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BUSINESS SOLUTION

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BUSINESS SOLUTIONS & MARKETING

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Lokesh Jangid

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CORPORATE OFFICE: Cyber House, B-35, Sec-32, Gurugram (NCR Delhi) 122003. India

email us pcquest@cybermedia.co.in

call us +91-124-423-7517, Ext. No.: 347, Mobile +91-9953150474, +91- 7993574118

OUR OFFICES

BENGALURU: Address: 205-207, Sree Complex (Opp. RBANMS Ground), # 73, St John's Road,

Bangaluru - 560 042. Tel: +91 (80) 4302 8412, Fax: +91 (80) 2530 7971

MUMBAI: Address: INS Tower, Office No. 326, Bandra Kurla Complex Road, G Block BKC, Bandra East,

Mumbai - 400051. Mobile: +91 9969424024

DELHI: Address: Cyber House, B-35, Sec 32, Gurugram, NCR Delhi-122003.

Tel: 0124-4237517, Mobile: 9953150474

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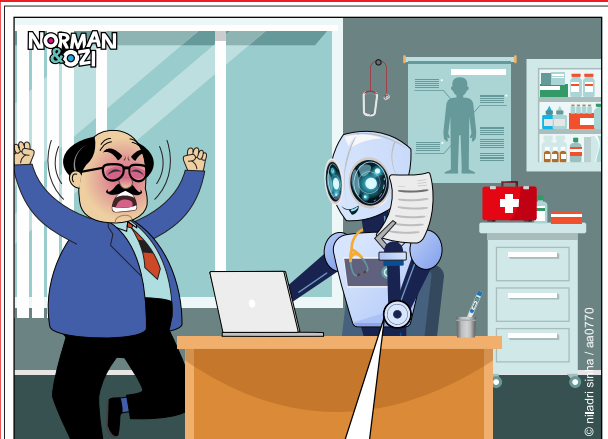
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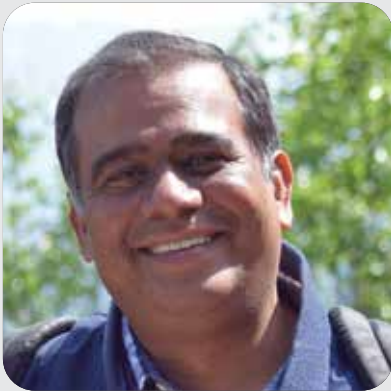
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Well, your blood work looks fine, but to control your BP, you need to stop sending passive aggressive emails to your staff.



Sunil Rajguru

✉ sunilr@cybermedia.co.in

Hypersonic is the name of the game

There was a time when brute force won the war when it came to an army. The bigger the better. Soon tactics and the latest weaponry gave one a tactical edge, especially when it came to things like gunpowder and cannons. During colonial rule, it was the age of the navies. During World War I, armies regressed to trench warfare. After this the battle tank changed things around. The Nazis with the Luftwaffe ruled the skies. After World War II we entered the nuclear age.

The nuclear age was scary, but also somewhat stable. The concept of Mutually Assured Destruction was coined, and it was felt that no matter what, no two nuclear armed countries would attack each other. Indeed, no nuclear bomb exploded over civilian populations from 1945, the year of Hiroshima and Nagasaki, to the start of 2025.

But things have proved to be different as 2025 progressed.

1. India attacked a nuclear-powered Pakistan with fighter jets, missiles and drones, reportedly hitting two nuclear bases. Pakistan also retaliated against a nuclear-powered India.
2. Ukraine attacked deep into Russian territory targeting nuclear bombers.
3. Israel and the US bombed Iranian nuclear sites even at the risk of radiation and a further revenge cycle in case of some N-sites being missed out.

What happened? Why is it suddenly game to hit nuclear targets and nuclear countries, something that was unthinkable a few years back. The reason for that is the rules of the game have changed yet again and now it's all about hypersonic missiles. These are described as at least Mach 5 or five times the speed of sound. It was reported that the Russians reached speeds of up to Mach 30.

This means that if your neighbouring country has a hundred nukes and you fire hundreds of hypersonic missiles at them along with other key targets, a war could be over in minutes. That is why India attacked Pakistan with such impunity and our enemy will currently be desperate and get their hands on hypersonic weapons. India is currently in an elite league which has them.

It is reported that Ukraine has been provided with hypersonic missiles by the West and that's why Russia did not retaliate the Ukraine N-attack with hypersonic weapons. As far as Iran is considered, they sprung a surprise of their own with Fattah-1, an alleged hypersonic missile. While the Israelis have rubbished this claim, it is true that the Fattah breached Israeli defences for the first time on this scale and have probably changed the rules of the game.

What next tech can be expected in modern warfare remains to be seen.

*No more
nuclear*

Sunil Rajguru

The shift from treatment to prevention

Ashok Pandey✉ ashokpa@cybermedia.co.in

What if your watch knew you were sick before you did? AI in healthcare is doing just that—spotting diseases before they strike. From data to diagnosis, it's turning doctors into futurists and prevention into power. Is the future already here? Well, the countdown has begun!

Imagine a doctor diagnosing your risk of a disease before you show even a single symptom. No stethoscope, no waiting for test results. Just data. Cold, clean, clinical and yet, profoundly human in what it enables. That's not science fiction. That's preventive healthcare, reimagined by Artificial Intelligence (AI).

For decades, medicine has largely been about damage control. A patient walks in, something's broken, and doctors try to fix it. But now, with machine learning (ML),

data integration, and predictive algorithms, healthcare is starting to flip the script from reactive to proactive.

At the heart of this revolution? Prediction. Prevention. Personalization.

