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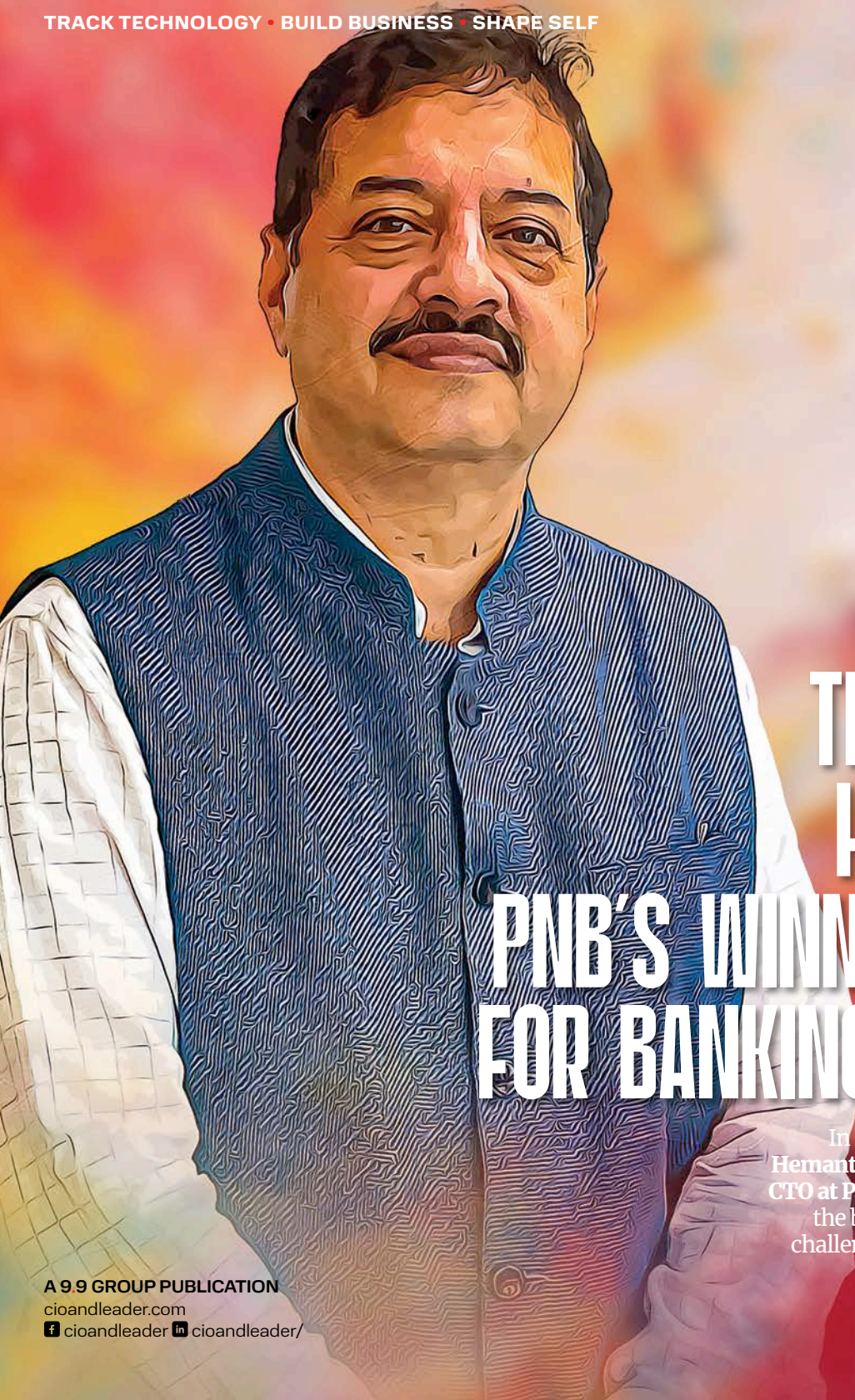
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Your legacy will continue to inspire generations!

A man with a heart of gold, Ratan Tata, former chairman of Tata Sons, passed away recently. PG. 06

AI is causing disruption across all industries

ARCHANA VEMULAPALLI
Corporate Vice President of Global Commercial Sales, AMD PG. 19

TRANSFORMING HR WITH TECH: PNB'S WINNING FORMULA FOR BANKING EXCELLENCE

In an exclusive interaction with CIO&Leader, **Hemant Verma, Chief General Manager of IT and CTO at Punjab National Bank,** shares insights into the bank's digital transformation journey, key challenges, and strategic focus areas for AI. PG. 14

Adapt or fall behind: Why innovation is non-negotiable

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ONE OF THE critical things we often forget is the need for continuous learning and innovation. Today, when change is happening quicker than ever, not adapting means you're running out of time.

As a CIO, who better than you to understand the constant challenge of creating innovative business models and leveraging technology to shape a better future — one that enables businesses to identify new opportunities, reach customers more effectively, and strengthen operations? The real challenge isn't change or our ability to adapt but our resistance and hesitation to keep up — whether in strategy or technology.

For instance, once a dominant force in the semiconductor industry, Intel has recently faced a sharp decline in revenues. The California-based technology giant, known for designing, manufacturing, and selling computer components for business and consumer markets, is now on the brink of a significant downturn, similar to Nokia's dramatic collapse post-2007.
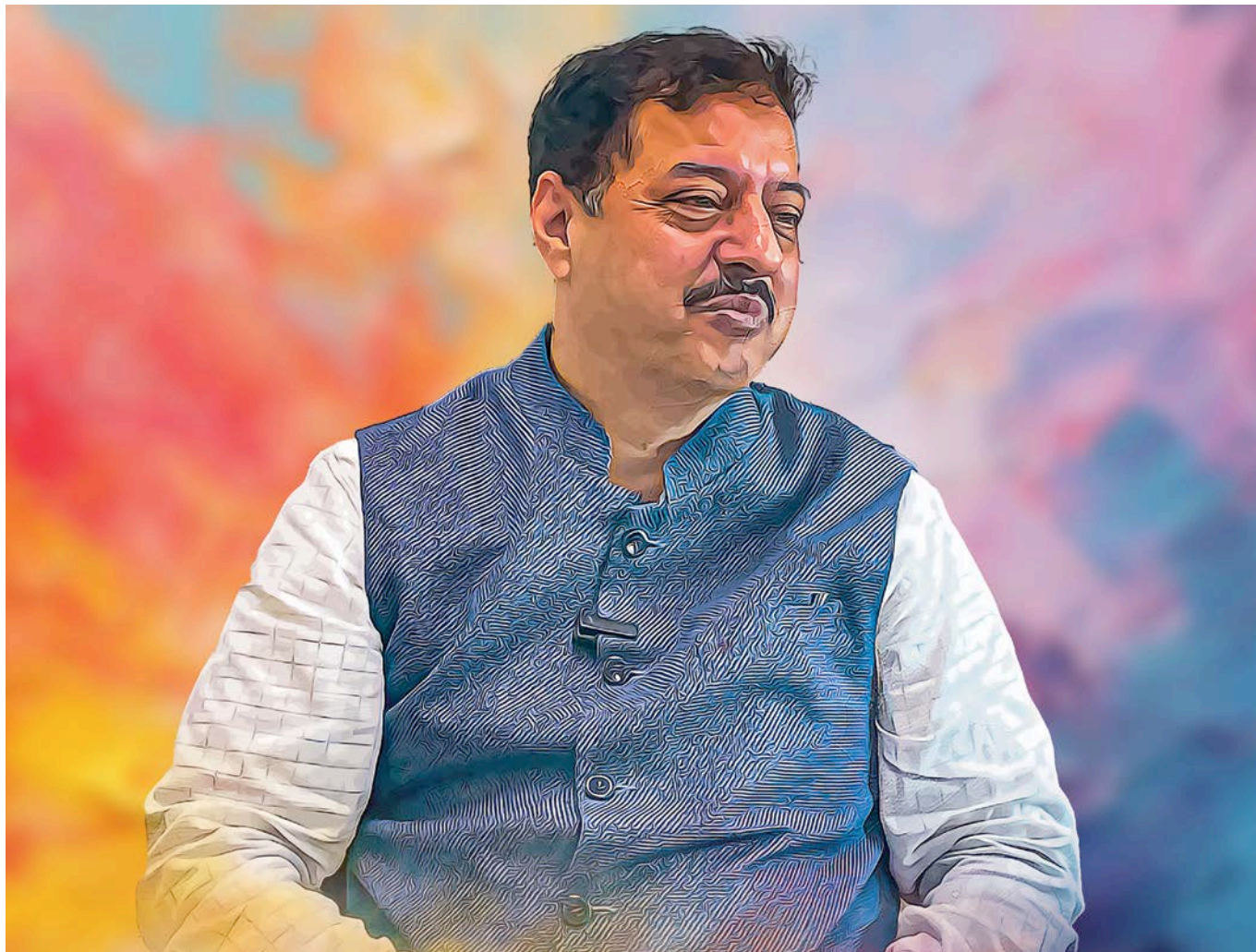
I remember working for one of India's leading telecom publications at that time. Analysts and journalists would question Nokia about the delay in launching dual-SIM phones during press conferences. Nokia executives routinely replied, "We are Nokia; we don't need to rely on dual-SIM technology to remain the frontrunner." Confidence is essential, but there's a thin line between confidence and arrogance, which can close your eyes to the changes around you. What happened after that I don't need to tell.

Similarly, Intel needs help with delays in transitioning to smaller manufacturing processes. Specifically, its difficulties in moving from 10nm to 7nm chip production allowed competitors like AMD, Apple, and others to outshine Intel in process technology. These delays fractured the company's ability to launch innovative products on time, causing them to miss the bus. Only time will tell if the company will be out of the woods anytime soon, but this serves as another reminder that to be in a race, you need to adapt, remain resilient, and change quickly in response to the market forces. ∎

Intel's downfall serves as another reminder that to be in a race, you need to adapt, remain resilient, and change quickly in response to the market forces.

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Cover Design by:
Shokeen Saifi

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cio movements

Sanjay Karnatak joins PNB MetLife as Chief Technology Officer

PNB MetLife has appointed **Sanjay Karnatak** as its Chief Technology Officer. He brings extensive experience from his previous role as SGM – Digital, IT/Ops & Innovation for the APAC Region at DLI Asia Pacific, and his career includes key positions across leading organizations like Star Union Dai-ichi Life Insurance, Aditya Birla Health Insurance, and Tata AIG General Insurance.

Modicare appoints Naveen Gulati as VP and CDIO

Modicare Ltd has named **Naveen Gulati** as its Vice President and Chief Digital & Information Officer (CDIO). With an impressive track record as VP of Technology and Head of IT at Nykaa, Gulati also has diverse experience with organizations such as CarDekho, Lucideus, Ricoh, and NIIT, where he spearheaded digital transformation initiatives.

Sandhya Ramachandran Arun becomes Chief Technology Officer at Wipro

Wipro has promoted **Sandhya Ramachandran Arun** to Chief Technology Officer. Previously serving as VP, Sector Delivery, and Operations Executive for the Americas, Sandhya has also held leadership positions at Deloitte Digital, IBM, and Infosys, demonstrating her global expertise in technology and operations.

Anand Hadgaonkar takes on Global IT Director role at Eaton

Anand Hadgaonkar has started a new chapter as Global IT Director at Eaton. Previously, he was the CIO – Asia at Whirlpool Corporation, and his career includes roles with Cummins and Satyam Infoway, showcasing his leadership in managing large-scale IT operations across industries.

Nikhil Bhushan named Chief Technology Officer at Starbucks India

Starbucks India has appointed **Nikhil Bhushan** as Chief Technology Officer. Bhushan, formerly the Head of IT & CISO at Travel Food Services, brings his broad experience in IT management, with prior stints at Citi, BNP Paribas India Solutions, Oracle, and Infosys.

Ajitsingh Nawale appointed as CIO at Adani Ports and SEZ

Ajitsingh Nawale has been appointed as Chief Information Officer at Adani Ports and SEZ. He brings extensive expertise from his previous role as Head of IT at CIE Automotive India Ltd and prior experience with S.M. Auto Engineering.

Mehjabeen Taj Aalam appointed CDIO at Raychem RPG

Raychem RPG (P) Ltd has promoted **Mehjabeen Taj Aalam** to Chief Digital & Information Officer (CDIO), continuing from her previous role as CIO. Her extensive experience includes leadership roles at Tata Capital, Muthoot Homefin, and Fullerton India Credit Company.

Abhay Karhade joins Indocount Industries as Group CIO and VP – IT

Indocount Industries Limited has welcomed **Abhay Karhade** as its Group CIO and VP – IT. He previously held a senior IT leadership role at INOX Air Products and has a rich career history that spans multiple industries, including Expeditors India Systems and Hewlett-Packard.

