to a vast population, thus accelerating India's digital transformation.

## 5. E-commerce growth

While not unique to India, the e-commerce boom has significantly impacted the Indian market and consumer behavior. Companies

like Flipkart (founded in 2007) and later Amazon India have transformed retail in India, bringing a wide range of products to the urban and rural populace. The e-commerce sector has spurred economic growth, created jobs, and changed how businesses operate, contributing to the digital economy's growth.

## 6. Solar energy expansion

India's focus on renewable energy, particularly solar, has been vital to its technology adoption strategy. The National Solar Mission, part of the National Action Plan on Climate Change, aims to make India a global leader in solar energy. With one of the world's largest solar parks and ambitious targets for renewable energy, India is leveraging technology to meet its energy needs sustainably.

## 7. Startup ecosystem and innovation

The last decade has seen a meteoric rise in India's startup ecosystem, fueled by technological innovation, venture capital, and government initiatives like Startup India. Indian startups in fintech, edtech, healthtech, and more are solving local and global challenges, showcasing India's growing influence in the global technology and innovation landscape.

## 8. Smart Cities Mission

Launched by the Government of India, the Smart Cities Mission aims to develop sustainable and citizen-friendly urban areas using digital technology, significantly impacting urban development and governance.

## 9. National Digital Health Mission (NDHM)

Announced in 2020, the NDHM aims to develop an integrated digital health infrastructure in India. The initiative seeks to provide a unified health ID, digitize health records, and create a robust health information exchange, representing a significant leap toward digital healthcare.

## 10. India's contributions to space technology

Beyond commercial space exploration, India's space missions, such as the Mars Orbiter Mission (Mangalyaan) and Chandrayaan missions to the Moon, have placed India on the global map of space exploration and research.

## 11. Growth of EdTech and online learning

Platforms like BYJU'S, Unacademy, and others have revolutionized the education sector in India, making quality education accessible to a broader audience and showcasing the potential of online learning.

These technologies and initiatives reflect India's unique journey through the digital age, highlighting the country's adaptability, innovation, and the pivotal role of technology in driving social and economic progress. ■



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Business Intelligence  
SPECIAL

# BI Jet Setter

Jet Airways automated around 80 percent of its work processes, and improved productivity by 30 percent with its BI solution.

By Ashwani Mishra

**F**or Jet Airways, getting one version of the truth across all business functions was a hurdle that the company wanted to overcome effectively. Information dissemination within the organisation was not standardised – there was dependency on excel sheets for conducting data analysis, and reconciling numbers periodically posted a big challenge.

The company was operating on disparate systems and the data from all these systems was not in sync with the ground reality.

For example, if the company wanted to look at the financial data for a month in a particular year, it had to wait till the end of the next month to get the required data. So there was a month's lag in getting the required information.

"We wanted to have a centralised reporting structure so that information could

be made available to key decision makers quickly," says R N Moorthy, General Manager-IT, Jet Airways.

To address these concerns, the company embarked on a BI roadmap way back in 2006, when it decided to implement the SAP Data Warehouse to generate its MIS out of the existing SAP ERP system.

The system was implemented with the help of partners, who helped in the initial design along with the in-house IT team. Later the company only consulted its technology partners while the development and implementation was done by the internal team.

Towards the end of last year the company implemented the SAP Business Objects (BO) analytical tool on top of its ERP and Data Warehouse to further increase its decision-making capabilities.

"The key reason for the implementation

was the growth in business and need for quicker data analysis," says Moorthy.

## GETTING DATA RIGHT

The number of aircrafts had gone up from 25 to 212 (Jet Airways and JetLite combined) that compelled the company to deploy an intelligent data reporting system. Before deploying this solution, the airline used to have reports but they were on a transaction-based system (where the data was fed) and getting the data out from the central data warehouse for analytics and reporting was quite a cumbersome task.

With the BO tool in place, the airline now is able to generate reports on time and has improved the decision making process. Jet Airways officials say that the BO tool has helped in making almost 80 percent of company's work automated. The tool helps analyse the data at finer granularity and is





We wanted to have a **centralised reporting structure** so that information could be **made available to key decision makers quickly**”

—R N Moorthy  
General Manager-IT,  
Jet Airways

available to employees across the organisation based on their roles. Currently more than 150 business users within Jet are using the system around the globe.

The Business Objects tool has also helped the company carry out route profitability and cost allocation at the most granular level.

“We can now find out a flight’s most profitable route, landing navigation rate, oil con-

sumption and so on. With the weight of the aircraft, the oil and landing navigation, the cost goes up. Hence it’s important to look at the Profit and Loss (P&L) of every aircraft. All this information is now available in real time,” says Moorthy.

The company now carries out the P&L on flights every week and depending on the future booking loads they can, for instance, decide to combine two flights instead of fly-

ing two separate aircraft.

The financial data is now available within a week and personal productivity has increased by 30 percent. The company now has the capability to create dashboards for the management.


“We intend to take BI to the next level by using it for predictive analysis , and enabling on-demand BI in the next couple of years,” says Moorthy. 

PHOTO: JIJEN GANDHI

*Originally featured in CTO FORUM (now CIO&Leader), October 2010, this story provides a nostalgic glimpse as we celebrate 25 years journey!*



Business Intelligence  
SPECIAL

# Staying ahead of the Curve

Vodafone Essar revamped their BI infrastructure to meet existing and future business demands.

By CTO Forum team

Vodafone Essar is one of India's leading cellular service providers with more than 100 million customers. The company has around 10000 end-users across 23 circles in the country working across various departments like customer service, marketing, sales, finance, IT, commercial, legal and regulatory etc. All these users have varied requirements in terms of MIS and BI.

The company has been adding nearly two million subscribers each month and this created a demand for scaling up the existing infrastructure in terms of getting information.

The BI journey had started with an initial maturity level with limited dimension of data sophistication and work load complexity. With the addition of new circles and an increase in customer base, it became challenging for the current BI system to give timely data. Besides, appropriate BI tools

were necessary for Customer Value Management (CVM) and analytical needs like segmentation, churn and usage modelling.

"The old BI architecture was not geared up to scale up to this kind of growth," says Thomas Cherian, Head BI Practice, Vodafone India.

There were various reports and interfaces which were built over time and were not easy to manage in the absence of standardisation. In addition, the expectations from end user groups were different in different geographies. The data available in the Data Warehouse was outdated and there was business demand for increased turnaround time, better uptime and accuracy along with high volumes.