▼ AI meets data and the results are wild

AI is nothing without data. But healthcare is practically drowning in it.

- Smartwatches track your heartbeat, stress, and even sleep cycles.
- Electronic health records (EHRs) store a

lifetime of diagnoses, prescriptions, and lab results.

- Genomic tests tell you what diseases might be written in your DNA.
- Environment and lifestyle data add layers like air quality, income level, job stress.

Put all that into an AI model, and you've got a system that can do something most human doctors can't: spot subtle patterns, long before the first symptom.

Take diabetes. Machine learning models trained on thousands of health profiles are already predicting Type 2 diabetes years in advance. Not after your sugar spikes. But way before—while there's still time to act.

▼ Personal health gets personal

One-size-fits-all medicine? That's so last decade.

Today's predictive AI can customize your care plan down to the molecule. It pulls together your genetic blueprint, your daily behavior, even your social and economic conditions to create a risk profile as unique as your fingerprint.

In two patients with the same diagnosis, AI might recommend two wildly different strategies. One gets a new diet and walking routine. The other? Early screenings and precision medications.

As Neeti Sharma puts it, "We are seeing a 40–50% jump in demand for professionals who understand bioinformatics, NLP, and imaging. It's about bringing tech and domain expertise together."

▼ Under the hood: The tech stack powering it all

So how does it actually work?

Let's open the hood:

1. Machine Learning (ML) models trained on massive datasets from EHRs, wearables, and labs.
2. Natural Language Processing (NLP) to understand messy clinical notes and reports.
3. Imaging AI that decodes CT scans, MRIs, and pathology slides at lightning speed.
4. Multimodal Integration Layers that blend structured (like lab results) and unstructured (like doctor's notes) data.



NEETI SHARMA,
CEO, TeamLease
Digital



"Improving diagnostic efficacy up by 30%, enabling real-time risk scoring and improving therapy leading to almost 25–30% better response rates in targeted treatments."

Atul Kurani's team is even building connected medical devices from insulin pumps to cardiac monitors that auto-adjust treatment based on real-time data.

▼ Glaucoma to sepsis: Real-world use cases

In ophthalmology, a new AI framework is setting the bar. Designed to predict glaucoma progression, it blends imaging, functional tests, social determinants of health (SDOH), and even access to care.

Here's what it brings to the table:

- Multimodal deep learning using CNNs and RNNs.
- Equity-first design for use in both urban hospitals and rural clinics.
- Explainable outputs that help doctors and patients trust the system.
- Cultural customization, so it works just as well in Bihar as in Boston.

In critical care, AI models are stepping up to battle sepsis, one of the deadliest and fastest-moving conditions. From early detection (hours before onset) to real-time monitoring via digital twins, AI isn't just watching the patient, it's running simulations, spotting trouble, and nudging clinicians with evidence-backed suggestions.

But while the tech is maturing, scaling these solutions beyond labs is another story.

▼ Talent vacuum: a quiet crisis

All this innovation means nothing if there's no one to build and run these systems. And right now? There's a talent crunch.

"We urgently need interoperability

architects, clinical informatics experts, and AI governance leads. But they're hard to find, especially in India," says Neeti Sharma.

Atul Kurani echoes the concern: "We need professionals who speak both doctor and data. Right now, too many speak just one."

▼ The ethics elephant in the room

Health data isn't just information. It's intimate. That's why AI in healthcare comes bundled with ethical landmines.

- **Bias:** If your training data isn't diverse, your predictions won't be either.
- **Ownership:** Who owns the data, especially when it's collected passively from wearables?
- **Transparency:** Can you trust a black-box model with your life?

The good news? Frameworks like HIPAA, GDPR, and the EU AI Act are laying foundations. The bad? Implementation is patchy.

There's rising demand for model auditors, bioethics consultants, and data privacy officers. Organizations know they can't wing it anymore. Responsible AI needs consent protocols, diverse training data, and real-time audits. Otherwise, we risk repeating old inequalities with new tech.

▼ The last mile: where theory meets reality

Even the most advanced AI models face hurdles in the real world.

- **Data fragmentation:** Up to 70% of healthcare firms struggle with integrating structured and unstructured data.
- **Interoperability issues:** Systems still speak in silos.
- **Legacy systems:** Many clinics still run on outdated software and budgets.
- **Explainability:** Doctors want to know why a model made a decision.
- **Trust:** Perhaps the biggest hurdle of all.

Even with standards like HL7 or FHIR, inconsistent implementation stalls progress. And legacy integration? That's a whole other beast.

▼ What's next? Prediction is just step one

Picture this: your smartwatch notices subtle changes in heart rate variability. It



ATUL KURANI,
VP, Capgemini
Engineering

"We've moved from just diagnosing to actively predicting and preventing. Our systems now integrate imaging, wearables, and genomics to forecast conditions and personalize treatment."

pings your doctor, who runs a few checks. A risk is flagged. Within hours, you're on a custom preventive care plan. No symptoms. No ER visits. Just foresight.

That's the endgame. But to get there, we need:

- Standardized data formats.
- Federated learning models for privacy-preserving AI.
- Integration with telemedicine and low-resource clinics.
- Transparent, multilingual UIs.
- And most importantly, trust.

As one recent framework on glaucoma prediction emphasized, equity and explainability must be central, not after thoughts.

▼ From stethoscopes to silicon

Let's be clear. AI won't replace doctors. But it will give them superpowers.

It won't eliminate the human touch. But it will make that touch smarter, faster, and far more precise. For patients, this isn't just about tech. It's about agency. About knowing your risk before it becomes your reality. About living in a world where healthcare means keeping you well, not just treating you when you're not.