NEXT100 winner Vikas Gupta joins Bajel Projects Limited as VP & CIO

Vikas Gupta, a NEXT100 2016 winner, has been appointed VP & CIO at Bajel Projects Limited. With an extensive background as CTO at Hiranandani Energy and leadership roles at Essar and Deloitte Consulting, Gupta brings significant expertise to his new role.

NEXT100 winner Ujjwal Diwakar appointed Director of Enterprise Data Management at GSK

Ujjwal Diwakar, a NEXT100 2022 winner, has joined GSK as Director of Enterprise Data Management. Diwakar was previously an ERP Manager at ABB and has held various positions at GE Aviation and Infosys Technologies.

Vivriti Capital appoints Saravanakumar Krishnamurthy as Chief Information Security Officer

Saravanakumar Krishnamurthy has joined Vivriti Capital as Chief Information Security Officer. He was previously EVP of Technology Engineering – IT, Network & Cyber Security at YES Bank and has a solid track record across roles at KLA-Tencor and Tech Mahindra.

Nagarajan Vaidyanathan named CIO at Prayagh Consumer Care

Prayagh Consumer Care has appointed **Nagarajan Vaidyanathan** as its Vice President of IT (CIO). Previously Head of IT Infrastructure at Britannia Industries, Vaidyanathan brings his vast experience in IT management from leading firms like Hindustan Unilever.

Dhaval Kamani has been named the CISO at TransUnion CIBIL

Prior to this role, he served as Senior Vice President – Head of Information Security Services (ISS) at DBS Bank. **Kamani** brings a wealth of cybersecurity and risk management experience, having worked with prominent organizations such as Mashreq Bank, YES Bank, HSBC InvestDirect (India), Nomura, Deutsche Bank, and Orange Business Services.

Your legacy will continue to inspire generations!

A man with a heart of gold, Ratan Tata, former chairman of Tata Sons, passed away recently.

By **Jatinder Singh** | jatinder.singh@9dot9.in

MANY OF US in the editorial fraternity were at a complete loss for words upon hearing of the passing of Ratan Tata, former chairman of Tata Sons, on the sorrowful night of October 9, 2024. He was 86 years old and had been dealing with health issues over the past few months. We didn't know how to react! While the news may not be surprising given his declining health, it is indeed heartbreaking.

In an era where most industrialists were known for their lavish lifestyles and extravagant hobbies, Ratan Tata was seen as a beacon of compassion and ethical leadership. Known for his determination, innovation, and Indian values, he was not just a business tycoon but a man with a heart of gold.

An awardee of the Padma Bhushan and Padma Vibhushan, Ratan Tata expanded, diversified, and modernized the Tata Group beyond its domestic footprint. Under his leadership, the conglomerate experienced significant growth and acquired companies such as Tetley Tea, the Corus Group (a British-Dutch steelmaker), and Jaguar and Land Rover from Ford. While his ambitious Tata Nano project aimed to create an affordable car priced at Rs 1 lakh may not have succeeded, it ignited the aspirations of many lower-middle-class people. It provided a blueprint for many automobile companies to launch affordable cars in the future.

Known as an animal lover, Ratan Tata demonstrated his commitment to this cause by dedicating a space in the Group's head office for stray dogs. During COVID-19, when many companies were laying off staff to control costs, he was one of the few business leaders who openly criticized this approach, urging organizations to prioritize the well-being of their employees.

In conversations with senior leaders and employees from various Tata Group companies, I've only heard praise for Ratan Tata and his efforts to develop an employee-centric culture.

Such was the loyalty of Tata Group's employees that in November 2008, when a group of ten terrorists from Pakistan attacked the Taj Hotel, run by Tata's Indian Hotels, several employees sacrificed their lives to protect hotel guests, even when they had the option of escaping through secret doors. Ratan Tata also paid salaries and covered medical expenses for the employees who lost their lives or were injured, treating them as if they were still employed.

Even after retirement, he dedicated his time and wisdom to mentoring young talent and entrepreneurs, funding scholarships, and supporting educational institutions—efforts that have helped many rise and shine, contributing to India's prosperity and growth. Many such stories genuinely define who he was and how he touched lives while remaining modest.

His passing has created an irreplaceable void that is particularly challenging to fill today. Among Indian industrialists who have made a significant impact without being boastful, he stands at the top.

Rest in peace, sir. You will be deeply missed. ■

Widespread surge in AI spending: CIO&L's 2nd State of Enterprise Tech (SET) survey

The survey indicates that more than one-third (37%) of enterprises expect a significant increase in their AI and ML budgets in 2024, up from 25% in 2023.

By **CIO&Leader Research** | editor@cioandleader.com

76% of Indian Organizations Bet Big on AI/ML

■ 72% prioritize discovering insights to improve decision-making, 74% focus on innovating or improving products and services, 77% aim to enhance customer experience and engagement.

■ AI/ML adoption is rapidly expanding across functions, with IT operations leading at 21%, followed by customer service and engagement at 19%, and sales and marketing at 18%

The 2nd Annual CIO&Leader State of Enterprise Technology (SET) Survey, conducted in partnership with research firm BM Nxt, reveals a significant surge in spending on AI and machine learning (ML) among Indian enterprises. With 76% of organizations planning to invest more in AI/ML projects, the survey underscores the growing recognition of these technologies as pivotal drivers of competitive advantage and operational excellence.

The study draws on insights from more than 350 CIOs and IT decision-makers in India's top enterprises, and serves as a crucial indicator of technology trends in Indian companies. The study, based on a survey combining both qualitative and quantitative approaches, was conducted between May to July 2024. The survey results give a comprehensive overview of the state of deployment of various technologies, organizational challenges, and future plans regarding Cloud Infrastructure, Cyber Security, Data Analytics, and Artificial Intelligence (AI).

The survey indicates that more than one-third (37%) of enterprises expect a significant increase in their AI and ML budgets in 2024, up from 25% in 2023. Meanwhile, 39% plan to somewhat increase their spending, compared with 43% in the previous year.

"This upward trend in AI and ML investments indicates a significant commitment to leveraging the transformative potential of these cutting-edge technologies," says R. Giridhar, Research Head and Group Editor at 9.9 Group. "The move towards budget increases not only underscores growing confidence in the impact of AI and ML on business operations but also highlights their potential for propelling innovation and competitiveness in today's dynamic marketplace," he adds.

Deepak Kumar, Founder Analyst & Chief Research Officer at BM Nxt, notes, "Enterprises are adopting a balanced approach towards acquiring AI solutions by combining external expertise with internal capabilities. This strategic blend is essential for quickly leveraging the full potential of AI and ML."

The survey also highlights the primary business outcomes expected from AI and ML projects. These include discovering useful insights to improve decision-making (72% deeming it very important), innovating or improving products and services (74%), and enhancing customer experience and engagement (77%). "AI and ML are not just enhancing existing processes but are fundamentally transforming how businesses operate and compete. The significant investments in these technologies signal a shift towards more data-driven decision-making and a greater focus on leveraging AI for strategic advantage. This

Change in Spending on AI & ML in Next 12 Months

Increase somewhat	39%
Increase significantly	37%
No change	14%
Not sure	9%
Decrease	1%

■ Responses

With 76% of the enterprises set to increase their AI/ML spending either significantly or moderately, a strong commitment to AI is firmly in place.
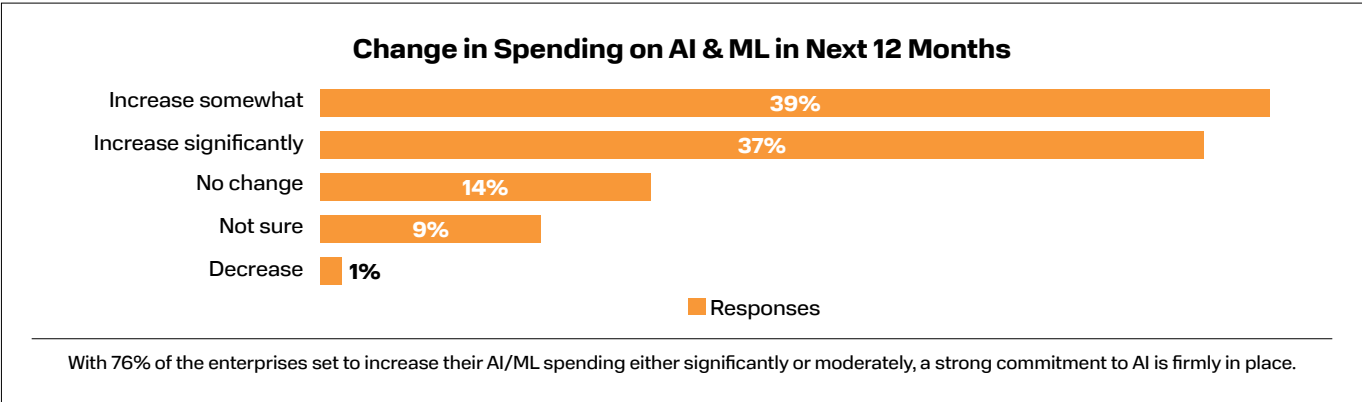
Business Expectations from AI/ML

Category	Very Important	Somewhat Important
Improve customer experience and engagement	78%	19%
Innovate or improve products and services	74%	21%
Discover useful insights, improve decision	72%	25%
Make processes more efficient, cut costs	67%	32%
Increase operational agility	64%	35%
Develop new, data-driven business models	61%	37%
Increase revenue	60%	33%
Predict demand, anticipate needs	58%	33%
Strengthen business resilience	56%	39%
Enhance stakeholder trust, reduce risk	48%	44%
Improve learning and development, training	45%	42%
Improve collaboration amongst employees, partners	37%	50%
Improve HR practices	35%	49%
Accomplish ESG goals	34%	52%

■ Very Important ■ Somewhat Important

Enterprises are prioritizing customer experience, products innovation, and insights gathering for better decision-making through AI and ML projects.

is a clear indication that Indian enterprises are positioning themselves at the forefront of technological innovation," says Jatinder Singh, Executive Editor, CIO&Leader.

The adoption of AI and ML across organizational functions is expanding rapidly. IT operations lead with 21% of organizations reporting wider deployment across multiple processes, followed by customer services and engagement at 19%, and sales and marketing at 18%. This trend highlights the integration of AI and ML into core business functions.

AI in cybersecurity operations shows robust adoption rates, with 23% reporting extensive and 35% moderate use of AI. With only 6% having no plans for AI adoption, resistance to AI in cybersecurity is minimal. As AI's ROI and effectiveness in preventing breaches and reducing security incidents grows, wider adoption is expected.

AI-readiness has become a critical decision factor in acquiring IT solutions for the enterprise. Data and analytics solutions with AI capabilities top the list, with 72% of organizations deeming AI-readiness as highly likely to influence their decisions, followed by

cloud platforms and solutions at 62%. "This reflects the high importance accorded to data processing and cloud management capabilities," explains Singh.

About CIO&Leader

Now in its 25th year, CIO&Leader is India's leading platform for enterprise technology leaders and decision-makers. It serves as a catalyst for the exchange of well-informed perspectives and insights and fosters discussions on cutting-edge trends, technology implementations and use cases, IT business strategies, leadership, and innovation between CIOs and other key stakeholders.