## FINDING NEW INTELLIGENCE

The company decided to implement BI tools to support analytics and CVM for executing marketing campaigns. Mining

tools and analytics would be used in identifying potential segmentation, priorities and retention efforts while CVM tools would lead to increase in conversions at lower cost of communication.

The new tools deployed increased the conversion rate. This in turn led to increase in base management revenue due to better segmentation and use of modelling inputs.

"We want to take BI to the next level; make the system scalable and ensure IT operations maintain work load balance," says Cherian.

The company managed to reduce cost of contact considerably due to focused targeting and have one view of the customer across all channels leading to better customer experience.

The current scoring framework encompasses close to 400 models scoring 50 million subscriber information bi-monthly that has been developed over the last two





We have achieved **huge time saving benefits** by the **speed and availability** of the solution despite it **running millions of records**”

— Thomas Cherian  
Head BI Practice,  
Vodafone India

years. The scoring platform is a complete automated system and take cares of event triggering, ETL, scoring and score delivery and automated mailers by its own.

“We have achieved huge time saving benefits by the speed and availability of the solution despite it running millions of records that get executed in a matter of hours,” says Cherian.

Using the BI tool, the churn percentage on postpaid business has reduced by 0.5 percent in a year, translating into substantial revenue saving and generation due to ongoing relationship with churn subscribers.

**FUTURE PLANS**

The company has plans to enhance and introduce next generation of automation in data extraction, loading and aggregation process to address workload management. The systems viz. Data Warehouse and MIS will undergo transformation by implementing the ETL (extract, transform and load) application layer and the reporting layer.

“BI is extremely critical and represents the face of IT to our management. It will remain as one of our biggest focus areas to ensure we have the latest and accurate data at all times,” says Navin Chadha, Director-IT, Vodafone Essar.

BI will also be integrated with current strategic IT programs that are being undertaken within the organisation like 3G network, mobile number portability (MNP), new billing platform, new prepaid platform and CRM.


The enhanced BI will used for micro segmentation and automation of scoring and sharper predictive modelling. Campaign management solution will be integrated to newer channels like kiosks and online medium for targeted and segmented offerings. 

PHOTO: JITEN GANDHI

*Originally featured in CTO FORUM (now CIO&Leader), October 2010, this story provides a nostalgic glimpse as we celebrate 25 years journey!*



# As Easy as an ATM

TG Dhandapani, CIO, TVS Motors increased the usage of his open source BI product by making it as easy as an ATM machine. **By Rahul Neel Mani**

**T**VS Motor Company is one of the largest industrial entities in India with majority interests in the automobile industry. This includes two wheelers, finance, parts and distribution.

It is also the third largest two-wheeler manufacturer in India and one of the top ten in the world, with an annual turnover of more than \$1 billion, and is the flagship company of the \$4 billion TVS Group. The company has been growing at close to 35 percent year on year.

With three manufacturing units in India – Hosur, Mysore and Himachal Pradesh – TVS Motors produces 2 and 3 wheelers and markets them through 600 dealerships and 1,200 authorised service centres. Logistics in the company is one of the most important things as the parts are to be procured

“After ERP, the thrust was on knowing more about our customers products in the field.”

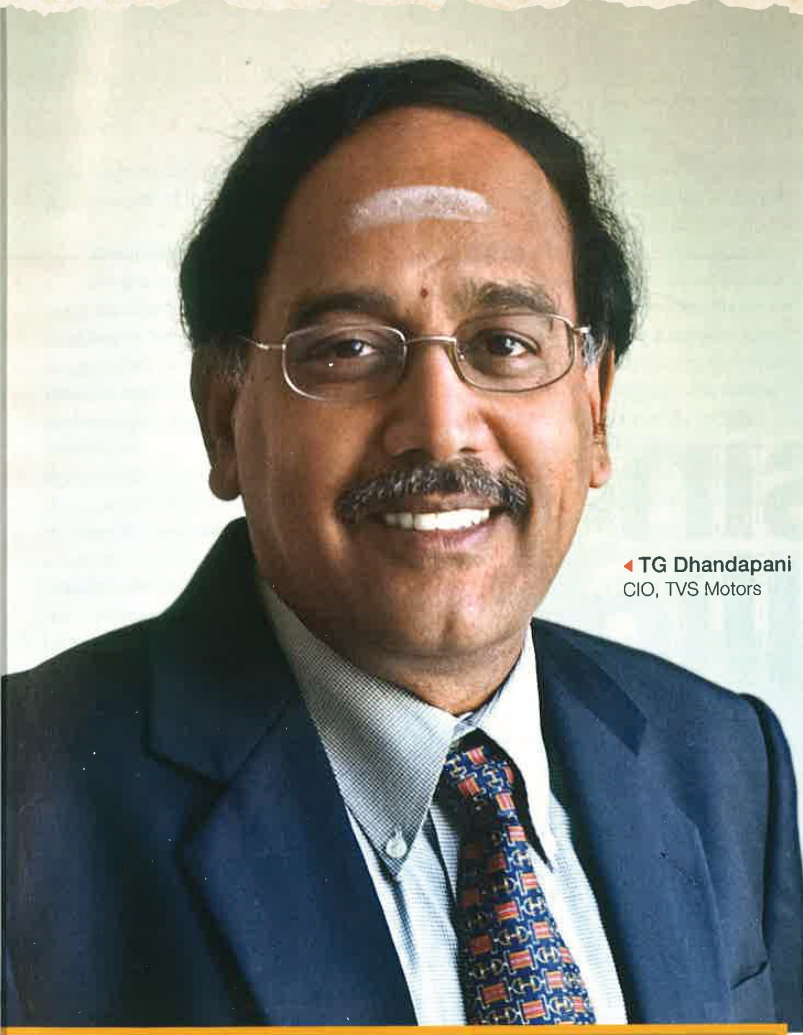
**TG Dhandapani**  
CIO, TVS Motors

globally and marketed globally. Continuous improvement in product and service quality is the order of the day. To meet these business challenges, TVS Motors uses information technology as a transformation platform for business innovation and best-in-class operational efficiency. The cultural and organisational transformation at TVS Motor is to change the role of functional managers and employees from being passive information receivers to being proactive information seekers – resulting in better business decisions and performance.