Preventive AI is not a promise. It's already happening. The only question is: will our systems, talent, and ethics catch up fast enough? Because the best time to beat a disease is before it begins. And AI? It just might make that possible.

Healing smarter AI enters the ward

Preeti Anand✉ preetia@cybermedia.co.in

In the AI-enabled clinic of tomorrow, precision meets compassion. From predictive pumps to surgical robotics, healthcare is being reimagined not by replacing doctors, but by upgrading care with data, design, and a digital dose of foresight

In a rapidly evolving digital healthscape, Artificial Intelligence (AI) isn't just a tech buzzword, it's becoming a quiet partner in clinics, labs, and operating rooms. In this wide-ranging conversation, **Dr. Sanjay Kalra, renowned endocrinologist, Bharti Hospital, Karnal**, reflects on how AI is shifting the way medicine

is taught, practiced, and trusted. From early screening to robotic surgery, he breaks down what works, what worries, and why empathy still trumps all.

▼ Understanding AI-powered healthcare

He starts by emphasizing the extent to which AI has currently become integrated with

the tapestry of modern existence, in the field of medicine as well. He explains that our very understanding of intelligence has evolved: “Earlier, we thought intelligence was unique to humans because we could create tools. But now, we realize even animals like gorillas and elephants use tools, so our definition has changed. We now know that true intelligence is also about recognizing when we need support, and that’s where artificial intelligence comes in.”

AI in healthcare does not simply mean automation of tasks, but improving the quality of care. Doctors, nurses, and paramedics do their best to provide the best results, but sometimes the workload and the complexities of the job can result in mistakes, either through omission or commission. He notes, “AI helps us learn, find reasons, improve decision-making, and ultimately raise the standard of care we provide.”

▼ How AI is transforming disease diagnosis

You can already see a practical impact on disease detection and management with AI. He relates an interesting example in the care of diabetes.

▼ Diabetic retinopathy screening

All diabetes patients are supposed to be screened to detect retinal disease, yet the number of eye specialists is insufficient to cater to the need. Eye images can now be taken using AI-powered cameras controlled by technicians, and the AI systems analyze the images and assign the patients as low, moderate, or high risk. With this triage system, patients that require immediate attention can be seen first, and the others may be attended to accordingly.

▼ Glucose monitoring and insulin pumps

Modern insulin pumps, powered by AI, don’t just measure current glucose levels—they predict future fluctuations. If the system anticipates a drop in blood sugar, it can automatically adjust insulin delivery to prevent dangerous lows. “This is a real-life example where AI can make the difference between life and death,” he emphasizes.

It is important to note that AI is not about



DR. SANJAY KALRA, Renowned endocrinologist, Bharti Hospital, Karnal

doctor replacement, but their empowerment. AI can free up clinicians by automating routine tasks, delivering predictive insights, and even supporting triage. As he puts it, “AI helps us recognize our own limitations and supports us in delivering safer, smarter, and more personalized healthcare.”

▼ The human side of AI challenges

The largest obstacles in implementing AI in healthcare are not technological, but human. Many physicians are worried that AI will take away their jobs because they lack training in technology or have low self-confidence. “AI is not here to take over the medical profession,” he emphasizes. “It is here to support, augment, and help us do a better job.”

Another challenge is ethical. He refers to the well-known laws of robotics by Isaac Asimov to show that our ethics need to keep up with the technology. When an AI system processes a pathology report, the legal and ethical liability remains with the human pathologist signing off on it. “We need clear laws and self-censorship in the medical profession to ensure ethical AI use,” he says.

▼ The future: Macro, meso, and micro impact of AI

In the future, he believes that AI will

revolutionize healthcare on all levels:

- **Macro level:** AI will assist policymakers in allocating resources more effectively. Data-driven insights can be used to target stroke prevention initiatives to high-risk areas.
- **Meso level:** Hospitals will optimize staffing and resource allocation with the help of AI-driven decisions.
- **Micro level:** For individual patients, AI will allow personal triage and follow-up.

This adaptive, cyclical process becomes crucial as healthcare is burdened by complex, multifactorial problems.

▼ Robotic surgeries: Precision, experience, and human oversight

AI-powered robotic-assisted surgeries are becoming popular due to precision and consistency. He points out that these systems are merely as efficient as the surgeons who use them. “Robotic surgery bridges the gap between youthful agility and seasoned experience.”

Still, technology is not infallible. He recalls rare but serious incidents where robots malfunctioned. “The future is bright, but human oversight remains essential.”

▼ Empathy, trust, and communication

In healthcare, trust is key. The most human connection is the best way to establish trust. “Empathy and communication are irreplaceable. Doctors must listen and speak to patients as they themselves would wish to be treated.”

Real-time decisions in complicated surgeries can be aided by AI and robots. Nevertheless, the surgeon is responsible in full. “A good surgeon’s ability to act decisively in a crisis is still irreplaceable,” he notes.

▼ Auditing and AI in healthcare

Oversight and external audits are a delicate matter. Fairness in AI remains a gray area. This requires constant auditing to identify and correct bias. However, human nature might be an obstacle to transparency. “We need to improve our auditing processes to ensure AI systems treat all patients fairly and equitably.”

External audits are usually faced with reluctance. “An external audit helps me

improve by highlighting areas for growth. On the other hand, it exposes my shortcomings and mistakes, which naturally makes me hesitant,” he says.

One justification for resisting audits is the concern for patient confidentiality. “Depending on which side of the table you’re on, both the need for transparency and the need for privacy can be valid arguments.”