About BM Nxt

BM Nxt specializes in meeting the research-based information, communication, and marketing needs of decision-makers and planners in the technology sector. It serves both suppliers and users of technology products and services by providing comprehensive insights and strategies that drive informed decisions and effective planning. ■
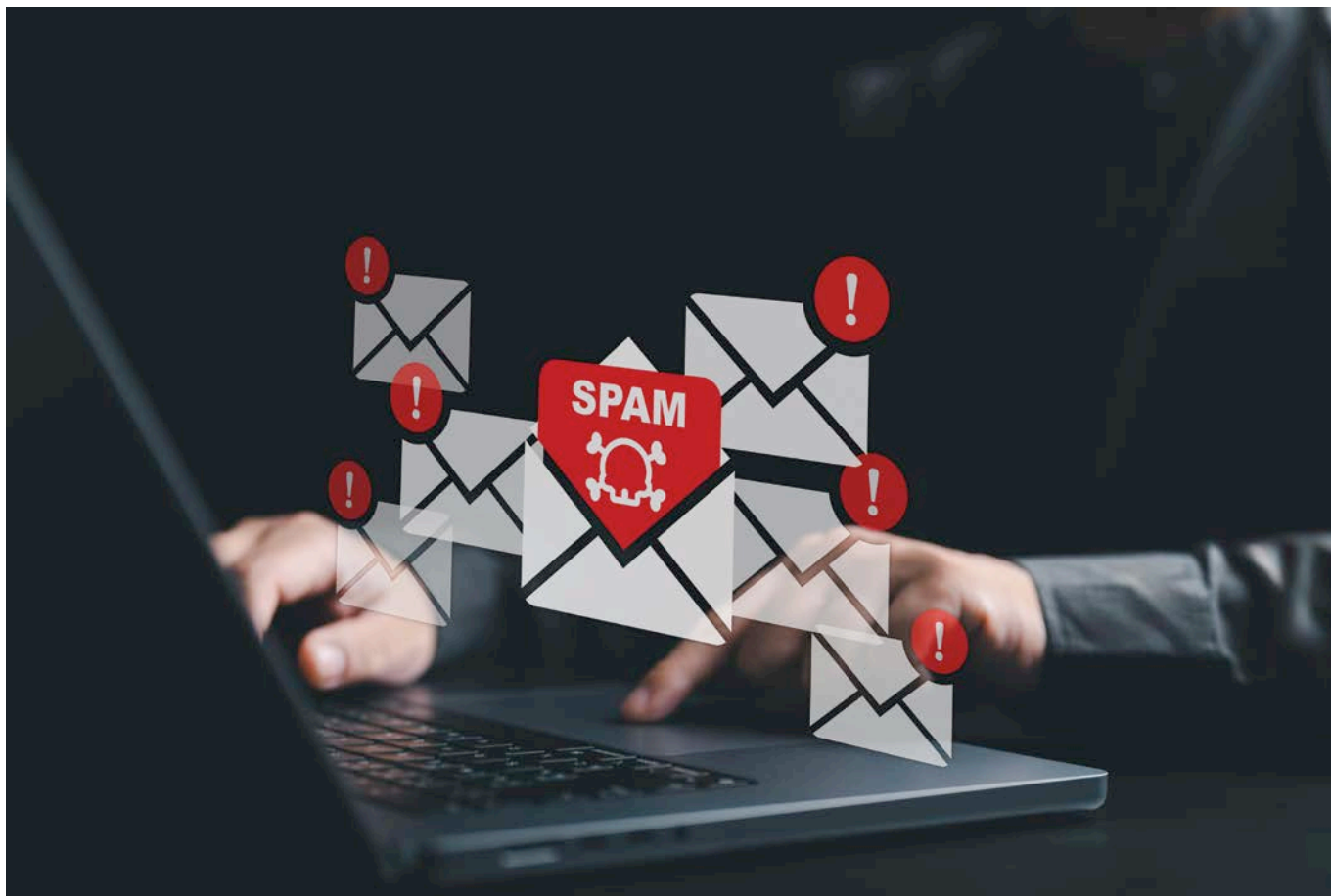
New phishing campaign exploiting Google app scripts

The emails falsely claim to provide "account details" for a user registration that the recipient never initiated.

By **CIO&Leader Research** | editor@cioandleader.com

Email examples

Example of link to 'activate account'. Image courtesy of Harmony Email researchers

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HARMONY EMAIL RESEARCHERS have recently identified a concerning phishing campaign that spoofs Google Apps Script macros – a tool used to automate tasks in Google applications.

MGoogle Apps Script macros are popular due to their abilities to automate workflows and integrate with assorted Google services, making them prime targets for cyber criminals.

Campaign overview

The campaign involves approximately 360 emails written in multiple languages, including English, Russian, Chinese, Arabic, Italian, German, and French. The emails falsely claim to provide "account details" for a user registration that the recipient never initiated.

The campaign remains ongoing

Should employees fall victim to this email-based scam, risks to organizations include the exposure of sensitive data, the fraudulent transfer of funds, and operational disruption, among other things.

How it works

The phishing emails feature a link, in the subject line, which leads to a Google Apps Script page. On the page, users will find a deceptive URL that includes scrip.google.com.

The URL claims to be a "secure and trusted" payment service. Because the URL overtly appears legitimate, it may deceive users into potentially disclosing sensitive information.

Detection indicators

To spot these types of threats, look for emails with subject lines that claim to provide "account details" for an unrecognized registration. URLs that include "scrip.google.com," but that direct users to pages requesting the input of sensitive data are also red flags.

Mitigation strategies:

■ Apply advanced email filtering. This is sophisticated cyber security tooling that employs algorithms and machine learning to identify and filter out phishing emails
■ Leverage real-time URL scanning tools, which can identify and block links that direct users to malicious pages.
■ Utilize tools that employ AI-powered Natural Language Processing to analyze the context and intent of email content
■ Obtain tooling with built-in AI-powered threat intelligence. This enables organizations to apply the most powerful mitigation measures available at any given time
■ Implement phishing awareness training to increase employees' knowledge concerning the identification of suspicious emails and to elucidate internal reporting best practices

Further information

Upon observing this attack, the cyber security researchers responded quickly, rendering Check Point customers protected from this attack. Check Point customers remain protected from such attacks. ■

Amazon's new mandate: Return to office

While some flexibility will be allowed for exceptional circumstances, Amazon plans to reinstate assigned desks at its U.S. headquarters and expects regular in-office attendance to become the norm.

By **Praneeta** | praneeta@9dot9.in

AMAZON CEO ANDY Jassy is directing employees to return to the office on a regular basis.

Like many large companies during the COVID-19 pandemic, Amazon had adopted work-from-home and hybrid models. Now, the company is telling its staff to resume five-day office work weeks.

In a recent memo, Jassy announced that Amazon will revert to pre-COVID office arrangements to enhance collaboration, innovation, and cultural connection, which, he says, is essential to "deliver the absolute best for customers and the business."

"When we look back over the last five years, we continue to believe that the advantages of being together in the office are significant," Jassy said, highlighting the benefits of in-person work, including easier learning, stronger culture, and more effective teamwork.

While some flexibility will be allowed for exceptional circumstances, Amazon plans to reinstate assigned desks at its U.S. headquarters and expects regular in-office attendance to become the norm.

The company has set a deadline of January 2, 2025, to "help ensure a smooth transition," though exceptions will be granted to those with a Remote Work Exception approved by their s-team leader.

Additionally, Amazon plans to restructure its teams by increasing the ratio of individual contributors to managers by at least 15% by the end of Q1 2025, according to the memo.

"Having fewer managers will remove layers and flatten organizations more than they are today," Jassy noted.

Amazon's People and Talent (PxT) team will work closely with leaders to implement these changes thoughtfully, guiding the organization through the transition in the coming months. ∎

TRANSFORMING HR WITH TECH: PNB'S WINNING FORMULA FOR BANKING EXCELLENCE

In an exclusive interaction with CIO&Leader, **Hemant Verma, Chief General Manager of IT and CTO at Punjab National Bank,** shares insights into the bank's digital transformation journey, key challenges, and strategic focus areas for AI.

By **Jatinder Singh** | jatinder.singh@9dot9.in

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PUNJAB NATIONAL BANK (PNB), recognized as India's second-largest public sector bank, has embarked on a fast-track digital transformation journey. Hemant Verma, Chief General Manager of IT and Chief Technology Officer has played a crucial role in spearheading modernization initiatives that are reshaping the bank's operational landscape.

In recent years, PNB has made substantial strides in enhancing customer experience by leveraging new-age technologies such as artificial intelligence (AI). These initiatives focus on strengthening fraud detection mechanisms, optimizing customer service, and enhancing talent management, all while laying the foundation for a robust and future-proof digital infrastructure.

As a senior technology leader, Hemant Verma brings extensive experience from his previous leadership roles at Oriental Bank of Commerce and Syndicate Bank. He has strong expertise in data warehousing, data center management, information security, and business development, positioning him centrally in the ongoing evolution of PNB's IT infrastructure and operational excellence.

In an exclusive conversation with Jatinder Singh, Executive Editor of CIO&Leader, and Vikas Gupta, Editorial Director of CIO&Leader, Hemant Verma shares insights into how AI, automation, and hybrid cloud solutions are helping the bank modernize and enhance its systems and processes. He discusses their impact on talent retention and innovation within the financial sector, providing a detailed overview of the bank's strategic direction and technological advancements. Here are key excerpts from the interaction.

CIO&Leader: **Given its position as India's second-largest public sector bank with a legacy of over 125 years, Punjab National Bank (PNB) has undergone substantial transformations in the banking landscape. Could you elaborate on some of the key digital transformation initiatives that PNB has implemented in recent years and their impact on the bank's operations and customer experience?**

HEMANT VERMA: PNB has undergone a substantial digital transformation, especially post-COVID, to modernize and streamline our services. Over the last two years, we have introduced more than 70 digital journeys. One notable achievement is our revamped Pre-Approved Personal Loan (PAPL) service, where we saw a multi-fold increase in business. By optimizing the process from seven or eight clicks down to just four and eliminating unnecessary paperwork, we've significantly improved the user experience. Another milestone is our introduction of the One-Time Settlement (EOTS) service, which allows customers to settle loans digitally without having to visit a branch, enhancing both convenience and efficiency. Our PNB One app also reflects these enhancements—its rating has surged from 2.2 to 4.6, underscoring strong customer adoption of our digital services.

CIO&Leader: **In your view, how does PNB compare to other public sector banks regarding its digital transformation efforts?**

HEMANT VERMA: Among public sector banks, PNB stands out in terms of its digital transformation efforts. While private sector banks are traditionally more agile, PNB has succeeded in delivering fast, innovative solutions, even with our large rural and semi-urban customer base. For instance, we manage over 4 crore UPI transactions monthly, a remarkable volume for a public sector bank. We've seen rapid adoption of our UPI services, particularly in Tier 2 and Tier 3 cities, signaling that customers in these regions are increasingly embracing digital payments.

CIO&Leader: **With AI increasingly becoming integral to modern banking, how are you harnessing AI technologies to enhance your banking services?**

HEMANT VERMA: At PNB, AI is playing an emerging role in transforming customer service and fraud detection. While we are still in the early stages of full-scale AI adoption, we've implemented AI-driven chatbots to offer more efficient customer service, and our internal teams use AI tools to quickly access policy information, and for faster customer resolutions. In fraud detection, we are integrating AI into our Enterprise Fraud Risk Management (EFRM) system to identify fraudulent activities in real-time. Additionally, AI is crucial for enhancing cybersecurity, enabling us to predict and mitigate threats more swiftly than traditional methods. While our AI journey is still evolving, we are confident that it will deliver even greater value in the future.

CIO&Leader: **Data governance plays a critical role in driving robust AI implementations. How does PNB ensure strong data governance for its AI initiatives?**

HEMANT VERMA: A solid data governance framework is essential for effective AI deployment, and we have one of the strongest data warehouses in the Indian banking sector. This allows us to analyze large data sets accurately, enabling services like pre-approved loans with high precision. Our data governance ensures that predictive analytics are reliable, helping reduce the risk of bad loans. It also fosters customer trust, as we can assure them that AI-driven decisions are both ethical and accurate.

CIO&Leader: **How has AI helped improve fraud detection and cybersecurity at PNB?**

HEMANT VERMA: AI has transformed fraud detection by making it faster and more accurate. We are updating our fraud monitoring systems to be AI-powered, which allows us to detect suspicious activities in real time and respond immediately. In cybersecurity, AI helps predict potential threats, enable us to proactively address risks before they escalate. These AI-driven systems provide a proactive approach to safeguarding customer data and internal banking systems, making AI not just an innovation, but a necessity for ensuring trust and security in banking.

CIO&Leader: **What are some of the key challenges you face in adopting AI, and how are you addressing them?**

HEMANT VERMA: One major challenge is building customer trust in AI, particularly in terms of data privacy and transparency. Customers need to feel confident that their data will be handled ethically. Another challenge is justifying the investment in AI. It's critical to demonstrate early returns on investment (ROI) to secure ongoing support from the board and stakeholders. We've adopted a conservative, step-by-step approach to AI, starting with small-scale implementations, and if we see the measurable benefits then we will scale further.

CIO&Leader: **How do you evaluate the choice between in-house development and packaged AI solutions from third-party providers?**

HEMANT VERMA: We're still evaluating which approach works best for us. So far, we have developed smaller in-house AI projects, such as chatbots and fraud monitoring. However, as we monitor their performance, we may consider packaged AI solutions for larger deployments. It's essential to weigh the ROI, privacy rules and regulations, ethical considerations such as data fairness & integrity, and the level of customer adoption before making significant investments in external solutions.

CIO&Leader: **IT governance is critical in banking. How do you align your IT strategy with broader business objectives, and what role does the IT department play in shaping the bank's growth?**

HEMANT VERMA: Post-COVID, the role of IT has evolved from a support function to a key enabler of business strategy. Today, the

"We've seen rapid adoption of our UPI services, particularly in Tier 2 and Tier 3 cities, signaling that customers in these regions are increasingly embracing digital payments."

CIO has a direct seat at the table in business discussions. Our IT strategy is closely aligned with our business goals, ensuring that technology initiatives like digitization and AI adoption directly contribute to business growth and improved customer satisfaction. IT is now seen as a driver of innovation, helping shape the future direction of the bank.

CIO&Leader: You have invested heavily in private cloud infrastructure. Can you discuss the bank's current cloud strategy and any plans for future expansion into public cloud services?