“For this transformation, BI is playing an important role to drive the achievement of strategic and operational objectives of the company” says TG Dhandapani, CIO, TVS Motors.

The first milestone on this journey is to implement ERP and integrate all business



Business Intelligence  
SPECIAL

◀ **TG Dhandapani**  
CIO, TVS Motors

processes not only within the company but with suppliers and customers as well. "After ERP, the thrust was on knowing more about our customers and performance of our products in the field."

For this TVS Motors developed the Dealer Management System (DMS). "It is an ERP for the dealers that talks to the company ERP seamlessly and provides valuable information on customer profiles and product performance from the electronic job card used in the DMS," says Dhandapani.

The next stage was the digitisation of New Product Development for which valuable information were received from the DMS. This was followed by shop-floor integration where activities on the shop-floor were digitised for improvement in productivity and product performance. "At this stage BI was implemented to drive the achievement of strategic initiatives and operational per-

formance improvement. A cross functional team was formed where stakeholders from all functions participated. IT spearheaded the team."

#### THE ROLE OF IT

The role of IT here was to provide an appropriate platform while maintaining focus on the strategic objective. BI was implemented by integrating the ERP and DMS. The ERP covered all areas including PLM and CRM. There were other non-mission-critical applications too. "These included time management, Travel, Fleet management, Taxi management, Visitor management, Shop-floor integration projects and so on," Dhandapani said. Those 20 applications were not a part of the ERP and Dhandapani decided to use an open source BI solution, Dundas, to provide intelligence. "This BI tool is user friendly and can be easily used by the shop

floor worker also", he says. In TVS motors all employees get their full personal information including compensation details, salary certificate, PF details, Loan, Leave and so on using this open source tool.

Dhandapani says that the main force for the decision to go for the tool was its simplicity, elegance and effectiveness. He also notes that this open source BI tool is very useful and effective for the data pulled from ERP in smaller companies.

#### IMPLEMENTATION

Generally BI tools are used extensively by employees that are not comfortable with technology. Since these tools are designed to give on-demand information, they are not too different from designing a good mobile phone or a user-operated kiosk. For a tool to be good and efficient it should be so transparent that the user does not even know that they are using a tool. Case in point, take ATM machines. They are so simple to use that practically no training is required.

As Dhandapani observes, "Any BI implementation is a journey and we could understand that the user involvement and their thirst for analysis is the limitation. Once this is in place simplicity of operation is important. As we ensured that the operations of this BI system were as simple as using an ATM, we could see many IT users joining and contributing for enhancement."

#### BENEFITS

TVS Motors has seen significant benefits. The first win for the IT department has been the users are actually using the system to its potential. Otherwise you may create tens of dashboards for the employees to use, but they may not use them simply because either they are not comfortable or there is resistance to change. By using a smart system and by proper employee orientation TVS Motors has surpassed this milestone with ease.

With this out of the way, the users are actually using the system for tangible business benefits. Dhandapani concludes that "In the short term we could see usage mushrooming and in long term we will experience IT users taking informed decisions. We also expect to see functional managers and employees as proactive information seekers to improve business decisions and performance. **CTO**"

*Originally featured in CTO FORUM (now CIO&Leader), October 2010, this story provides a nostalgic glimpse as we celebrate 25 years journey!*

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# SPECIAL FEATURE



## Vertiv Unveils Pune Plant to Meet Rising Data Center Needs

Vertiv has opened a new manufacturing facility in Pune, India, catering to the global demand for data center solutions.

By **Nisha Sharma** | [nisha.sharma@9dot9.in](mailto:nisha.sharma@9dot9.in)



**Vertiv's recent** inauguration of a new manufacturing facility in Chakan, Pune, India, on 9 January 2024 represents a strategic move within India's data center industry. This facility, the third of its kind in India, is aimed at meeting the growing demand for data centers and supporting infrastructure solutions in the country. It complements Vertiv's existing manufacturing facilities in Ambarnath and Pune.

The 210,000-square-foot facility is equipped to manufacture various cooling solutions, including adiabatic free cooling chillers, custom air handling units, thermal wall units, direct expansion (DX) packaged units, in-row cooling units, wall mount units, and rack cooling systems. Additionally, it includes psychometric labs for performance testing, a customer experience center, and design support capabilities, emphasizing sustainability.

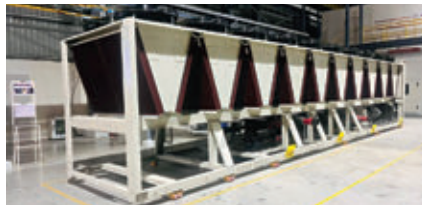
Vertiv CEO Giordano (Gio) Albertazzi sees this facility as crucial in addressing the global demand for data center thermal and power infrastructure, driven by the increasing digitalization and AI adoption. India's emergence as a data center hub in the APAC region was pivotal in its establishment, aligning with Vertiv's commitment to fostering India's data center ecosystem while serving global needs.

The impact on manufacturing costs and logistics in India is notable, with improved infrastructure and logistics leading to lower manufacturing costs, particularly for large unit handling. This indirectly aids operators by sim-

plifying funding aspects related to infrastructure development.

The Chakan plant currently employs over 500 employees and plans to expand further. The Pune Engineering Center focuses on global needs, while local teams cater to domestic markets, ensuring comprehensive product development and support.

Subhasis Majumdar, Managing Director, Vertiv India, emphasized the significance of the new plant, highlighting its potential to enhance Vertiv's capacity to provide thermal management solutions, improve lead times, and deliver tailor-made solutions that align with India's unique environmental and infrastructural needs.



In terms of product development and supply chain contributions, Vertiv's strategic approach underscores the growing importance of the sector. However, the specific impacts on enterprises are not absolute and depend on individual circumstances. Here are some key considerations for enterprises:

- 1. Data Center Capacity Enhancement:** The facility's focus on advanced cooling solutions offers potential benefits for enterprises managing increased data processing demands. The actual impact hinges on factors such as cost, innovation, and compatibility with existing infrastructure.
- 2. Supply Chain Dynamics:** Strengthening the local supply chain for data center components could lead to reduced lead times, but the extent of impact varies based on geographical and operational specifics.