▼ The path forward Person-centric care and common sense

He is optimistic that the potential of AI in healthcare is about more proactive, accurate, and person-centered systems. “Taking care of the person in front of you and using good clinical sense is crucial. AI should be a tool, not a replacement for judgment.”

He gives an example: “Google Maps is helpful, but you still need common sense.”

▼ Kalra’s laws: Inspired by Asimov

He draws on his own work, influenced by Isaac Asimov’s laws of robotics. He has suggested “Kalra Laws of AI in Healthcare” to provide ethical AI usage. “These laws don’t just provide answers—they raise new questions.”

Asimov’s Laws

- **Law 1:** A robot may not injure a human being, or through inaction, allow a human being to come to harm.
- **Law 2:** A robot must obey orders given to it by human beings, except where such orders would conflict with the first law.
- **Law 3:** A robot must protect its own existence as long as such protection does not conflict with the first or second law.
- **Law 4:** A robot may not harm humanity, or by inaction, allow humanity to come to harm.

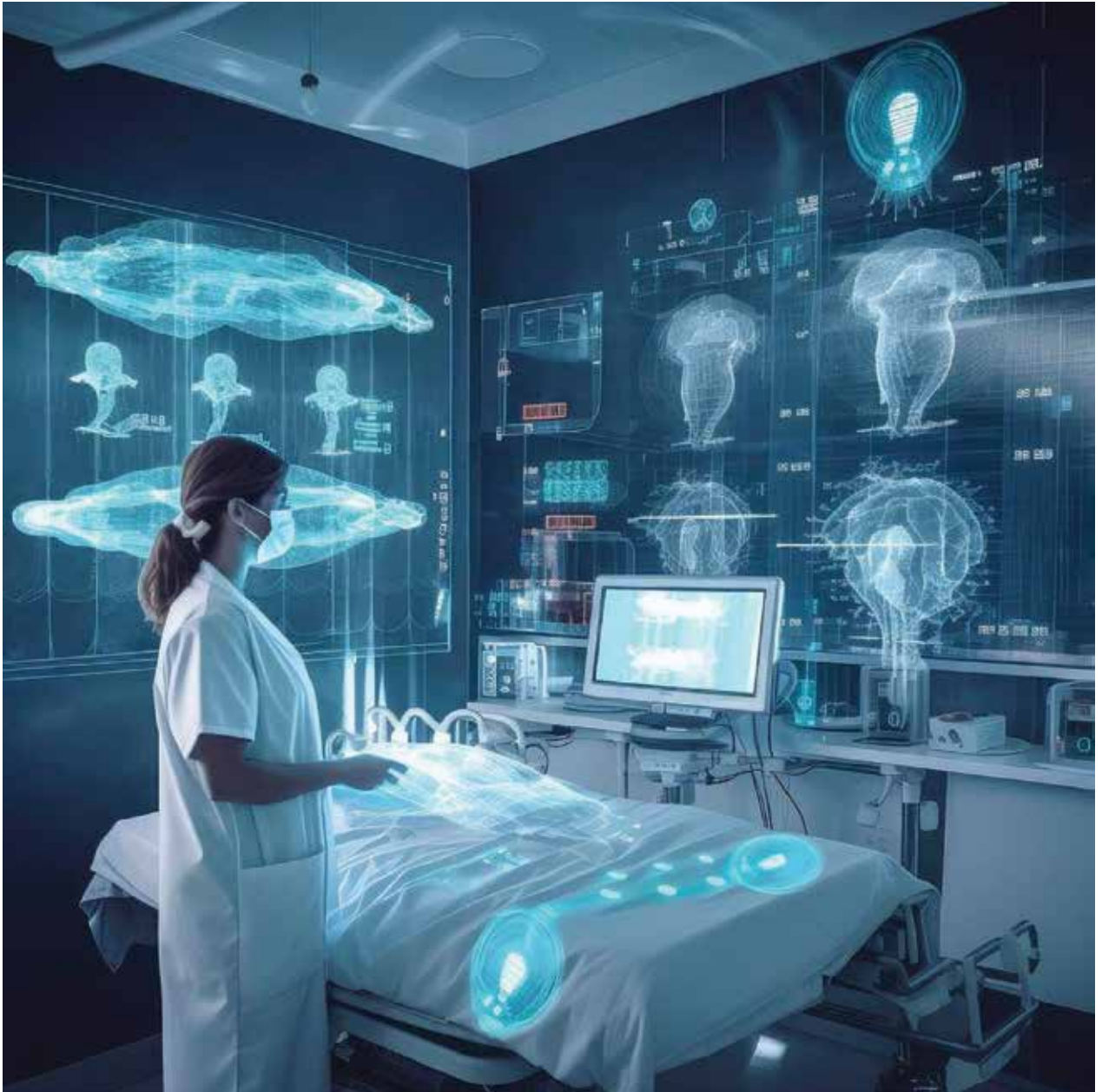
▼ Looking ahead: AI with a human soul

The future of AI in healthcare is changing fast. Its success will be determined by considerate governance, moral caution, and prioritizing innovation with person-centered care. The wise words of Dr. Kalra remind us that the integration of AI in medicine must always keep humanity at the core.

Healing beyond hospitals

Ashok Pandey

✉ ashokpa@cybermedia.co.in



From AI-powered triage to smart post-op monitoring, assistive tech is quietly rewriting recovery. With insights from front-line innovators, here's how machines are making care personal, precise and possible from anywhere

When we think of rehabilitation, we often picture sterile rooms, scheduled visits, and slow progress. But **Ayush Jain, CEO of Mindbowser Inc.**, is rethinking that narrative bringing AI into the loop not to replace doctors, but to empower patients and transform care from reactive to real-time.