HEMANT VERMA: Currently, we are enhancing of our operations on private cloud by expanding infrastructure while we are using public cloud for a few non-critical services. Although public cloud offers agility, it is not always the most cost-effective solution for large banks like us. Private cloud has proven to be more cost-efficient for storing and processing critical data. However, as we move forward, we may adopt an 80-20 approach, with 80% on private cloud and 20% on public cloud, depending on the criticality of the data and cost considerations.

CIO&Leader: Retaining in-house IT talent is a key focus for most CIOs. How do you ensure that your IT team is equipped to handle the bank's digital transformation, and what is your approach to talent retention?

HEMANT VERMA: We prioritize developing in-house talent rather than relying solely on external vendors. Our IT team, which is over 1,500 professionals, manages everything from core banking systems to app development. We provide continuous training and leverage certifications to ensure our staff remains up to date with the latest banking technologies. As a result, our attrition rate is remarkably low—less than 1%. While we occasionally engage external consultants or hire employees for specialized roles, particularly in cybersecurity, our primary focus remains on nurturing internal talent and cultivating a robust culture of growth and innovation.

By prioritizing in-house talent development and leveraging digital tools, we have achieved an attrition rate of less than 1%: Hemant Verma

PUNJAB NATIONAL BANK (PNB), India's second-largest public sector bank, is undergoing a significant digital transformation to modernize its HR processes and remain competitive with new-age banks. The focus is on retaining top talent while enhancing customer experiences through a more agile and future-ready workforce.

One of PNB's key challenges was equipping its employees with the latest technological skills and accurately assessing their training and development needs. The bank also required an efficient digital system for monitoring, assessing, and appraising employee performance.

According to Hemant Verma, CTO, PNB developed an innovative solution in collaboration with an external consultant, called "PNB Udaan." This program aims to clearly define roles and expectations for employees by introducing measurable Key Result Areas (KRAs) and establishing job families. Job families enable employees to transition smoothly between roles in areas such as IT, cybersecurity, and analytics, aligning their career paths with individual skills and interests.

PNB Udaan leverages digital tools to provide real-time insights into the performance and career progression of its diverse workforce, which includes over 1 lakh employees across a vast network of 10,000 branches. This personalized approach helps employees understand their current standing and identifies clear steps for professional growth.

The program also includes personalized, role-based training interventions to upskill employees' functional capabilities and offers performance-linked rewards to motivate and recognize high achievers. Additionally, a comprehensive leadership development program prepares future leaders by focusing on both functional and behavioral aspects.

By integrating these advanced digital tools into its HR practices, along with market-linked targets for each branch and clarity around roles and expectations through well-defined KRAs, PNB is cultivating a culture of continuous development and engagement. According to Verma, this ensures that the bank's workforce is well-equipped to meet future challenges, and significant improvement in keeping attrition rate of less than 1%, and resolving customer issues in a better and more impactful manner.

> "We have implemented AI-driven chatbots for efficient customer service, while our internal teams leverage AI tools to access policy information and resolve customer issues in real time."
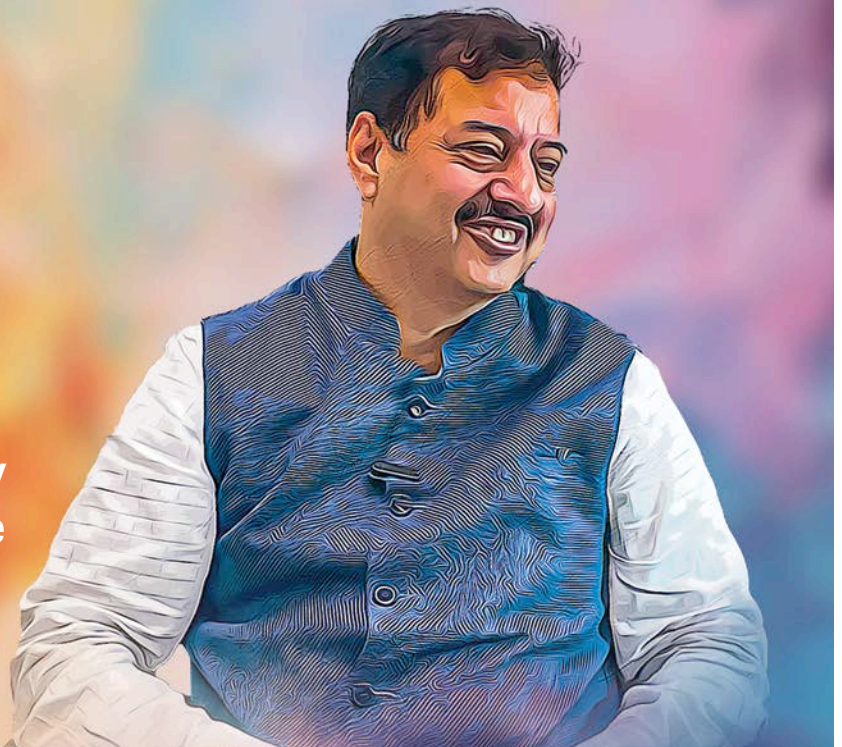
CIO&Leader: What role do external consultants play in your digital transformation efforts, and how do you balance their input with your in-house capabilities?

HEMANT VERMA: While we depend heavily on our in-house IT talent, we engage consultants when necessary, particularly for gaining insights on industry trends and global best practices. However, the execution and day-to-day operations largely remains in-house, giving us greater control and reducing reliance on external vendors. For example, our core banking solution is run entirely by our internal teams, without any involvement from system integrators.

CIO&Leader: How has the integration of AI and digital transformation impacted your HR strategies?

HEMANT VERMA: Our HR strategy is closely integrated with our digital transformation journey, particularly through initiatives like PNB Udaan. This program is designed to clarify roles and expectations from each employee by defining measurable Key Result Areas (KRAs) and introducing job families.

The concept of job families enables employees to transition seamlessly between roles in IT, cybersecurity, and analytics, aligning their career paths with their skills and interests. Additionally, we leverage AI-driven tools to provide employees with real-time data regarding their performance and career progression.

This personalized approach help our people to gain insights into their current standing within the organization and outlines the steps they need to take for professional growth. By integrating our HR practices with digital initiatives, we promote a culture of continuous development and engagements, ensuring our employees are well-prepared for the evolving demands of the industry.

CIO&Leader: Looking ahead, what key trends do you think will shape the future of banking technology, particularly in the public sector?

HEMANT VERMA: AI, automation, cybersecurity, and data analytics will be the key drivers of future banking technology. AI will transform areas like fraud detection, cybersecurity and customer service, making processes faster and more efficient. However, governance and ethical AI use will be critical to maintaining customer trust. Another significant trend is the increasing adoption of hybrid cloud infrastructure, as more banks, including PNB, balance private and public cloud usage. Finally, the role of the CIO is evolving—IT leaders are now central to business strategy, with their decisions directly impacting the bank's growth and future direction. ∎

AI is causing disruption across all industries

Archana Vemulapalli, emphasized the fast-paced evolution of AI technologies and the critical need for organizations to rethink their infrastructure and strategic approach.

By **Praneeta** | praneeta@9dot9.in

Archana Vemulapalli
Corporate Vice President of Global Commercial Sales, AMD

A ADVANCED MICRO DEVICES (AMD), a leading American multinational and fabless semiconductor company, has been making significant inroads into the enterprise sector, thanks to its innovative graphics and high-performance computing solutions, offered at competitive prices.

Headquartered in Santa Clara, California, AMD's EPYC processors have gained widespread popularity among IT decision-makers, who are looking to address growing compute demands while transitioning their data centers to higher-density, heterogeneous hardware or hybrid environments that blend on-premises infrastructure with cloud solutions.

AMD is also positioning itself as a key player in the rapidly growing AI computing space, with its AI chips offering a compelling balance of value and performance.

In a recent interaction with CIO&Leader during the 25th Annual CIO&Leader Conference, Archana Vemulapalli, Corporate Vice President of Global Commercial Sales at AMD, shared her insights on the transformative impact of Artificial Intelligence (AI) on enterprise computing and how organizations can prepare for this new era.

Vemulapalli, with over 23 years of technology leadership experience, previously held management roles at Amazon Web Services (AWS), where she led Product and Global Strategy for data and AI, and was general manager and head of Solutions Architecture for North America. Before AWS, she served as the global chief technology officer for IBM's Infrastructure Services

business, overseeing its global portfolio strategy, software product development, and offerings portfolio.

In a fireside chat with R. Giridhar, Group Editor, CIO&Leader, Vemulapalli emphasized the fast-paced evolution of AI technologies and the critical need for organizations to rethink their infrastructure and strategic approach. She highlighted AI's role not only in driving productivity but also as a catalyst for significant market growth and new business opportunities. Below are excerpts from the conversation.

CIO&Leader: Given the growing complexity and sophistication of AI models, especially with AMD's involvement in hardware development, how should organizations approach the challenge of running these advanced models?
ARCHANA VEMULAPALLI: It's crucial to reframe how we think about our infrastructure. The AI landscape has evolved incredibly fast; two years ago, we were just beginning to talk about AI and generative AI, and now it's at the forefront of technological advancement. Organizations need to assess where they consume compute resources today—whether it's PCs, data centers, or cloud providers—and align that with their ambitions for leveraging AI.

The key is to determine the most optimized compute environment for your specific use cases. Sometimes, a smaller model running on a PC might suffice for certain applications. In other cases, you might need the most TCO-efficient GPUs for training large-scale models. Also, as we all know, inference is where the real scalability challenges lie, and that requires a focus on both GPU and CPU performance.
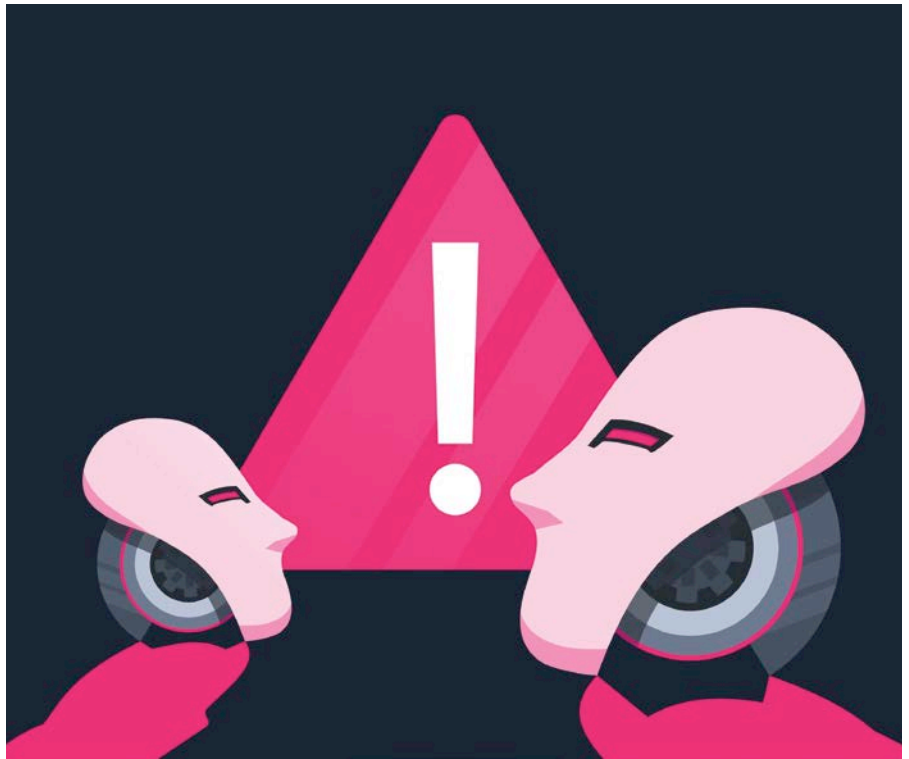
While total cost of ownership (TCO) and return on investment (ROI) are important, especially when focusing on productivity, the real question is about capturing new market opportunities.

Latency, networking, memory, and storage are all critical factors as these models evolve. Organizations need to revisit their infrastructure from the ground up, leveraging their experience but also embracing new tools and opportunities for market growth.

CIO&Leader: From a practical perspective, does this mean organizations need to overhaul their entire infrastructure to accommodate AI? What about the impact on operating costs and energy consumption?
ARCHANA VEMULAPALLI: Opportunity cost should be a primary consideration. While total cost of ownership (TCO) and return on investment (ROI) are important, especially when focusing on

productivity, the real question is about capturing new market opportunities. CEOs and boards are more interested in market share growth than incremental productivity gains.

Investing in AI infrastructure is about positioning your organization to seize these growth opportunities. Yes, there will be operating costs and considerations around energy consumption, but these should be weighed against the potential for significant market gains. It's about reframing the conversation from cost to opportunity. So my two cents is always opportunity first.