- 3. Sustainability Considerations:** The facility's emphasis on environmental compliance aligns with global trends but challenges enterprises to balance sustainability with operational efficiency and cost.
  - 4. Local Versus Global Solutions:** While the facility integrates global engineering practices with local adaptability, enterprises must evaluate these solutions against existing global standards and technologies.
  - 5. Operational Costs and Efficiency:** The facility's influence on local manufacturing and logistics landscapes may offer operational benefits, but enterprises should consider broader market dynamics, including competition and technological advancements.
  - 6. Talent Pool Expansion:** The facility's contribution to the regional skilled workforce could benefit enterprises in need of specialized talent, contingent on the quality of training and the relevance of skills.
  - 7. Competitive Market Landscape:** The development could intensify competition among data center providers, potentially driving innovation. Enterprises should assess how these changes align with their strategic goals.
  - 8. Domestic vs. International Market Impact:** The facility's aim to address both local and global markets requires consideration of various factors, including market demand, technological trends, and economic conditions.
- In conclusion, while Vertiv's new facility is a significant development in India's data center industry, its impact on enterprises is multifaceted. It offers potential opportunities and benefits, but enterprises should assess these in the context of their unique requirements and the broader market landscape. An analytical approach is essential for enterprises navigating this evolving terrain. ■



## **Navigating the Cybersecurity Storm: A Modern Approach for Digital Challenges**

ISOs/CIOs must talk to the CEO and board about safeguarding the organizations' crown jewels and protecting shareholders' interests.

By **Kanishk Gaur** | [editor@cioandleader.com](mailto:editor@cioandleader.com)



**I**n the rapidly evolving digital landscape, the role of Chief Information Security Officers (CISOs) and Chief Information Officers (CIOs) has never been more critical. As digital transformation accelerates, so do the complexities and frequencies of cyber threats. From advanced persistent threats (APTs) to sophisticated ransomware attacks, today's cybersecurity challenges demand not just attention but innovation in our defensive strategies.

The digital world is a battleground of constantly evolving threats. Cybercriminals are becoming more sophisticated, leveraging advanced technologies to orchestrate more complex and harder-to-detect attacks. Traditional cybersecurity measures are often reactive and struggle to keep pace with these evolving threats. This gap leaves organizations vulnerable to data breaches and threats that can undermine their entire digital identity and integrity.

### Next-generation cybersecurity solutions

A new breed of cybersecurity solutions has emerged in response to these challenges. SaaS-based digital risk management platforms represent a paradigm shift in our approach to cybersecurity. These platforms provide organizations with a comprehensive, 360-degree view of their digital risk posture, encompassing everything from brand reputation to social media, web, and mobile-specific risks.

Integrating Artificial Intelligence (AI) and Machine Learning (ML) in these platforms is a game-changer. By analyzing vast amounts of data, AI and ML algorithms can predict and identify potential threats before they materialize. This proactive approach shifts the cybersecurity strategy from reactive firefighting to predictive and preventive measures, enabling organizations to stay one step ahead of cybercriminals.

### Broadening the scope beyond financial gains

Today's cyber threats are not just about financial gain. Hactivism and state-sponsored attacks have brought a new dimension to the cybersecurity landscape. These threats are often politically motivated and can be particularly damaging. Modern digital risk management platforms are equipped to safe-

guard businesses from such diverse threats, ensuring they are prepared for any eventuality.

The scope of modern cybersecurity solutions extends beyond traditional threats. They offer protection against identity theft, fraud, and social engineering attacks. By continuously monitoring digital footprints across the dark, deep, and surface web, these platforms shield against emerging threats, ensuring comprehensive protection for businesses.

### The role of digital risk management in cybersecurity strategy

For CISOs and CIOs, integrating a robust digital risk management platform into their cybersecurity strategy is no longer optional; it's imperative. These platforms enhance an organization's ability to respond to threats and improve its overall resilience. They enable informed decision-making and strategic planning by providing a holistic view of the digital risk landscape.

The future of cybersecurity lies in adaptive, intelligent solutions that can anticipate and mitigate risks in real-time. As cyber threats continue to evolve, so must our defenses. Integrating AI and ML in cybersecurity represents a significant step forward, offering the potential to transform how we protect our digital assets.

### A call to action for today's CISOs and CIOs

In conclusion, the cybersecurity landscape is more challenging than ever, but it also presents an opportunity for innovation. By embracing advanced digital risk management solutions, organizations can protect themselves against current threats and prepare for future challenges. The message for CISOs and CIOs worldwide is clear: the time to act is now. Adopting a proactive, comprehensive approach to cybersecurity, we can navigate the storm and emerge more robust and resilient.

### Cybersecurity as an Enterprise Risk: Beyond IT

Hence, the need breed of CISOs and CIOs should not look at cybersecurity in isolation or as part of a broad information technology function but as an Enterprise Risk with holistic implications for the organization. A physical security or human resource functional risk and financial fraud never occur in isolation; hence, broad principles of digital risk management must be embraced within organizations. ■

—Kanishk Gaur is a cybersecurity and digital technology expert.



# Artificial Intelligence's Role And Strategy In Cybersecurity

AI has emerged as a powerful ally in the fight against cyber threats, but implementation need a careful approach.

By **Bhabani Chatterjee** | [editor@cioandleader.com](mailto:editor@cioandleader.com)

**I**n the age of digital transformation, where data is the lifeblood of businesses and individuals alike, the importance of cybersecurity cannot be overstated. The ever-evolving threat landscape demands innovative approaches to safeguarding digital assets. Now, they are also turning to it to shore up their defenses against the crime that inevitably follows. We wanted to learn more about how they are doing this and, more importantly, how they can do it better.

Artificial Intelligence (AI) has emerged as a powerful ally in the fight against cyber threats, offering the promise of enhanced defense strategies and proactive threat mitigation. This article explores the pivotal role AI plays in cybersecurity and outlines key strategies for its implementation.

## The power of AI in cybersecurity

Artificial Intelligence has revolutionized the way we approach cybersecurity. Its unique capabilities empower security professionals to stay one step ahead of attackers by automating tasks, analyzing massive datasets, and making real-time decisions.

Here are some of the key ways AI enhances cybersecurity:

### Threat detection

AI-powered systems excel at identifying and recognizing patterns that may indicate a cyber threat. They can swiftly detect anomalies, unusual behavior, and potential vulnerabilities across a network.

### Behavioral analysis

AI algorithms can analyze user and network behavior to establish baselines and detect deviations promptly. This helps identify insider threats and advanced persistent threats (APTs).

### Predictive analytics

AI's ability to analyze historical data and predict future threats is a game-changer. It enables organizations to defend against potential cyberattacks and vulnerabilities proactively.