Rehabilitation is no longer confined to hospital beds and clipboards. A quiet shift is underway, one where virtual assistants, wearable-driven insights, and predictive recovery tools are redefining how we heal.

At the center of this shift is AI. Not as a flashy replacement for doctors, but as a reliable second brain, an always-on partner that listens, learns, and nudges care in the right direction.

▼ When AI starts before the doctor does

AI's role now kicks in before a patient even meets their clinician. Smart triage tools handle symptom intake, structure patient histories, and cut the clutter before consultations begin. The result? Shorter queues, less burnout, and sharper decisions.

NLP-based documentation tools are also replacing manual note-taking. Whether it's a video call with a physiotherapist or a follow-up consult, AI transcribes and summarizes sessions in real time—saving hours and reducing error creep.

For patients recovering at home, AI models trained on movement data, therapy logs, and baseline health inputs predict who's likely to fall behind. Subtle changes in gait or restlessness post-surgery can now trigger early alerts, guiding timely interventions.

▼ Smart care that fits like a glove

The beauty of AI isn't just automation, it's adaptation. Today's systems study thousands of treatment paths to refine what works. In neuro-rehab, for instance, AI can recommend therapy levels based on live muscle feedback, past session data, and overlapping conditions.

But personalization goes beyond data. Some systems now tweak daily exercises in real time, using smartwatch-fed data like pain scores and range-of-motion metrics. It's rehab that listens to the body, not just the schedule.

And accessibility? Voice-first interfaces in local languages, offline modes, and chatbot guides are bridging gaps for older patients, low-



AYUSH JAIN,
CEO, Mindbowser Inc.

literacy users, and rural populations—bringing care closer without dragging people out.

▼ Making AI safe, seamless and invisible

Integrating AI into clinical routines is a tightrope walk. It's not just about great code; it's about trust, safety, and adaptability. Privacy-first design is non-negotiable. Whether it's tokenized datasets, encrypted records, or synthetic training data, the gold standard is compliance with laws like HIPAA and GDPR.

But even more critical is the human layer. AI-generated summaries and predictions must pass through clinician review before reaching records or affecting treatment. Human-in-the-loop validation keeps machines in check.

Technical integration matters too. Whether it's Epic, Cerner, or open-source EHRs, AI systems must plug into existing hospital workflows using standard APIs without disrupting care. And as models drift or outgrow their training, real-time monitoring catches drops in performance, bias creep, or latency spikes. When needed, models are pulled, retrained, or shelved. That's what keeps trust intact.

▼ The invisible upgrade

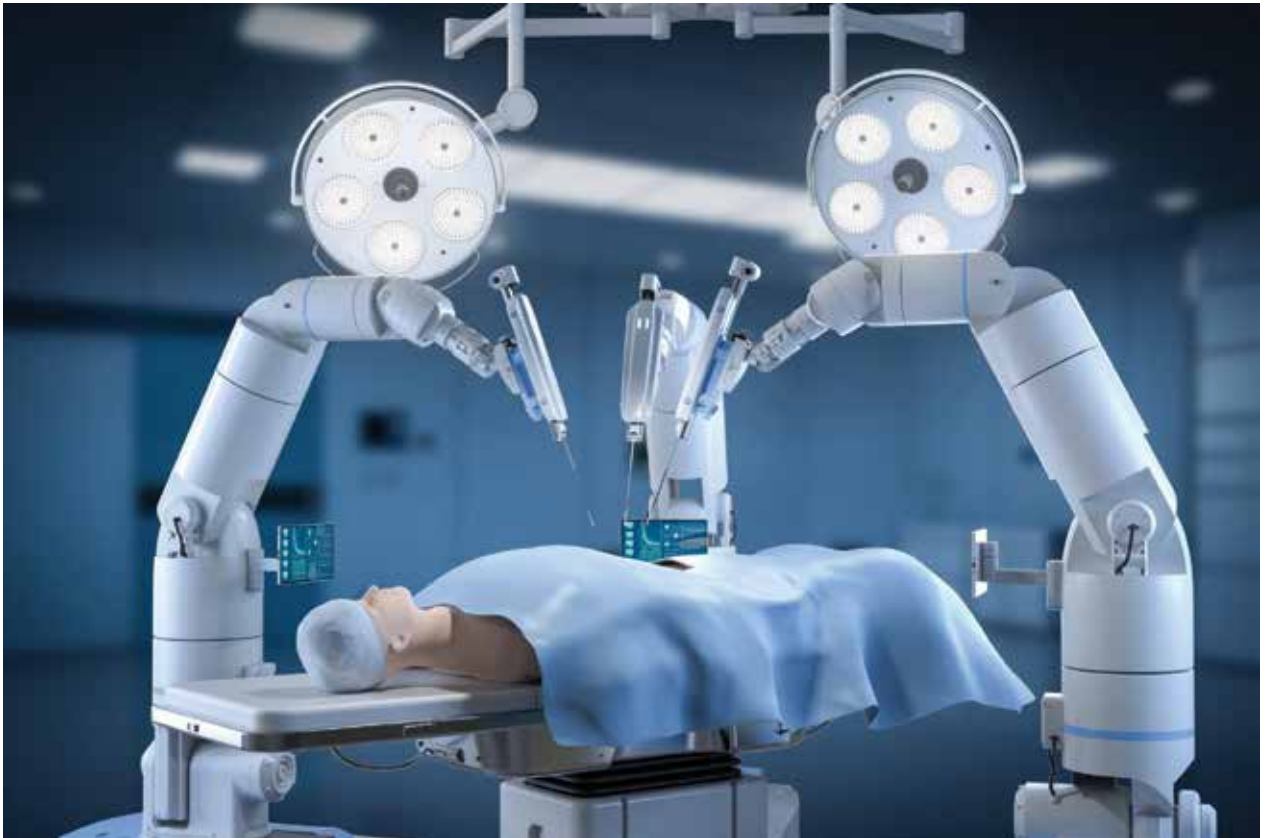
Done right, AI doesn't dazzle. It disappears.