It really about how you push it. If you lead with the productivity play, productivity immediately goes to cost savings. I always ask people what productivity and

You should view AI as a fast evolving space and be prepared to adapt. But it also forces us from a standard procurement and a perspective on re-framing our strategy.

growth means to them. Because the smartest people are looking at leveraging this whole space to accelerate and capture market before anyone else. Eventually we all are going to be consuming it, but the people that move fast will redefine the market share.

CIO&Leader: Do you see a risk in moving too early into AI adoption? Could organizations invest heavily without immediate returns?
ARCHANA VEMULAPALLI: I believe there's always going to be risk in any strategic decision, but the pace at which AI technology is evolving means that flexibility is key. Organizations have to redefine their pace as they move with the technology. Rather than making a one-time decision, it's about continuously evaluating the technology's capabilities and aligning them with your business needs.

You should view AI as a fast-evolving space and be prepared to adapt. But it also forces us from a standard procurement and a perspective on reframing our strategy. And this is where partners matter. In this journey you want to get a set of partners that you trust, that have credibility, that have a staying power in the market, and that are invested in this. It allows us to move forward together.

Being early allows you to capture market share before the playing field levels out. The risk of inaction or late adoption could be far greater than the risks associated with early investment.

CIO&Leader: As a former CIO, what advice would you give to others on preparing their organizations for the age of AI beyond just the technological aspects?
ARCHANA VEMULAPALLI: AI is causing disruption across all industries, including within our own technology functions. It changes how software development teams, data analysts, and business analysts work. Organizations need to shift from being highly structured to becoming more flexible, to succeed in this space.

Though it is not easy, as you have set processes and structure and people in place, I recommend the various teams like technology teams, CIO teams, to learn the power of this technology. Encourage your technology teams to learn about AI, take courses, and understand its capabilities. This internal upskilling will make them powerful advocates and innovators within your organization.

Also, build a consortium of trusted partners who share your values and investment strategies. This includes compute providers,

consultants, and software vendors who are committed to your success. Lastly, be an advocate with your CEO and board. They're already discussing AI's potential, and your expertise can help shape the organization's strategic direction.

CIO&Leader: What would you rate as the top three challenges that CIOs need to overcome?
ARCHANA VEMULAPALLI: I'm not a challenge person, but I'll say here are the opportunities. First, leverage your experience to become a change agent. Your deep understanding of both technology and your organization's needs positions you uniquely to drive AI adoption. Second, build strong partnerships with entities that align with your values and objectives. This collaboration will help navigate the rapidly evolving AI landscape.

Third, proactively engage with your CEO and board to advocate for AI initiatives. They're eager to understand how AI can propel the organization forward, and your insights are invaluable. Embrace the opportunity to redefine what's possible and challenge the status quo. One doesn't become a CIO or a CTO or a key technical leader of a company without having executed at scale. And so the ability to now take this amazing opportunity and leapfrog what your organization can do is amazing.

And we should just embrace this and we should challenge ourselves. Every time we hear a no, we should challenge ourselves and say, why not? ∎

Scott Caveza
Staff Research Engineer,
Tenable

Those who embrace AI will outpace those who don't!

Acott Caveza, Staff research Engineer, Tenable, talks about how much GenAI is a factor in the concerning gap between the demand and talent, and new threats in the evolving IT landscape.

By **Praneeta** | praneeta@9dot9.in

"GenAI lays the foundation for preventive security. It can transform an organisation's approach to security, by enabling faster analysis, decision-making and guidance, cutting through complexity, so security teams can stay ahead of attackers."

SCOTT CAVEZA JOINED Tenable in 2012, and is currently a member of the Security response team, helping the research organisation respond to the latest threats, previously he was leading the Security Response team and the Zero Day Research team.

Speaking with CIO&Leader he talked about the current unemployment conditions in tech industry and exactly how much GenAI is a factor in the concerning gap between the demand and talent, and new threats in the evolving IT landscape.

During the conversation Scott shared his opinion on ethical use of AI without regulations.

CIO&Leader: According to the World Economic Forum, the global talent shortage, which spans nations, states and industries, could reach 85 million workers by 2030. Why is there such a gap between the ongoing demand and the shrinking talent?

SCOTT CAVEZA: The gap between cybersecurity demand and talent is driven by several factors. Rapidly evolving cyber threats outpace the supply of skilled professionals. Education and training programs often fall short in preparing candidates with the necessary expertise. The field's high-stress levels lead to burnout, causing attrition. Additionally, a lack of diversity limits the talent pool, and the complexity of certification pathways can be a barrier. As cybersecurity becomes crucial across industries, the demand intensifies, making it harder to find qualified professionals who can keep up with the pace

of technological change and the increasing sophistication of threats.

CIO&Leader: The prevailing sentiment regarding AI is that it will eventually replace jobs, despite assurances from numerous technology leaders who argue otherwise. Nevertheless, skepticism persists. What is your perspective on this issue, and in what ways can Generative AI contribute to reducing the unemployment gap?

SCOTT CAVEZA: AI won't replace jobs, but those who embrace AI will outpace those who don't. GenAI is quickly becoming a tool to bridge the cybersecurity skills gap, at least in the short term. Consider the current situation: 21% of organisations face a significant shortage of cybersecurity staff, and another 46% have a moderate shortage. Without skilled workers, managing cyber risks is tough. GenAI can help solve this by acting as a force multiplier, enabling resource-strapped teams to troubleshoot and proactively identify and fix security issues before they escalate into major attacks.

CIO&Leader: Unlike Europe with its AI Act, only very few countries have laws regulating artificial intelligence. How can organizations ensure the data used to train their models is ethical in the absence of such regulations?

SCOTT CAVEZA: Organisations mustn't wait for regulations to be passed to incorporate ethical data protection practices into their workflows. While regulation is necessary to a certain degree, in the absence of it, organisations must curate AI governance policies to ensure the ethical use of data and AI. It's also important to assess and address the social impact of AI use, while ensuring that AI is not used beyond what it is proven to do correctly, especially for unethical outcomes.

CIO&Leader: Is there any way to move towards the path of technological evolution with both cybersecurity and ethical regulation hand in hand?

SCOTT CAVEZA: Cybersecurity depends on defence and trust, but AI's lack of transparency challenges this. Some AI models, especially deep learning ones, work like a "black box," making their decision-making processes unclear. Intellectual property protections often prevent full transparency, which can be problematic when unexpected outcomes occur. This lack of clarity can undermine trust and create challenges for security professionals. To address this, it's essential to build security into AI models from the start, ensuring that ethical practices and cybersecurity are aligned.

CIO&Leader: How secure is the cloud in 2024?

SCOTT CAVEZA: Cloud deployments are an organisation's blindspot. Effectively securing the cloud requires looking across every aspect of potential risk exposures including vulnerabilities, cloud misconfigurations and identities. Even cloud-native organisations find it difficult to detect and remediate cyber risks in their cloud. To gain control over cloud security gaps, organisations must be able to discern the most critical risks and set priorities, and do so on a scale. This requires integrated, comprehensive risk analysis across all parts of the cloud infrastructure and automation of both the detection of risk and its remediation.

Towards this end, Tenable recently announced the availability of Vulnerability Intelligence and Exposure Response, two powerful context-driven prioritisation and response features. The combined power of these features contextualise vulnerability data from internal and external sources, enabling organisations to close the exposures that pose the greatest risks to their businesses. It offers seven curated exposure risk categories to proactively surface key exposures that need further review by highlighting CVEs under CISA-known exploits, active exploitation, ransomware campaigns, emerging threats in the news and more. Natural language search ensures security teams can look for specific vulnerabilities by CVE number or common name, review the context available and the impacted assets. It paves the way for targeted campaigns so that organizations can prioritize and mitigate critical vulnerabilities, ensuring resources are deployed efficiently.

CIO&Leader: In upcoming years, what is the biggest challenge the IT industry is going to face?

SCOTT CAVEZA: As more organisations migrate to the cloud, cloud security will become a top priority, making effective cybersecurity solutions essential. However, history shows that despite new technologies, some attack tactics persist because they work. Despite new technological challenges, organziations are routinely plagued by missing security patches, incorrectly configured cloud assets and identity and access control failures, introducing risk to their assets. The combination of old methods with new and emerging threats will lead to a new era of preventive security. ∎

For widespread AI adoption in enterprises, PCs must be able to process AI applications locally

Dinesh Sharma, VP of Commercial PCs at ASUS India, shared how ASUS is adapting to meet CIOs' and tech leaders' needs.

Dinesh Sharma
VP of Commercial PCs,
ASUS India

By **Praneeta** | praneeta@9dot9.in

AAS ASUS SHIFTS from its strong gaming foundation to expand into the enterprise device market, the company is focusing on integrating artificial intelligence (AI) into its products. With the rising demand for secure, high-performance computing in enterprise environments, ASUS is introducing laptops designed for local AI processing, addressing concerns about cloud reliance.

To explore this development further, CIO&Leader spoke with Dinesh Sharma, Vice President of Commercial PCs at ASUS India's System Business Group, who shared insights on how ASUS is adapting to meet the needs of CIOs and tech leaders. Below are excerpts from the interview.

CIO&Leader: What key features of your newly launched Expertbook, do you believe will most excite enterprise customers?

DINESH SHARMA: AI is indeed making waves, but from an enterprise perspective, it's still in its nascent stages. Let's consider practical use cases: you might want Excel to analyze data and autonomously recommend charts—a simple AI application. Currently, utilizing tools like Copilot involves sending your data to the cloud for processing, with the results then returned to you, much like how ChatGPT operates.

CIO&Leader: For CIOs, the idea of sending sensitive data to the cloud is certainly concerning.

DINESH SHARMA: Precisely. Many organizations are hesitant to expose their proprietary data externally. For AI to be widely adopted in enterprises, it's essential that PCs have the capability to process AI applications locally. This

ensures that your data remains on the device, enhancing both security and efficiency. That's where high-performance AI hardware comes into play.

With our latest launch, we're introducing laptops on the Intel platform equipped with robust Neural Processing Units (NPUs), capable of handling up to 48 trillion operations per second. This hardware enables the machine to process AI tasks locally at significantly increased speeds.

CIO&Leader: Aside from local AI processing, what sets this product apart from competitors?
DINESH SHARMA: By shifting AI processing to the PC, we alleviate some of that load. Our new ASUS ExpertBook P5 exemplifies this approach, offering industry-leading AI capabilities directly on the device.

Moreover, we've integrated AI functionalities into the hardware itself—not just providing AI-enabled hardware but enhancing native features. This includes an AI camera, AI noise cancellation, and our AI ExpertMeet application. AI ExpertMeet offers automated meeting transcription, live translation, speaker identification, and meeting summaries, all without additional licensing fees. The AI-powered features currently support eight languages commonly spoken in India, facilitating seamless communication and collaboration.

CIO&Leader: Sustained performance is crucial for enterprise users. How does this product maintain its performance over time?
DINESH SHARMA: CPUs can throttle performance when they overheat, impacting productivity.

Drawing from our expertise in gaming PCs, we've implemented advanced thermal solutions in the ExpertBook P5, including dual fans and innovative cooling technologies. This allows the CPU to consistently perform at 30 watts, even during extended periods of intensive use, without compromising on weight or portability.

CIO&Leader: Battery life is often a trade-off with performance. How does this model address that?
DINESH SHARMA: Traditionally, improving performance meant sacrificing battery life, and vice versa. However, this model offers both. It delivers excellent battery life without compromising on performance, which is particularly beneficial for business users who travel frequently and prefer not to be tethered to power outlets.

CIO&Leader: Security is a significant concern, especially with AI. How does ASUS address potential risks?
DINESH SHARMA: Many businesses utilize Windows Pro, which offers enhanced data control policies. These policies extend to AI applications as well. IT departments can manage data flow and permissions through backend controls. By processing AI tasks locally on the PC rather than relying solely on cloud-based servers, we reduce potential vulnerabilities and enhance data security.

CIO&Leader: Considering AI's energy demands, how does ASUS approach sustainability?
DINESH SHARMA: Sustainability is integral to our operations. We're part of the RE100 initiative and have set ambitious goals for carbon neutrality. Our products are

certified for their environmental impact. The extended battery life of our devices contributes to energy efficiency—charging less frequently reduces power consumption, aligning with our sustainability objectives.

CIO&Leader: For CIOs looking to integrate this technology, how seamless is the process?
DINESH SHARMA: Integration is designed to be straightforward. From a CIO's perspective, these devices can be incorporated into existing environments with minimal disruption. The primary consideration might be establishing new backend policies for data flow control, but beyond that, the transition should be smooth.

CIO&Leader: What are your aspirations for this venture into the commercial space?
DINESH SHARMA: While our reputation in gaming is strong, we've been steadily expanding in the commercial PC market. Recent IDC reports reflect our significant growth in this sector. We're committed to being an end-to-end provider, delivering high-quality products across all categories to meet the diverse needs of businesses.