### Automated response

AI can not only detect threats but also respond to them in real-time. Automated incident response can isolate compromised systems, stop malicious processes, and mitigate the impact of an attack.

### Security training

AI-driven tools can simulate cyberattacks and provide security teams with hands-on training, helping them prepare for evolving threats.

At Capgemini, through our comprehensive analysis of various AI use cases in cybersecurity spanning across many domains, several significant findings have come to light:

**A heightened necessity for AI in cybersecurity:** Most organizations have recognized the need to reinforce their cybersecurity measures by incorporating AI. Nearly two-thirds of these entities now believe that identifying critical threats without the assistance of AI is an increasingly challenging task.

**Accelerated adoption of AI in cybersecurity:** The pace of AI integration into cybersecurity is rising. Approximately three-quarters of organizations are actively exploring and experimenting with AI in various cybersecurity use cases, reflecting a growing momentum in its adoption.

**Strong business justification for AI:** An overwhelming three out of five organizations have established a robust business case for implement-

ing AI in their cybersecurity strategies. They have observed that the utilization of AI significantly enhances the accuracy and efficiency of cyber analysts, underscoring the tangible benefits derived from AI integration in this context. Numerous companies have already incorporated AI into their cybersecurity efforts or have imminent plans to do so. To achieve optimal results, they should develop a strategic roadmap for AI integration within the cybersecurity domain. This entails tasks such as pinpointing essential data sources and establishing robust data platforms to effectively leverage AI, selecting the most pertinent use cases to expedite and optimize advantages, fostering external collaborations to bolster threat intelligence, implementing security orchestration, automation, and response (SOAR) mechanisms to enhance security management, providing training for cyber analysts to work with AI proficiently, and instituting governance protocols for AI in cybersecurity to ensure sustained enhancements over the long term.

## Strategies for AI implementation in cybersecurity

To harness the full potential of AI in cybersecurity, organizations must adopt comprehensive strategies that align with their security goals. Here are some key strategies:

### Data collection and analysis

Gather and store extensive data from various sources, including logs, network traffic, and user behavior. AI systems require robust datasets for training and continuous improvement.

### Machine learning models

Develop machine learning models to analyze the data and recognize patterns, anomalies, and threats. Continuous model training and fine-tuning are crucial for optimal performance.

### User and Entity Behavior Analytics (UEBA)

UEBA systems leverage AI to analyze the behavior of users and entities. Implementing UEBA can help identify insider threats and compromised accounts.

### Threat intelligence integration

Integrate threat intelligence feeds with AI systems to update them with the latest threats and attack techniques.

### Automation and orchestration

Use AI for automating repetitive tasks and orchestrating incident response. This speeds up reaction time and reduces human error.

### Collaboration and information sharing

Encourage collaboration among security professionals and organizations. Sharing information about emerging threats and vulnerabilities is critical in a connected world.

### Continuous monitoring and assessment

AI should be continuously monitoring the network and systems for new threats. Regular security assessments and audits ensure the AI systems are effective and aligned with the organization's evolving needs.

### Challenges and ethical considerations

AI possesses the potential to reshape the landscape of cybersecurity, yet it also ushers in a host of challenges and ethical considerations. These include concerns related to privacy, the potential for biases within AI models, and the crucial necessity for human oversight.

The discourse concerning the ethical ramifications of incorporating AI into business processes is legitimate and paramount. We have all experienced AI's advantages and unforeseen consequences in our daily lives.



## It's important to address ethical considerations, such as privacy and bias, to ensure AI's responsible and effective use in cybersecurity.

Contemplating the utilization of this formidable technology in safeguarding personal and corporate data naturally gives rise to contemplation.

Nonetheless, cybersecurity is a clear and compelling case for AI's widespread and accelerated adoption, extending its reach to encompass enterprises and their Security Operations Centers (SOCs). The rationale is strikingly evident: malevolent actors are devoid of ethical restraint, harnessing AI to conceive and launch innovative attacks. In the absence of AI-driven defenses, their intrusions become significantly more potent. This paper delves into why companies must embrace AI as their primary defense and why such adoption is ethical and morally imperative.

The defining capability AI furnishes cybercriminals with is speed. It empowers them to inflict more significant harm in shorter durations and swiftly adapt to evolving security responses by applying machine intelligence to their operations. Conversely, AI equips security teams with the swiftness required to counter and

outperform these attackers. By harnessing AI and automation, SOCs can expand to cope with the escalating volume, complexity, and diversity of AI-based cyberattacks.

AI empowers computers to acquire, analyze, and disseminate information at a pace far surpassing human security analysts. Consequently, AI enhances the efficiency of SOCs by reducing manual analysis, streamlining evidence collection, and correlating threat intelligence, resulting in quicker, more consistent, and more precise responses.

### Conclusion

AI has become an indispensable tool in the realm of cybersecurity. Its capacity to analyze vast amounts of data, predict threats, and automate responses offers a formidable defense against the ever-evolving cyber threat landscape. Also, Artificial intelligence (AI) is no longer a futuristic concept but a crucial component of modern cybersecurity. Real-world examples and case studies demonstrate how AI enhances threat detection, automates responses, and improves security.

Organizations implementing AI-driven strategies can better safeguard their digital assets in an increasingly complex and interconnected cyber landscape. While the benefits are evident, it's important to address ethical considerations, such as privacy and bias, to ensure AI's responsible and effective use in cybersecurity. Organizations can bolster their cybersecurity posture by implementing AI strategies and staying vigilant, safeguarding their digital assets in an increasingly interconnected world. However, it's essential to address AI's ethical and operational challenges, ensuring that it serves as a responsible and effective guardian of digital security. ■

—Bhabani Chatterjee is a NEX100 winner and engagement leader at Capgemini.



# Digital Transformation With Generative AI And Semantic Models



Relevant structured data will provide the much needed “context” to the problem statement and help enterprise generate intelligent insights through in-context learning!

By **Ajay Malgaonkar** | [editor@cioandleader.com](mailto:editor@cioandleader.com)



**T**oday, technology allows farmers to create more with fewer resources,” the CEO of John Deere, a global agri-solutions manufacturing company, said in CES 2023 Keynote. Since 2019, the organization has been building solutions that use technology like computer vision and advanced sensing, machine learning, and data analytics, embracing smart industrial strategy based on Industry 4.0 to drive the transformation journey.