Patients don't feel the algorithms at work. They just notice that recovery is smoother, support is faster, and care feels a little more human. It's not the robot doctor that matters. It's the fact that help came before the pain did. ■

AI-powered robotics and assistive technologies

Dr. Venkat P and Dr. Priya Kapoor

✉ pcquest@cybermedia.co.in



Scalpels meet silicon. From AI-guided staplers to telesurgery with <100 ms latency, robots aren't just assisting, they're anticipating, adapting, and accelerating recovery. The future of surgery isn't coming. It's already scrubbing in

▼ AI-powered robotics and assistive technologies: Transforming surgical precision and patient care.

In the last decade, the fusion of artificial intelligence (AI) with robotics has transformed surgical, rehabilitative, and remote care. What once seemed futuristic, robots assisting in performing complex surgeries or supporting rehabilitation, is now a part of modern medical practice. As clinicians, we are witnessing the

dawn of a new paradigm: AI-powered assistive technologies that do not just support human capability but extend and amplify it.

▼ The new frontier: AI in robotic surgery

AI-powered robotic platforms have significantly advanced the way complex surgeries are performed. Systems like the da Vinci Surgical System are now equipped with embedded machine learning algorithms that

enhance motion scaling, tremor filtration, and image-guided navigation. With AI integration, the surgical console becomes more than a tool, it becomes an intelligent assistant that helps anticipate anatomical variations, track instrument movement, and identify potential issues in real time.

▼ AI-driven robotics in surgical applications: Key advances include

- Automated margin detection during tumor resections, reducing positive cancer margins by 30%.
- Real-time force feedback systems preventing tissue damage during delicate procedures.
- AI-generated operative reports with 87.3% accuracy vs. surgeons' 72.8%.

Today, AI enables personalized surgical planning by analyzing thousands of prior cases. It suggests optimal approaches tailored to the patient's unique anatomy and pathology, eliminating uncertainty and translating into better postoperative outcomes.

Modern robotic platforms augmented by AI, such as the da Vinci Surgical System, go beyond being extensions of the surgeon's hands. Tools like Firefly fluorescence imaging, enhanced by AI, provide precise visualization of blood vessels, lymphatic drainage, and tissue perfusion—helping in critical decisions. For example, in colorectal surgery, Firefly offers high-definition, real-time visualization of perfusion, reducing the risk of anastomotic leaks.

SureForm robotic staplers are powered by advanced software algorithms that provide real-time feedback and dynamic stapling adjustments. They integrate seamlessly with the da Vinci robotic system, enabling multi-angle articulation for access in tight anatomical spaces.

AI-powered SmartFire technology optimizes staple line formation by measuring tissue compression over 1,000 times per second. This ensures consistent, secure closures, even in variable tissue thickness, reducing leak rates and improving outcomes. SureForm enhances surgical precision and efficiency, particularly in complex oncologic and colorectal resections.

Similarly, TilePro allows streaming of



DR. VENKAT P, Surgical Oncologist at Apollo Cancer Centre, Apollo Proton Cancer Centre, Veritas Cancer Care Team

auxiliary imaging, such as ultrasound, CT, or endoscopy, onto the surgeon's console, giving surgeons a complete, real-time view that supports faster and more accurate decisions.

▼ Extending reach through telesurgery and remote collaboration

AI is transforming telesurgery and telepresence. The Intuitive Hub and My Intuitive app provide real-time access to case data, performance metrics, and surgical analytics from anywhere. These tools support post-operative reviews, training, and mentoring across locations, helping surgeons share expertise without geographic limitations.

AI helps address challenges such as network delays by stabilizing images, predicting hand movements, and compensating for latency. This makes robotic telesurgery safer and more reliable. With 5G-enabled systems, surgeons can now control robotic arms with <100 ms latency, while predictive AI models reduce operational errors by 30% by anticipating complications based on more than 10,000 historical cases. The Digital Telework Project demonstrates how remote-controlled robots perform vital sign monitoring and medication delivery in long-term care settings.

Moreover, AI enhances teleconsultation through intelligent decision support systems that triage patients, summarize clinical

history, and suggest diagnostic pathways. Robotic arms equipped with AI-powered imaging sensors and haptic feedback can now assist in remote wound care, ultrasound assessments, and minor interventions, expanding the scope of telemedicine.

▼ AI-driven rehabilitation robotics

Robotic technologies have become indispensable in post-surgical and neuro-rehabilitation care. AI-powered exoskeletons and robotic therapy systems help patients regain mobility after strokes, spinal injuries, or orthopedic surgeries. These systems monitor muscle tone, joint angles, and gait stability to optimize training protocols.

Machine learning algorithms personalize therapy sessions based on the patient's fatigue levels and neuromuscular response, making recovery more efficient and engaging.

In our experience, combining robotic rehabilitation tools with virtual reality and gamification has enabled patient adherence and psychological motivation, often major challenges in long-term recovery.

▼ Remote care and assistive robotics

During the COVID-19 pandemic, telepresence robots became vital in delivering care at a distance. These robots can now:

- Perform 83% of routine physical exam components remotely.
- Automate medication dispensing with computer vision dose verification.
- Assist in meal delivery through force-sensitive robotic arms.