CIO&Leader: It's great to see AI integrated into enterprise laptops. What future innovations can we expect from ASUS?
DINESH SHARMA: There's much more on the horizon. We aim to continue innovating and collaborating closely with the CIO community. Our goal is to showcase how our products and services can support businesses in their AI journey, enhancing productivity while addressing security and sustainability concerns. ∎

Winds of Change – Infrastructure management returns to center stage

Technology risk today perhaps rivals operating risk and market risk in its sheer ability and speed to cause an organization wide meltdown.

By **Phiroze Vandrewala** | editor@cioandleader.com

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THE OXFORD DICTIONARY mentions epoch-making events as those of major importance and which are likely to have a significant impact over a period of time. The worldwide major technology outage on July 19, 2024, might be considered the largest IT outage in recorded history. It was caused by a botched-up software update from CrowdStrike that affected millions of Windows machines around the world. The damage estimated to Fortune 500 companies alone is pegged at USD 5.4 billion. There are many learnings that have surfaced, and in many ways, things will be pegged as prior to or post the July disaster. It seems apt, therefore, to say that this was an epoch-making event.

Background for those who did not follow the events

CrowdStrike is an endpoint security vendor that primarily offers the Falcon platform. This platform protects against cyber threats to endpoints.

Software issues occur very commonly in the technology industry. Rarely, though, do they manifest all at once everywhere. Here, too, a buggy software update was released on July 19th, 2024, that affected the core or "kernel" of the Windows operating system, causing it to shut itself down. What is different here is the propensity of this update to cause mass upheaval on a global scale.

The effect of this software bug was amplified logarithmically due to Falcon's pervasiveness as a platform in many mission-critical applications and industries. According to a Microsoft estimate, 8.5 million Windows devices were directly affected. Airlines, public transit, healthcare, media, and, last but not least, financial services were industries that were brought to their knees.

The once obscure term "blue screen of death" or "bsod," which was used only by tech geeks, was prominently used in all news reports about this incident.

The fix advised required warm bodies to physically reach the impacted machines, modify some parameters, and reboot. While very time-consuming, this is also a lesson, which we will cover below.

Deep Dive

Many thousands of words have already been expended on the internet explaining the geekery behind how the bug impacted the core of the Windows system, and the steps required to get back to production readiness. I do not

Prepare, plan, review, and rehearse. A clearly articulated response protocol addressing technology risks including outages, cyber events, etc., is critical.

intend to dwell on that bit of wizardry here. This article is more focused on the changes that I see coming from all that I have read, understood, and analyzed, albeit baselined to my own three decades of experience in Infrastructure Management.

It is perhaps advisable to break the learnings into some broad groups.
1. Technology Management or Planning fixes
2. Changes in Products and Process
3. Risk Management Disaster Recovery
4. Legal and Commercial

1. TECHNOLOGY MANAGEMENT AND PLANNING FIXES:

Barring a few organizations that indulge in regularly propelling people into space, etc., rarely do people plan on a 3rd or 4th layer outage in all its dimensions of design, staffing, planning, recovery, etc. There is an unwritten median of possibility that most organizations calibrate per their industry or peer groups. Some, more than others depending on the criticality or extent of loss or damage that can occur. This outage, however, forces us to rethink, recalibrate, or at least review the set median and give it a good shake to check if it is still appropriate.
A. Know thy self – God is indeed in the details… Over time, all organizations have a sprawl of infrastructure built and layered across projects, acquisitions, mergers, staff attrition, and so on. When faced with a pervasive outage like the above, a key learning, however, is to know your

environment well. What system does what, where in the enterprise it is located, how it is managed, delivers what functionality, and the criticality of that functionality to business operations, etc., are all things that need a lot of time and effort to record correctly. There is, however, a rich dividend in having this information clearly mapped and recorded. It is invaluable when prioritizing actions.

B. Established response protocols – Prepare, plan, review, and rehearse. A clearly articulated response protocol addressing technology risks including outages, cyber events, etc., is critical. This means preparing a Crisis Management plan to outline the roles and responsibilities of various stakeholders (Crisis Management Team), potential scenarios, and probable response strategies that could be designed to plug and play. It is very important to have a chain of command that drives measuring impact, decision-making, communications, etc. This will enable one to "respond" to the crisis in a concerted way rather than "ad hoc reactions."

Business Impact Analysis too is very critical to drive recovery efforts as categorized below.

i. critical for survival,
ii. required for sustenance
iii. good to have for scale.

A BIA exercise must be a cold nosed categorization of systems. Sadly however, business rarely have the time to participate in this and it is left to the operating risk folks to drive. Most times, therefore, the baby that cries loudest lands up getting fed the most.

C. Architecture & Engineering – In every enterprise today, there are many business applications. Underpinning those business applications are numerous infrastructure systems and software, which are the skeleton,

Phiroze Vandrewala

sinews, and musculature that form the framework on which the applications are based. Most of these underpinning systems are pervasive to the overall framework. An outage in these is more than likely to cause a horizontal impact. There is a line of thought, especially post CrowdStrike, that advocates not having any one software as a single point of failure and going for multiple product implementations for a given objective. Experience indicates, however, that this creates more complexity in day-to-day operations with not enough benefit of resilience. Having two points of failure for endpoint security is perhaps as bad as having one. The negatives seem to outweigh the perceived benefit.

D. Staffing – Endpoint management is widely categorized as a low-tech activity and is often outsourced on a service-level basis. Service providers provide support to multiple organizations with the same pool of resources. Providing hands and feet support that touch and can reach the machine is sub-contracted even further for reasons of cost, geographical reach, etc. For the most part, that is indeed appropriate. An outage of this proportion, however, is likely taken as a force majeure event.

A service provider with a highly utilized team would not be able to cope with the surge of demand even centrally, let alone in the field. Organizations outsourcing these activities would be well advised to have differentiated levels of service carved out for critical officers, machines, and locations.

2. PRODUCT & PROCESS CHANGES

In today's world of specialization, there is an alphabet soup of products required to keep things running and secure. It is considered too difficult to size, recruit, and keep in-house teams motivated. Also, the sheer breadth of specialization would make it very expensive.

Therefore, teams that are manning this variety of software are most often drawn from either the OEM or their resellers. These folks are mostly immersed in ensuring product uptime itself, and its regular core updates. Minor versions and definition updates are designed as automated downloads and deployments. The updates across systems are just too numerous to manually sequence.

The possible answer is perhaps a couple of things. Zoning the endpoints into smaller and more manageable groups would deliver more fine-grained control than the "uat-dr-proddmz" grouping today, in which each may have thousands of machines. Grouping could be per network zone and then per criticality or such combinations. No one pattern would fit all requirements. The idea, however, is to be able to limit damage and lateral spread. While the process is difficult, it can be achieved.

Technology product evaluations too will increasingly look for the ability to group endpoint systems and desktops as desired and even a kill switch to stop automatic

Technology risk today perhaps rivals operating risk and market risk in its sheer ability and speed to cause an organization wide meltdown.

updates in their tracks or deliver a bypass. Fine grained and flexible reporting for different reviews is also the need of the hour.

3. RISK MANAGEMENT & DISASTER RECOVERY

Consider the horrifying prospect of having your Privileged Access Management system on Windows patched and updated at the same time as the rest of the environment. In the above outage, you have now lost the ability to administer even those systems that are not directly impacted by the extant outage.

The responsibility to design and implement both the infrastructure and such solutions to consider such possibilities can no longer be assigned to the core system administration team. Technology risk today perhaps rivals operating risk and market risk in its sheer ability and speed to cause an organization wide meltdown.

Having well trained technology risk and disaster recovery managers

that contribute through the lifecycle rather than just at times of audit or downtime is well advised. These need to be embedded in the technology organization reporting directly to the CIO.

4. COMMERCIAL AND LEGAL ASPECTS

The overwhelming majority of legal agreements related to technology products limit direct or indirect liability to the value of the contract. Outside of government business, there is no vendor that would accept liability in excess of the contract. This is not an easy problem to resolve.

Increasingly however, Regulators, and even the Board of Directors of organizations are going to mandate regular reviews of architecture, build to suit, and service levels. While this is certainly onerous, it does need to be done. Risk Managers need to play a key role in creating frameworks that aid the listing, risk categorization and review of technology vendors.

How can you use this information?

This article is designed to provoke thought in the minds of key decision makers in technology. Not everything will apply uniformly, but the broad elements are indeed horizontal. The priorities that a CIO today has are numerous and often conflicting. The need for agility of delivery v/s design to scale and survive are often at odds with each other.

At TechBridge Governance and Strategy Consulting we specialize in aiding the Technology and Risk Management teams in reviewing their current setups, and providing expert consulting advise and recommendations across a broad range of technology risk, governance and disaster recovery aspects. ■

—Phiroze Vandrewala is an accomplished and visionary CTO with 30 years of distinguished experience in the Indian Banking and Financial Industry.

DevSecOps Practices: Enhancing Delivery Efficiency and Fast-Tracking Secure Software Deployment

Ongoing collaboration and communication between software developers and security teams drive the high speed and agility that are top priorities for today's businesses.

By **Rahul S Kurkure** | editor@cioandleader.com

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DEVSECOPS (DEVELOPMENT, SECURITY & Operations) has become an integral component of the software engineering culture, emphasizing security from the very outset. By introducing security early in the software and application development lifecycle, risks are significantly reduced, enabling organizations to achieve their IT and business objectives more rapidly.

Ongoing collaboration and communication between software developers and security teams drive the high speed and agility that are top priorities for today's businesses. In the DevSecOps approach, security practices are embedded within the continuous integration and continuous deployment (CI/CD) pipelines, making security a shared responsibility of both software development and security teams.

This model contrasts sharply with traditional development approaches, where security was often treated as an afterthought, resulting in numerous vulnerabilities that posed risks to the organization's security posture. Additionally, in this method, developers integrate real-time security measures into applications, enhancing security for end-users.

Let us delve into the key DevSecOps Practices that drive efficiency and accelerate secure software development:

Address Vulnerabilities before they Emerge

Traditional approaches to security,

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where security assessments are implemented as an afterthought, lead to setbacks and an increase in vulnerabilities. Conversely, integrating security during the development stage ensures that security considerations are addressed throughout the entire software development lifecycle (SDLC). Developers, positioned at the left of the software development process, are responsible for developing, building, testing, and deploying with security in mind. This practice, known as 'shifting left,' enhances both efficiency and productivity.

By integrating security tools into the CI/CD pipeline, security checks can be performed at every stage of the SDLC. This proactive approach allows for the early detection and mitigation of potential security issues, ensuring that vulnerabilities are addressed before they become significant threats.

Leverage Automation for Security Testing

As software developers face tight deadlines, the CI/CD process is designed for speed to ensure faster delivery. To meet this objective, DevSecOps teams must employ

automation to enable continuous testing, identify vulnerabilities early in the development process, and reduce the number of security issues that can enter production. Automating security tests and controls helps eliminate delays caused by security compliance checks. These automated tools continuously scan code for vulnerabilities, ensuring that security is integrated into every stage of development. By leveraging automation, DevSecOps teams can maintain high-speed delivery without compromising on security, thereby enhancing overall efficiency and reliability.

Encourage Threat Modeling

Threat modeling is a structured process that helps identify and quantify security threats and potential vulnerabilities. Integrating threat modeling into the DevSecOps process is critical for mitigating potential threats before they impact the system. This proactive approach documents risks related to key system assets, enabling organizations to make informed decisions, design more secure systems, and address potential vulnerabilities effectively. Threat modeling workshops should be organized at the very onset of the software development life cycle during the design stage.

Implement real-time security monitoring

Cyber threats are ever-evolving and can change daily. Real-time security monitoring, including log activity tracking and monitoring of infrastructure and application activity, helps detect anomalies quickly and respond to them in real-time. For effective and continuous monitoring, several key tools can be leveraged. One such tool is a Security Information

Continuous education on the importance of security in the development process is essential for all business leaders and employees.

and Event Management (SIEM) solution.

SIEM solutions gather and analyze logs from applications, network devices, infrastructure, and security tools, providing comprehensive visibility into security events. Vulnerability scanning tools can be used along with SIEM for ongoing vulnerability monitoring where even newly discovered vulnerabilities are captured which otherwise could potentially cause severe damage.

Educate developers on secure coding practices

Developers must be provided with and educated on DevSecOps best practices and guidelines to ensure code security from the design stage through to development. Without

this foundational knowledge, any security vulnerability in the code can expose data and applications to malicious threat actors.

Implementing secure coding practices is essential for eliminating common coding errors and securing data input, output, and storage. This empowers applications to withstand potential attacks. Regular code reviews are crucial to ensure that the code remains resilient against emerging threats. Additionally, implementing secure coding standards from the outset ensures that applications are built securely.