One of the ways that John Deere helps the farmers with technology solutions is through its Operations Center platform. This platform provides farmers with access to data and insights from their equipment, which can help them make better decisions about their operations. A “See & Spray” innovation exemplifies the successful collaboration of technology, enterprise, and consumers. See & Spray is a precision spraying technology that uses cameras, computer vision, and machine learning to identify weeds and only spray them, leaving crops unharmed. This can help farmers reduce their herbicide use by up to 77% and save millions of gallons of water usage.

This is not the only example of innovative use of the latest technology trends. Many organizations, particularly in manufacturing, are putting severe efforts into embracing new technologies to benefit end consumers.

Many of these use cases, which were never thought possible before, are becoming a reality due to accelerated technological development and affordability.

### The transformation model

The applications and insights drive the top layer to generate autonomy for consumers. The top layer relies heavily on the enterprise data housed in a modern data stack, which could be in any form: structured, unstructured, historical, real-time, etc.

The third layer forms the connectivity between the enterprise’s various hardware, machinery, equipment, sensors, processes, and software and harnesses the enormous data generated by multiple functions in the modern data stack.

The foundation layer is the enterprise knowledge generated from ERP software, warehouse management, order fulfillment, consumer usage & behaviors, and differentiation created through standard operating procedures, best manufacturing practices, quality control processes, and various documents.

### The gap (Information Technology + Operational Technology)

While enterprises strive to digitalize and automate every aspect of shopfloor entities, operational technology is undergoing a huge transformation.

At every step, the real-time data emitted by the sensors and processes can generate crucial insights to boost productivity. More than 90% of the data generated in the manufacturing processes is enormous and largely unstructured.

Over the last few decades, enterprises have matured in digitalizing business applications through information technology.

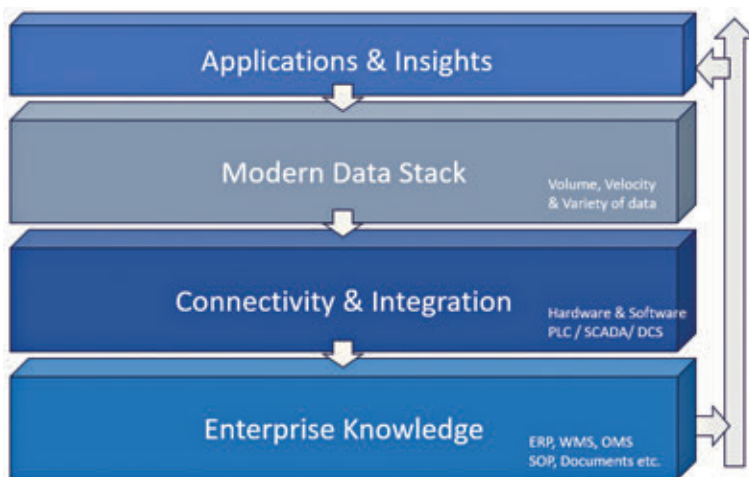
However, there is a strong need in the market to bring information technology and operational technologies together to generate better insights.

### Enters Generative AI

A recent manifestation of generative AI by chatGPT, Bard, Dall-E, etc., has triggered the ‘Art of Possible’ in generating insights from unstructured data. With the help of large language models (LLMs), enterprises can harness the knowledge layer to form critical business decisions. Through summarization, Q&A, findability, etc., enterprises can augment their expertise with the help of machines.

### Retrieval-Augmented Generation

Retrieval-augmented generation (RAG) is a tech-



nique in natural language processing (NLP) that combines the strengths of retrieval-based models and generative models to improve the quality and relevance of generated text.

Retrieval-based models find relevant information from large datasets, while generative models are good at creating new text. RAG uses a retrieval-based model to find relevant information from a dataset. This information is then used as input to a generative model, which creates new text based on the retrieved information.

RAG is effective for various NLP tasks, including question-answering, summarization, and machine translation. For example, in question answering, RAG can generate more comprehensive and informative answers by providing the generative model with access to relevant information within the enterprise or from the web.

## The use case

Imagine a troubleshooting scenario for an injection molding machine that otherwise requires a company expert to visit the site and diagnose.



- What if the expert is not available at the time? How about a support engineer taking the help of generative AI and carrying out the following steps:
- Uses Computer Vision to identify the machine's 'make' and 'model'.
  - Accesses the product catalog and retrieves the troubleshooting manual.
  - Follows the steps suggested by the app to carry out inspection and diagnosis.
  - Uses troubleshooting videos retrieved from the knowledge database using the AR/VR tool on the site.
  - Accesses service history and known error database to arrive at concise root causes to fix the issue.

This is just a sample; the use cases of generative AI would be numerous and vary from industry to industry. We have just started scratching the surface of this new innovative tool, which is still graduating.

## Bring method to madness!

Every enterprise has realized the potential of generative AI. Technology is more than just hype since it makes everyone think differently about the same problems not solved earlier by using contemporary technologies.

When traditional AI (Predictive AI) started gaining a foothold in enterprises, it was highly limited to the IT department and Data Analytics within IT. The Enterprise Data Management group defined the AI strategy, created the common infrastructure, and generated data lakes to harness and deploy AI models for usage. The applications largely depended on the structured data, which was in the custody of data analytics units and required to be governed to avoid redundancies.

Generative AI has pierced every aspect of the enterprise, not only data management teams but also app development, integration, DevOps, customer experience, infrastructure units and CRM, Customer Support, Marketing, etc., in the hands of business. This means every unit is bubbling with innovative ideas to apply generative AI for their respective use cases and participate in the transformation journey. The results will be tangible and directly impact the business outcomes; hence, everyone is queuing up.

Very shortly, this will lead to a chaotic situation if not handled with maturity. While the generative AI matures, enterprises are still experimenting with different proprietary and open-source GPTs, unaware of which to use. Redundancy in creating data products and fetching unstructured information, which is pre-validated, are some of the challenges surfacing.

There is paramount pressure on IT departments to be hyper-agile and build governance models with design patterns, reusability, and service discovery capabilities ... all within the gamut of uncompromised information security within and outside and the ease of provisioning. The euphoria and parallelism in building the products to bridge this gap is taking its toll on the enterprise software products & platform providers as no single tool or platform can satisfy every enterprise's aspirations.