Sanctuary AI's collaboration with Microsoft has produced general-purpose robots that learn caregiving tasks through observation. In Canada, this has helped address a 23% care worker shortage.

▼ Ensuring safety, ethics, and integration

The deployment of AI in clinical robotics must prioritize safety, accountability, and ethical practice. Key safeguards include:

1. Rigorous clinical validation to ensure AI models work effectively across different populations and conditions.
2. Human oversight so that AI supports rather than replaces clinical judgment, with clear override options.



DR. PRIYA KAPOOR, Surgical Oncologist at Apollo Cancer Centre, Apollo Proton Cancer Centre, Veritas Cancer Care Team

3. Data security and privacy to protect patient information and comply with privacy laws (e.g., HIPAA, GDPR).
4. Comprehensive interdisciplinary training for clinicians, nurses, and technical staff, not just to operate these tools, but to understand AI fundamentals, bias, and limitations.
5. Built-in fail-safe engineering and predictive diagnostics to detect and correct malfunctions.
6. Ethical frameworks to ensure transparency, informed consent, and clear responsibility when AI contributes to care decisions.

Conclusion: Towards a human-AI synergy

AI-powered robotics is not about replacing the human touch in medicine, it is about enhancing the precision, reach, and impact of what clinicians can do. When used responsibly, these technologies help deliver better care, support recovery, and bring advanced treatment to more people.

The challenge now is to shape the future thoughtfully. By working together across disciplines, we can ensure AI and robotics serve as instruments of precision, compassion, and equitable care for all. ■

The author are Surgical Oncologists at Apollo Cancer Centre, Apollo Proton Cancer Centre, Veritas Cancer Care Team

Tricky grey matter – Not a grey man any more

Thomas George✉ thomasg@cybermedia.co.in

What if your brain had a twin? At LIBD, AI isn't just crunching data, it's painting cells, inventing drugs, and time-traveling into fetal brains. With AWS as its cortex, science is flipping the script on mental illness before it even begins

Mental health has long been a maze, complex, misunderstood, and sidelined. But what if AI and cloud tech could light the way? At the AWS DC Public Sector Summit 2025, we sat down with **Geoff DeLizzio, Chief Advancement Officer, Lieber Institute for Brain Development**, to explore how the fusion of neuroscience and cloud-powered AI is transforming mental health research. From brain banks to digital twins,

the conversation reveals a future where prevention could replace treatment—and data might just be the brain's new best friend.

▼ The new-age phrenology – with AI's eyes

Who could have thought that hitting its head on AI would prove an unexpected acquired savant syndrome for the mental health research community! Mental illness has been a medical enigma—complex, poorly understood, and vastly under prioritized for

centuries. But with AI's arrival, researchers and healthcare players can find superpowers they could never imagine before. Today, innovators and bold thinkers, such as the Lieber Institute for Brain Development (LIBD) in Baltimore, are transforming this landscape. Thanks to some new tools they find handy now.

With the world's largest repository of postmortem human brains and powerful generative AI running on AWS, LIBD is revolutionizing neuroscience research, making it faster, deeper, and incredibly precise. Just the new synapses this area wanted.

In an insightful discussion at the AWS DC Public Sector Summit, Geoff DeLizzio, LIBD's Chief Advancement Officer, explained how the convergence of biological data, cloud infrastructure, and AI innovation is reshaping the pursuit of elusive cures for schizophrenia, Alzheimer's disease, Parkinson's disease, and other neurological disorders.

▼ The mission: When brain meets tech-brawn

Founded over a decade ago by renowned neuroscientist Dr. Daniel Weinberger, LIBD was built on a groundbreaking belief: the brain itself—not merely proxies like blood or urine—must be studied to truly unravel the daunting and complex world of mental illnesses.

This philosophy led to the creation of an unprecedented repository of over 5,000 donated brains, supporting an integrated team of neuroscientists, geneticists, and drug discovery specialists.

"We function as a brain bank, research institute, and biotech firm under one roof," DeLizzio explains. "Integration gives us speed, but data management was a bottleneck."

With petabytes of complex data, LIBD faced a critical challenge: how to analyze and leverage this information effectively throughout the entire research process.

This is where a path opened for technology and research to forge into a superhighway. There was a transformative partnership with AWS, which has gone beyond mere data storage to redefine medical research methodologies for the AI era.

"This partnership between AWS and LIBD is transformative," DeLizzio dissects and



GEOFF DELIZZIO, Chief Advancement Officer, Lieber Institute for Brain Development

explains. "AI-driven computation is essential for breakthroughs in neuroscience. Without it, we're too slow. And patients need solutions urgently."

The institute has created a new nervous system of data through these AWS neurons. Shifting from traditional servers to AWS addressed key challenges—security, scalability, and efficiency. Previously siloed or dormant data, often referred to as "zombie data," is now being actively reanalyzed through modern AI techniques.

These efforts are beyond the petri dish. They are manifesting into real answers already.

▼ GRAPE: The white coat's ChatGPT

Among LIBD's boldest initiatives is GRAPE (Generative Reinforcement Alignment of Predicted Expression), a pioneering AI tool that generates novel drug candidates for complex mental illnesses.

"Think of GRAPE as a molecular ChatGPT," says DeLizzio. "We've built a large chemistry model starting with disease data—not just known molecular targets—to innovate completely new compounds."

GRAPE reverses traditional drug discovery. Instead of focusing solely on known targets, it proposes entirely novel molecular structures matched to specific gene expressions

associated with diseases. AWS's advanced Trainium chips and elastic computing infrastructure enable rapid iterations, dramatically reducing drug discovery timelines from years to months.