IMPLEMENTATION OF DEVSECOPS BEST PRACTICES

The implementation of DevSecOps best practices has brought about

a paradigm shift in software security, fortifying applications and systems. Organizations need to recognize that this transformation is both a cultural and a mindset shift. Continuous education on the importance of security in the development process is essential for all business leaders and employees. Selecting the appropriate tools for implementing DevSecOps is crucial. These tools should facilitate automated testing and continuous monitoring, integrating security seamlessly into the CI/CD pipelines. Every part of the code must be tested for errors, ensuring that security is an integral part of the development process.

Infrastructure as Code (IaC) is another vital practice where infrastructure configurations are managed through code. This approach significantly reduces the chances of errors and prevents the introduction of security gaps and vulnerabilities. Equipping teams with the necessary skill sets to implement and maintain DevSecOps practices is essential. Regular hands-on training sessions should be conducted to ensure that DevSecOps teams can build applications resilient against evolving threats.

By adopting these DevSecOps practices, the software development process is transformed. This ensures organizations stay ahead of security challenges, delivering secure applications, enhancing delivery efficiency and their overall security posture in addition to accelerating secure software development. ∎

—Rahul S Kurkure is the Founder and Director of Cloud.in

The Digital Renaissance in Banking: AI and Analytics as Pillars of Stability
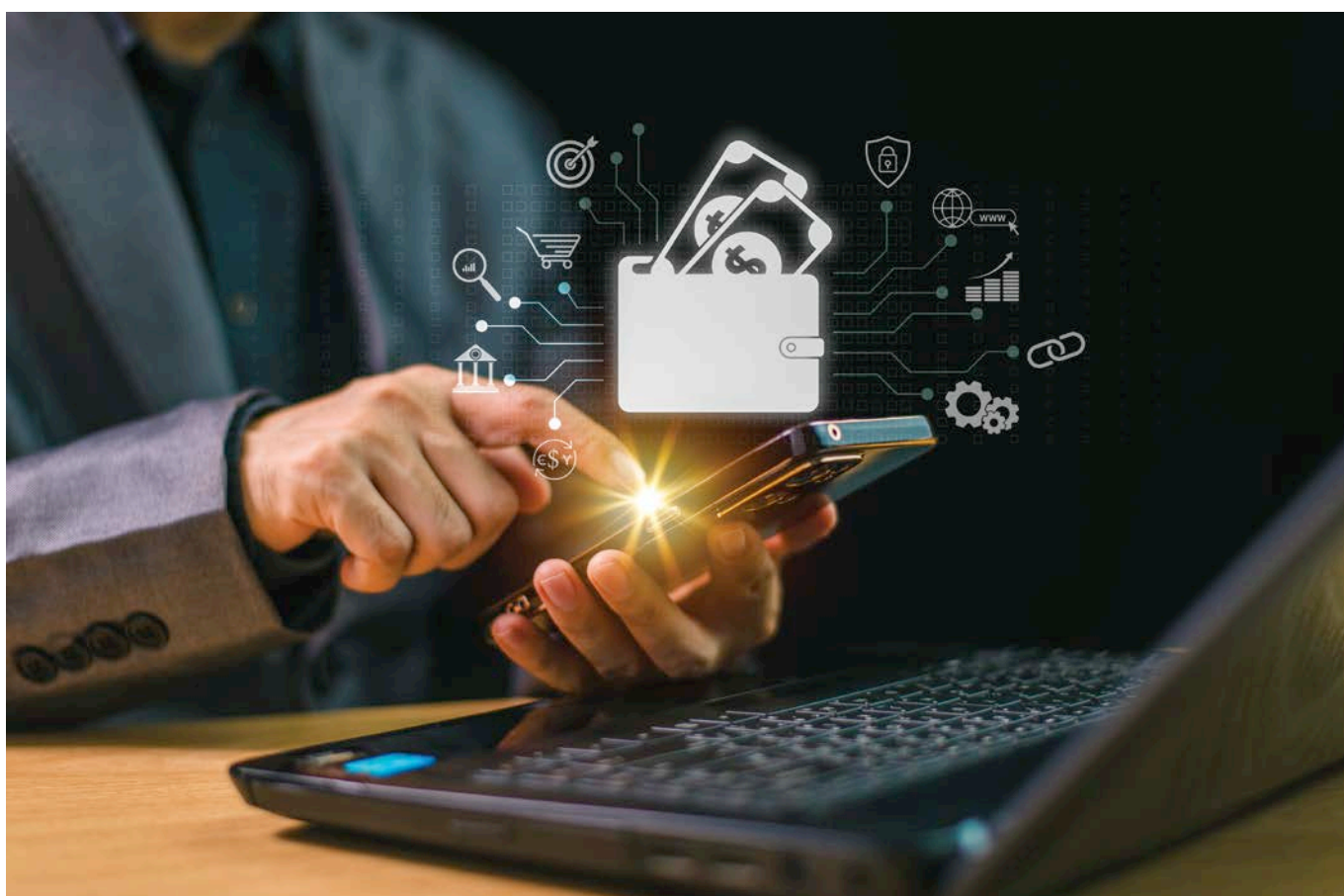
AI's scope has expanded to encompass advanced applications in risk management, fraud prevention, and delivering superlative hyper-personalised customer experiences.

By **Nirav Bhatia** | editor@cioandleader.com

IN AN ERA of unprecedented volatility, the world has witnessed the limitations of traditional economic theories in addressing crises like pandemics, conflicts, and climate change. Financial institutions now find themselves at a pivotal crossroads. Their responsibility extends beyond securing their own success; they must chart a path toward a future that is more resilient and equitable.

Embracing Responsibility

Banks today are not just financial institutions; they are the bedrock of societal well-being, particularly in tumultuous times. Their mission encompasses the well-being of society. The looming threat of climate change underscores the urgency of technological solutions for problem anticipation and resolution. Banks must embrace the role of being the "foundation of stability and optimism during turbulent times."

The Analytics Revolution

The technological metamorphosis in banking is akin to the transition from horse-drawn carriages to automobiles—a shift that reshapes the entire landscape of possibilities. This evolution is about redefining the essence of banking. Advanced analytics and AI models are now guiding banks through modern finance. These technologies have entrenched themselves as the linchpin of decision-making, influencing every facet of banking operations.

Furthermore, AI's scope has expanded to encompass advanced applications in risk management, fraud prevention, and delivering superlative hyper-personalised customer experiences. The emergence of generative AI, capable of creating and predicting based on vast amounts of data, represents a monumental shift that promises to revolutionize banking operations and strategy further.

AI's scope has expanded to applications in risk management and fraud prevention, enhancing customer experiences. Generative AI, capable of creating and predicting based on vast data, promises to revolutionize banking operations further.

Data analytics allow banks to gain invaluable insights into customer needs, enabling them to customize offerings with precision. Predictive analytics enhances banking by forecasting future events, anticipating customer needs, and improving satisfaction. By analyzing past behavior, banks

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can create nuanced risk profiles and make informed lending decisions.

In essence, the technological revolution in banking, powered by advanced analytics and AI, is redefining banking. It mirrors the evolution from antiquated modes of transportation to modern vehicles, ensuring that customer well-being remains at the heart of every banking decision.

Navigating Regulation and Responsibility

With the excitement around AI and building robust Customer Data Platforms (CDP), it is imperative to champion a balanced approach, prioritizing ethics and responsibility in high-stakes industries like banking, where handling sensitive data is crucial. As AI evolves, regulatory scrutiny will intensify. Banks must stay ahead of regulatory changes to ensure ethical and responsible AI use, minimizing legal and reputational risks.
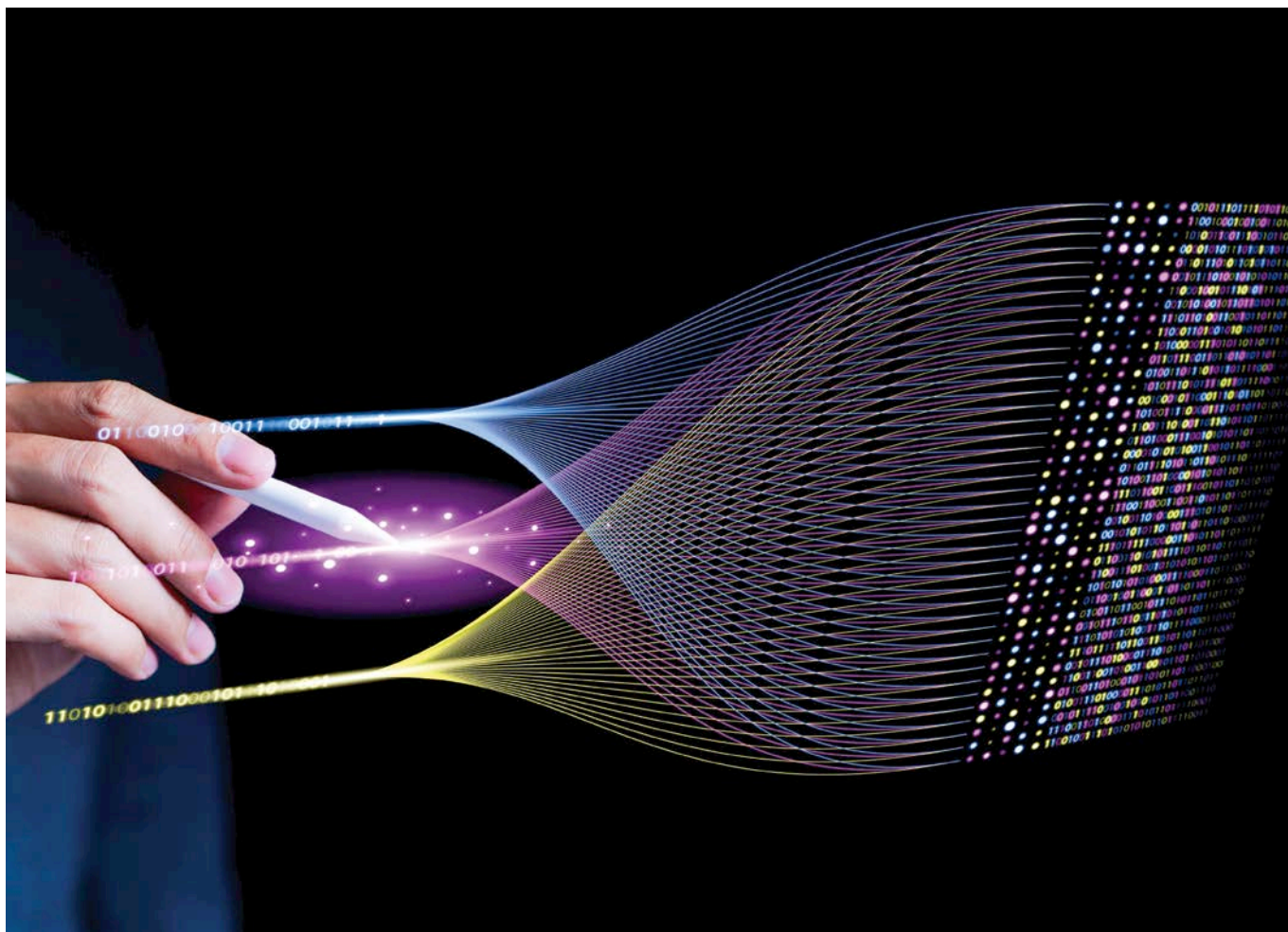
Conclusion

In the quest to reshape banking for an uncertain future, digital banking, innovative technologies like CDP, data analytics, AI, and cloud platforms are transformation tools. As we navigate challenging times, banks stand as the bedrock of stability and trust in our evolving world. Their commitment to resilience and societal well-being paves the way for a brighter future where banks are not just financial institutions but beacons of progress. ∎

—Nirav Bhatia is the Customer Digital Solutions Lead at SAS EMEAP

New-age Databases with In-built LLMs: An AI Game Changer?

With the rapid adoption of AI across industries, there's a significant need for databases with inbuilt LLMs that can support AI transformation and innovation.

By **Siddharth Deshmukh** | editor@cioandleader.com

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THE INTEGRATION OF Large Language Models (LLMs) into modern databases marks a significant leap in the evolution of data management systems. As businesses increasingly rely on vast and complex datasets to drive decision-making, the demand for more intelligent, responsive, and adaptive data management solutions has surged. Enter new-age databases with inbuilt LLMs, promising to transform how we store, query, and interact with data.

Why they are a game changer for businesses?

Databases with inbuilt Large Language Models (LLMs) are vital for businesses because they transform how data is accessed, managed and utilized. By enabling natural language interaction, they make data more accessible to non-technical users, allowing for broader use across organizations. Here's why they are crucial:

■ **Simplifies interaction with databases –** LLMs allow users to interact with databases using natural language queries, making data more accessible to non-technical users. This democratizes data access, enabling broader use across the organization and fostering a data-driven culture.

■ **Delivers precise and contextually relevant outcomes –** LLMs can interpret and correlate data from different sources, providing a more comprehensive understanding of the data landscape. They can understand context, intent, and

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nuances in queries, leading to more accurate and relevant results. This is particularly valuable for complex or ambiguous queries where traditional systems might struggle.