## Enterprise strategy to build Gen AI platform

There is no magic wand that will solve the challenges in this space. However, the good news is technology is fast evolving towards maturity.

Enterprises need the following capabilities in their enterprise AI platforms:

- Model repository & configuration management
- Automation in Model training/ retraining and deployment
- Model observability for drift
- Model Security and explainability/ audibility
- Composable apps/ services
- Workflow / Chaining

The top-tier players in this space have complemented their Gen AI platforms with most of the capabilities listed above. Bedrock from Amazon, WatsonX from IBM, Microsoft Fabric, and OpenAI service on Azure and Google Vertex AI are some of the key platforms to help build and manage generative AI apps at the enterprise level. Frameworks like Langchain are gaining popularity as they aid in building templated AI applications.

Enterprises must embrace the fundamental principles of digital product engineering-

- Solve business problems with a productized approach.
- Build solutions like digital products that can be extended beyond the current use case, within and outside the organization.
- The solution must be built using scalable, modular, cloud-native, microservices-based, event-driven architecture and serverless capabilities.
- The architecture must support multi-tenancy.
- Follow agile methodology equipped with DevOps/ CI/CD and Automated testing for scaling purposes.

### The challenges of generative AI and how to overcome

The concept is very fresh and constantly evolving. It's no surprise to know its caveats.

- **Hallucination** – occasionally, the model may throw irrelevant or even synthetic responses that appear true but not.
- **Generic/ Bookish knowledge** – The insights generated from a large but finite data set that is generic.
- **No Guard Rails** – Enterprise wants to apply guard rails with respect to who accesses what information, what to dispose of, and what not to.

- **Does not understand the context** – Generative AI works on largely unstructured data, which lacks context. The next thing the enterprise would be looking for is how to narrow down the response with concise knowledge provided through context.

### The RRR of the New Frontier

As enterprises mature in experimenting and implementing generative AI solutions, there are 3 R's that every enterprise would benefit from

- **Relevance** – The new solution architectures will combine the structured data with insights generated from unstructured data to be fed to generative AI models for “relevant” output rather than generic.
- **Reasoning** – Most use cases around unstructured knowledge are to understand the entities and concepts, their attributes, and the complex relationships amongst them. The semantic model, which would help build the complex network of each entity's relevance in the enterprise, will lead to understanding the “Reasoning” of certain events, defects, faults, failures, results, and achievements and help take corrective actions before they occur.
- **Recommendation** – Once the enterprise brings the unstructured and structured data together, the new frontiers will build the AI models using machine learning to forecast the following link in the relationship, whether structured or unstructured, and generate fairly accurate recommendations.

### Importance of Semantic models

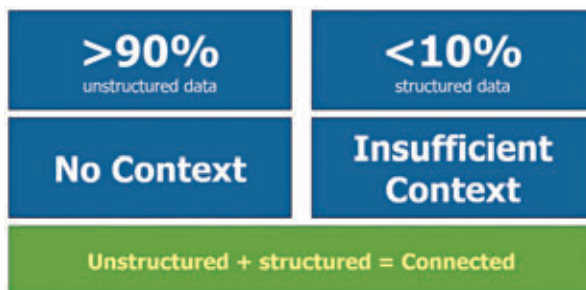
Using generative AI for insights from unstructured data will be like looking for a needle in a haystack. Enterprises must start building semantic models for their business and data.

The next crucial step is to converge generative AI-driven insights from unstructured data with the structured relationship between business entities and enterprise data.

Relevant structured data will provide the much-needed “context” to the problem statement and allow the enterprise to generate intelligent insights through in-context learning.

The ultimate path will lead to a unified analytics platform using LLMs and Semantic Models to achieve hyper-personalization. ■

—Ajay Malgaonkar is a Next100 2023 awardee and heads the engineering for Prolifics.







# Unmasking Synthetic Fraud: A Growing Threat to Financial Institutions

Financial institutions must rethink their fraud protection strategies in the face of synthetic fraud, especially in the realms of digital onboarding and lending transactions.

By **Sudhir Sahu** | [editor@cioandleader.com](mailto:editor@cioandleader.com)

**I**n the ever-evolving landscape of cyber threats, a new player has entered the scene – Synthetic Fraud. This rapidly growing financial crime, fueled by the creation of what experts term “Frankenstein Identities,” is proving to be a formidable challenge for the financial industry, particularly impacting credit cards and unsecured lending portfolios. In this piece, we delve into the intricacies of synthetic fraud and how it operates and explore strategies for financial institutions to defend against this rising menace.

### The craft of synthetic fraud

Unlike traditional identity fraud, Synthetic Fraud takes a different approach. Instead of stealing existing identities, cybercriminals craft entirely new personas using a mix of real or unused social security numbers, fictitious names, driver's licenses, and physical addresses. This sophisticated

method makes detection an uphill battle for financial institutions.

### Patience pays off

What sets Synthetic Fraud apart is the patience of its perpetrators. These fraudsters play the long game, dedicating months to years to building credit histories with credit bureaus. Once their groundwork is laid, they apply for credit across various financial institutions, often starting with secured credit cards or products designed for high-risk borrowers. Over time, they accumulate multiple credit cards and small loans, maxing out credit limits before disappearing, leaving financial institutions to grapple with substantial losses.

### Reinventing fraud protection strategies

Financial institutions must rethink their fraud protection strategies in the face of synthetic fraud, especially in the realms of digital onboarding and lending transactions. Striking a balance between robust protection and a seamless experience for legitimate customers is key. This involves verifying additional attributes beyond traditional credit scores through third-party data evaluation

and ensuring high consistency within these supplementary data attributes, all matched to proven identities.

### Harnessing the power of emerging technologies

As we confront Synthetic Fraud, emerging technologies step into the limelight. Combining Artificial Intelligence (AI) and Machine Learning (ML) with Big Data Analytics and High-Performance Computing promises to process vast volumes of data from diverse sources. These technologies, adept at handling structured, unstructured, and semi-structured data, can identify trends and patterns across disparate datasets.

### Embracing AI and ML

Financial institutions can proactively identify Synthetic Fraud applicants by leveraging accelerated deep learning and statistical machine learning technologies. AI and ML enhance the efficiency of credit decision processes and streamline automated systems, expediting approval timelines. This shields financial institutions from Synthetic Fraud losses and benefits credit-worthy customers, offering them reduced paperwork and faster decision-making processes.

### Safeguarding the future together

Artificial Intelligence and Machine Learning are guardians in the evolving financial landscape, playing a crucial role in protecting customers and financial institutions from the threat of Synthetic Fraud. By adopting these technologies, the industry can build robust defenses, creating a shield against the adaptive strategies of cybercriminals. It's time for financial institutions to invest in proactive measures, ensuring their systems' integrity and safeguarding their clientele's trust. ■

—Sudhir Sahu is the Founder and CEO of *Datasafeguard.ai*.



# AI Ops: A New Horizon In IT Operations



Embedding AI and ML into IT operations is a complex plug-and-play affair. Read this article to learn how to get it right!

By **Nitesh Sharma** | [editor@cioandleader.com](mailto:editor@cioandleader.com)



**I**n the ever-evolving world of technology, staying ahead of the curve has become more critical than ever. Today, businesses, irrespective of their size or industry, are racing to embrace the transformative power of Artificial Intelligence (AI) and Machine Learning (ML) in their IT operations. Hence, AI and ML are not just buzzwords anymore; they're the fuel driving the next wave of innovation toward building NextGen IT operations, also referred to as "AIOps." It has the potential to revolutionize the way organizations manage their IT infrastructure, delivering greater efficiency, agility, and cost-effectiveness, and address some critical challenges like:

1. **Managing large datasets of events/alerts:** IT ops are overwhelmed with the flood of data and alerts due to more complex IT environments with disparate data sources (e.g., Infrastructure Log data, ITSM tools, inventory tools, etc.). With the high number of false positives, prioritizing alerts is time-consuming and increases the chances that engineers miss the real alerts.
2. **Provide faster response with reduced downtime:** SLA requirements for IT are increasing before, 96%, then 99.5%, and due to digital trans-

**The foundation of AI and ML is data. Quality data collection, storage, and integration are essential. Without a solid data strategy, the potential of AI and ML remains untapped.**

formation imperatives, now users demand 100% availability. Need for predictive maintenance, to monitor in real-time, and any anomalies are flagged before they lead to costly breakdowns.

3. **Align with Agile working methods:** DevOps adoption drives faster release cycles, increasing pressure on ops teams to continually operate and support new releases.
4. **Increasing Security Risks:** Cyber threats are rising, and traditional security measures are insufficient. Need to be able to detect even the most subtle anomalies in network traffic or user behavior, enabling rapid response to potential security breaches.

## Get started in the AIOps journey

Embedding AI and ML into IT operations is a complex plug-and-play affair. It involves several key components:

**Identifying foundational AIOps use cases:** The starting step for any organization in the AIOps journey is identifying core use cases. It's essential to differentiate AIOps from chatbot monitoring tools and focus on use cases that analyze operations data and telemetry to improve IT service delivery and operations. They can be categorized into three:

- **Eyes on Glass** – Enhanced transparency to IT landscape
- **Provide Deep Insights** – Transparency translated into actionable root cause analysis.
- **Proactive Action** – Deep understanding translated into the automated response.

**Selecting AIOps tools:** Most monitoring tools, like Datadog, Device42, PagerDuty, Big Panda, etc., have built-in features and functionalities like anomaly detection, event correlation, or noise reduction. For enabling AIOps capability, features beyond monitoring, like intelligent remediation capability and integration with other ITSM tools like CMDB, Incident Management, DevOps, etc., are necessary. Strategy and architecture teams are crucial in selecting the right tool for the organization.

**Data Management:** The foundation of AI and ML is data. Quality data collection, storage, and integration are essential. Without a solid data strategy, the potential of AI and ML remains untapped.

**Runbook Automation:** Automation processes should be designed, integrated, and tested meticulously to ensure they function as intended and do not disrupt critical operations.

**Start of the journey and not the end:** Establishing continuous improvement feedback loops to capture and implement improvements is crucial.



To gauge the effectiveness of AI and ML integration, define key performance indicators (KPIs). These might include metrics like mean time to resolution (MTTR), uptime, and cost savings.

AI and ML systems should learn and adapt as the IT environment changes.

## Challenges and Considerations

Despite the tremendous potential of AI and ML in IT operations, there are challenges and considerations to address before you get started:

**Data Security and Privacy:** Safeguarding sensitive data and ensuring compliance with data privacy regulations are paramount.

**Talent and Skills:** The need for more AI and ML expertise can be a hurdle. Organizations must invest in training or consider outsourcing.

**Change Management:** Employees need to adapt to the new AI-driven environment. Change management strategies are critical to secure a smooth transition.

**Ethical Concerns:** Algorithmic bias, transparency, and accountability must be addressed to ensure responsible AI and ML use.

## Define and measure the agreed Value / Outcomes

To gauge the effectiveness of AI and ML integration, define key performance indicators (KPIs). These might include metrics like mean time to resolution (MTTR), uptime, and cost savings. A few examples are:

- Enable Self Service by end users with knowl-

edge-backed self-services and an intuitive Product Service Catalog that reduces the demand on IT staff.

- Improve operational efficiency by X%
  1. AI improves efficiency by reducing tickets and identifying opportunities for process improvements.
  2. Noise reduction helps shift newly available capacity to proactive event management.
- Reduce downtime by ~X%
  1. Reduce Incident volume by using event patterns to predict problems and intervene before downtime.
  2. Resolve incidents faster by starting resolution actions earlier, being more efficient.

## Conclusion

Accelerating toward AIOps transformation is necessary for organizations to have reliable and secure Digital Products and Services. Achieving this operational maturity requires upskilling people, redesigning processes, and embedding new technology tools. Organizations ahead in the journey will undoubtedly be the ones to lead the way and help businesses maximize returns on their Digital investments. ■

—Nitesh Sharma is a NEXT100 winner and CTO / Head of IT Advisory at ISSC.



# डिजिट अब हिंदी में

देश का सबसे लोकप्रिय और विश्वसनीय टेक्नोलॉजी वेबसाइट डिजिट अब हिंदी में उपलब्ध है। नयी हिंदी वेबसाइट आपको टेक्नोलॉजी से जुड़े हर छोटी बड़ी घटनाओ से अवगत रखेगी। साथ में नए हिंदी वेबसाइट पर आपको डिजिट टेस्ट लैब से विस्तृत गैजेट रिव्यु से लेकर टेक सुझाव मिलेंगे। डिजिट जल्द ही और भी अन्य भारतीय भाषाओ में उपलब्ध होगा।

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