■ **Enables real-time insights and decision-making –** Databases with embedded LLMs can analyze historical data to forecast future trends and provide real-time insights from vast datasets. By summarizing key information and identifying emerging patterns, they empower faster and more precise decision-making.

■ **Enhances database scalability and efficiency –** LLMs are highly effective at processing and interpreting unstructured data like text or images. They can automate tasks such as data classification, tagging, and summarization, significantly reducing manual effort and enhancing overall efficiency.

■ **Integrates seamlessly with AI Workflows –** Integrating LLMs directly into databases enables a seamless connection with broader AI workflows, allowing data to be processed, analyzed, and utilized for AI applications without the need to transfer it between systems, thereby reducing latency and

complexity. Additionally, LLMs enhance the performance of other AI models by providing more refined data inputs, which improves the quality of AI-driven insights and predictions.

■ **Makes databases more secure and complaint –** LLMs offer advanced threat detection by analyzing patterns in data access and usage to identify potential security risks. They also play a crucial role in maintaining compliance by monitoring and flagging sensitive information. Additionally, LLMs aid in data privacy management by identifying and safeguarding sensitive data, ensuring adherence to regulations like GDPR.

The future...

With the rapid adoption of AI across industries, there's a significant need for databases with inbuilt LLMs that can support AI transformation and innovation. Leading industry players in databases such as IBM, Microsoft, and Oracle have started offering databases with this capability. For instance, Oracle had recently launched 'HeatWave GenAI', which provides integrated and automated generative AI with in-database large language models (LLMs).

These advanced databases not only handle vast amounts of data but also provide real-time analysis, predictive insights, and automated decision-making directly within the database environment. By reducing the need for data transfers and enhancing the quality of AI-driven outputs, databases with embedded LLMs will become central to AI workflows, driving efficiency, scalability, and more intelligent, data-driven innovations across industries. ■

— Siddharth Deshmukh is the Chief Operating Officer at Clover Infotech

Better, Faster, More Intuitive: How AI is delivering more Value to Patients
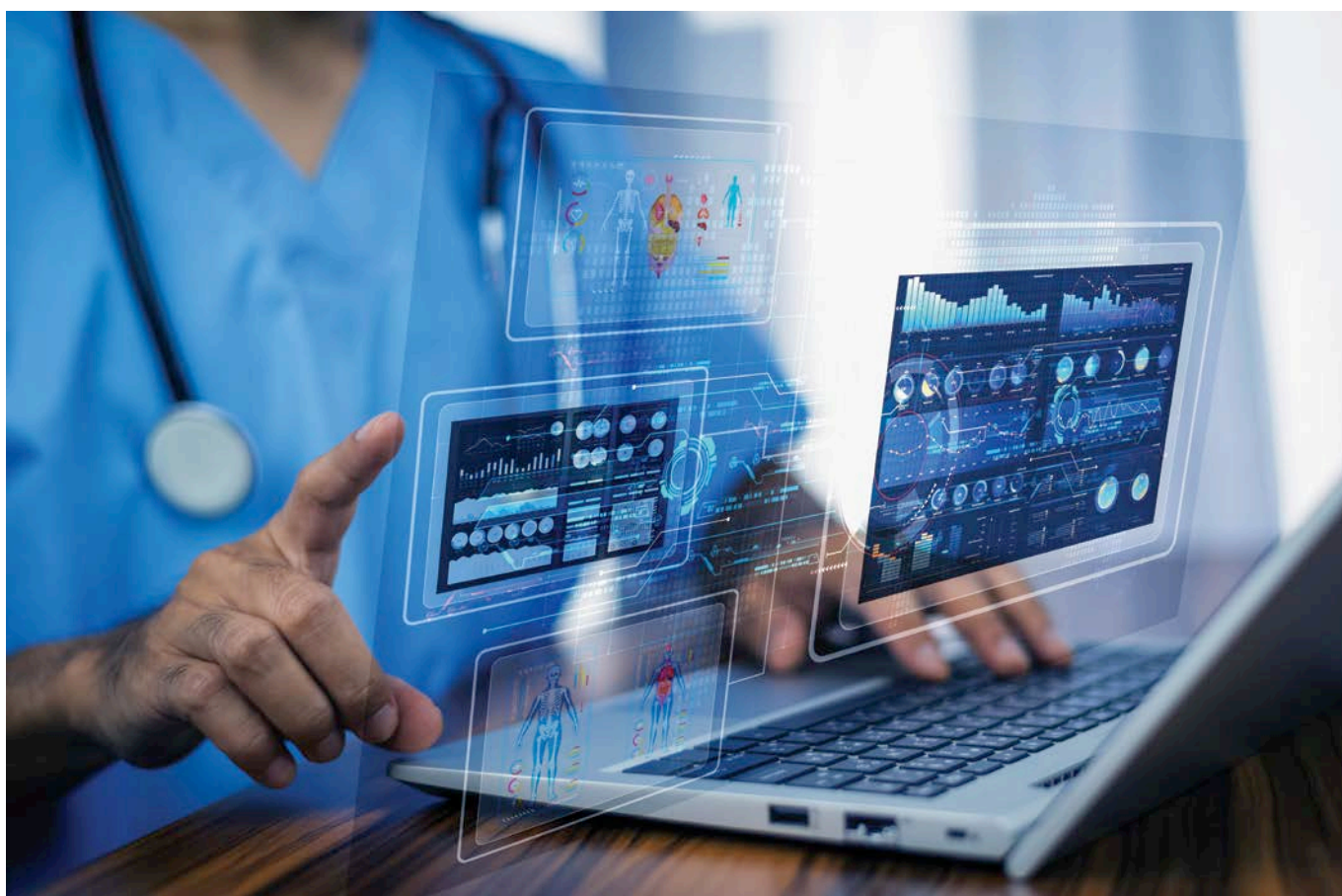
According to a study by NASSCOM, AI and data in healthcare could increase GDP by up to USD 30 billion by 2025. But it's important to nail down the specifics.

By **Sandeep Bhargava** | editor@cioandleader.com

INDIA'S HEALTHCARE INDUSTRY has always led the world in delivering new and affordable solutions to the people. Its healthcare innovation market is currently USD 30 billion, expected to double by fiscal year 2028.

One possible driver for this projection? Artificial intelligence (AI). According to a study by NASSCOM, AI and data in healthcare could increase GDP by up to USD 30 billion by 2025. But it's important to nail down the specifics. When discussing AI in healthcare, the popular notion is that "everything will be improved with AI." But what does that mean? Let's look at examples already being implemented and a few on the horizon.

Detecting and Intervening Faster

AI's computing power can quickly analyze large volumes of data to derive order from chaos. So, it stands to reason that AI-powered diagnostic tools can identify patterns in medical records, imaging, and lab results. By incorporating AI, doctors can flag early signs of diseases — and intervene faster.

For example, AI can help diagnose chronic conditions such as diabetes or heart disease sooner. From there, doctors can set up patient visits to monitor them, track their progress, and ultimately improve outcomes.

Detect Faster, Treat Earlier

AI also improves medical testing and imaging. AI-powered tools can help doctors detect irregularities at a scale and speed that wasn't previously possible. Doctors can now spot breast cancer from mammograms that could have otherwise been

Sandeep Bhargava
SVP, Global Services and Solutions,
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Rackspace Technology

missed. Blood tests can also detect early-stage gastric cancer with an almost 90% accuracy rate.

Bringing New Drugs to Market Sooner

Developing new drugs is laborious and expensive. Researchers have to pore over mountains of biological data and evaluate thousands of patients to predict drug interactions and find the perfect candidates..

AI can streamline this process by reducing the time and cost needed to bring new drugs to market. For example, natural language processing can match the right patients with the right clinical trials, cutting years from the drug development pipeline.

Delivering A New Standard of Care

Telemedicine and telehealth are improving thanks to AI. Patients receive a new standard of care through virtual consultations, remote health monitoring, real-time medical advice, and timely interventions.

In senior care, wearables and remote monitoring technologies can track patients without limiting their freedom. Voice-activated AI

applications can deliver medication reminders, appointment scheduling, and emergency responses. AI-driven systems can detect unusual movements (such as falls) and immediately alert emergency services.

AI-enhanced telemedicine also expands healthcare access to underserved populations, ensuring that more people receive timely care. By prioritizing patient inquiries and analyzing symptoms before consultations, healthcare providers can offer accurate care regardless of location.

Preventing Fraud and Data Breaches

Patient data is often targeted by hackers, with a recent case happening in June 2024.

However, AI can automate data protection and predict interactions to prevent future breaches and misuse. It's not a one-time feature; by continuously adapting to new threats, generative AI can enhance existing security and protect patient data.

Let's go further by preventing abuse before it happens. AI can detect healthcare fraud and scams. AI-powered fraud detection systems can help hospitals and other healthcare organizations reduce reimbursements from fraudulent claims by combining machine learning and data analytics.

Make no mistake! AI is here to stay and set to transform the healthcare industry. It's a powerful tool that can help healthcare providers deliver better treatments, prevent illnesses, and secure patient data. As AI evolves, healthcare will become more proactive, personalized, and efficient. It's a win-win for everyone. ∎

—Sandeep Bhargava is the SVP, Global Services and Solutions, Public Cloud Business Unit at Rackspace Technology.

How can blockchain transform financial transactions?

Blockchain's efficiency is enhanced by smart contracts, which automatically execute when predefined conditions are met, eliminating intermediaries.

By **Edul Patel** | editor@cioandleader.com

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BLOCKCHAIN, OFTEN ASSOCIATED with the rise of cryptocurrencies, has been around for over 30 years. Originally designed to timestamp digital documents, it has evolved into a revolutionary technology with wide-ranging applications across various industries. One of the most transformative sectors is finance, where blockchain has the potential to completely redefine how transactions are conducted.

Improved Speed and Efficiency

One of the most compelling advantages of blockchain technology is its ability to simplify and speed up financial transactions. Traditional financial systems rely heavily on intermediaries such as brokers, banks, and clearinghouses—which often increase costs and time. Blockchain operates through a decentralized network, enabling peer-to-peer interactions without the need for third parties. This allows transactions to be processed in near real-time, particularly for cross-border payments that typically take days to settle.

Companies like Ripple are already utilizing blockchain for global payments.

Enhanced Security for Financial Transactions

Security being a critical concern in financial services, blockchain offers a robust solution through its cryptographic algorithms. Every transaction is linked to the one before it, creating a verifiable and transparent trail of data. This immutability is key to preventing fraud and unauthorized access, offering a heightened level of

Edul Patel
CEO and Co-founder, Mudrex

security in an era of increasing cyber threats. This process not only enhances trust between participants but also reduces the risk of data breaches or tampering, as any changes would be immediately evident to the network.

Use of Smart Contracts

Blockchain's efficiency is further amplified by the rise of smart contracts. These contracts automatically execute once predefined conditions are met, eliminating the need for intermediaries like brokers or legal teams to approve transactions.

In an industry like insurance, smart contracts can be used to automate the claims process. For instance, if a claim meets the predefined conditions, the payout can be automatically processed without manual intervention. This reduces administrative overhead, speeds up the claims process, and minimizes the potential for fraud. Other industries such as logistics and supply chain also greatly benefit from smart contracts.

Reducing Costs of Transaction

Blockchain significantly reduces transaction costs by removing the need for intermediaries and automating processes. This is particularly important in complex areas like trade finance, where multiple players such as banks, insurers, and transport companies traditionally complicate the flow of funds.

Blockchain simplifies this process, reducing both the complexity and cost of transactions. Companies like HSBC and IBM are already leveraging blockchain for trade finance. By digitizing and automating the entire trade process, from issuing letters of credit to settling payments, these organizations have reduced paperwork and streamlined the process, resulting in significant cost savings.

Overcoming Challenges

Despite its advantages, blockchain adoption faces certain challenges. One of the primary concerns is scalability. While current blockchain networks are effective for smaller volumes, they need to evolve to handle the vast number of transactions processed by global financial systems every day. Additionally, while blockchain itself is secure, the risk lies in the quality and integrity of data uploaded to the system.

Incorrect or fraudulent data could compromise the entire network, necessitating strict verification processes.

However, for blockchain to fully revolutionize financial services, the industry must overcome current challenges and establish supportive regulatory frameworks.∎

—Edul Patel is the CEO and Co-founder of Mudrex, a global crypto investment platform

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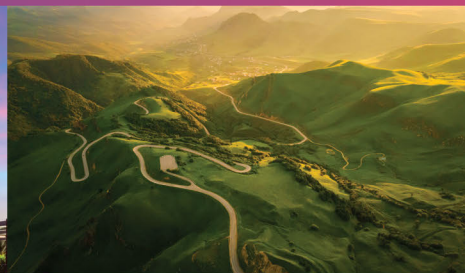Demonstrate strategic thinking, collaboration and problem solving skills

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