▼ AI – more than a varnish, more of a cell paint

A remarkable illustration of this transformation is LIBD's cell painting process. Historically, analyzing imaging data from brain tissues took almost six days. Now, using generative AI on AWS, this analysis is completed in just 31 minutes.

"That's 15 billion data points per study processed incredibly fast," beams DeLizzio. "AWS's user-friendly interfaces allow researchers, regardless of their coding skills, to harness AI effectively—democratizing access to high-performance analytics."

▼ The tool vs. the toolsmith

Despite rapid advances in automation, LIBD ensures that AI remains a complementary tool, never a replacement for scientific intuition. There is an intentional balance woven in between AI's expertise and human insight.

"AI accelerates our hypothesis-driven research—it doesn't replace scientific expertise," DeLizzio underscores.

LIBD prioritizes ethical considerations, ensuring donor family consent, robust data security through AWS, and the balanced sharing of foundational research with the global scientific community.

▼ Towards twins and twinning

LIBD has some remarkable and ambitious AI-driven goals for the coming years:

- **Accelerating drug validation cycles:** reducing the timeline from five years to two by licensing GRAPE-generated molecules to pharmaceutical partners.
- **Creating digital twins of the brain:** enabling simulation of disease states to test potential treatments extensively in virtual environments.
- **Expanding global collaboration:** sharing datasets, particularly from underrepresented populations, to enhance research inclusivity and effectiveness.

As DeLizzio augurs, "We're committed to democratizing our breakthroughs—not monopolizing them. We aim to maximize impact globally."

▼ Pressing the 'preempt' button

What's worth reckoning here is that these strides are much more than "gilding the lily." These are huge shifts. They are rewriting a big foundational part of this space. These efforts are rewiring the way we think about mental healthcare.

Traditionally, the space has focused on symptom management. LIBD is pivoting towards identifying and intervening at root causes, sometimes even during fetal development.

Groundbreaking studies by LIBD reveal how severe maternal stress during pregnancy, combined with genetic vulnerabilities, drastically increases schizophrenia risk. Now, LIBD is investigating nanotechnology-based hormone therapies to proactively mitigate these risks.

"Our goal is clear," says DeLizzio. "We're moving beyond treatment—towards prevention."

▼ From in vitro to in vivo – the AI-powered and patient-centric future

LIBD's innovative approach serves as a powerful example of how agile, purpose-driven institutions, partnered with technology leaders like AWS, can catalyze global scientific breakthroughs.

"We don't intend to grow into a bureaucratic entity," DeLizzio concludes. "Our strength lies in remaining nimble, tech-enabled, and staying research-accentuated and patient-focused. Speed is crucial—because patients deserve swift, impactful solutions."

As life sciences, data analytics, and AI converge, LIBD's visionary efforts give us a strong glimpse of the transformative potential of technology-driven science in revolutionizing mental health outcomes worldwide.

We may be on the verge of rocking the "10 percent brain myth." We may be coming closer to using hidden powers of human brains for helping other human brains—and swallowing the "red pill," but with the power and confidence to change it. ■

AI in healthcare

Balancing innovation with privacy, security, and ethics

Saurav Kasera

✉ pcquest@cybermedia.co.in



AI is transforming healthcare, but the real challenge lies in protecting what matters most—privacy, trust, and fairness. From encrypted insights to bias-busting algorithms, this is where innovation meets integrity—and where machines must first do no harm

The integration of Artificial Intelligence (AI) into healthcare is revolutionizing diagnostics and patient care, yet it simultaneously intensifies challenges around data privacy, security, and ethics. Navigating this landscape requires a strategic approach that

harnesses AI's power while upholding the fundamental duty to protect patients and ensure equitable outcomes.

▼ AI's dual impact on health data protection

AI presents a paradox for data security. On

one hand, it offers powerful enhancements, including real-time threat detection, predictive analytics to identify system vulnerabilities, and automated monitoring to ensure compliance with regulations like HIPAA and GDPR. On the other hand, AI introduces novel risks. The vast datasets required for training expand the attack surface for cybercriminals, while vulnerabilities like data memorization (where models inadvertently store sensitive patient information) and adversarial attacks (subtle manipulations that deceive AI systems) pose new threats to confidentiality.

▼ Strategies for privacy-first AI

To balance AI's data requirements with strict privacy obligations, healthcare organizations are turning to privacy-enhancing technologies (PETs). Key strategies include:

- **Federated learning:** Training models across multiple institutions without centralizing raw data, keeping sensitive information secure within its original location.
- **Differential privacy:** Adding mathematical “noise” to data outputs to make the re-identification of individuals computationally infeasible, while preserving statistical utility.
- **Homomorphic encryption:** Allowing computations to be performed directly on encrypted data, eliminating the need for decryption during analysis.
- **Synthetic data generation:** Creating artificial datasets that mirror the statistical properties of real patient data, enabling robust model development without privacy risks.

▼ Detecting and mitigating algorithmic bias

Algorithmic bias in clinical AI poses a significant threat to healthcare equity, potentially perpetuating or even worsening existing disparities. Detection involves algorithmic auditing with fairness metrics (e.g., demographic parity), and using explainable AI (XAI) tools like SHAP and LIME to increase transparency in model decision-making. Mitigation requires a multi-layered approach, including ensuring diverse training datasets, implementing fairness-aware



SAURAV KASERA, Co-founder and CEO, CLIRNET and DocTube

algorithms, and establishing continuous, multidisciplinary oversight. Critically, addressing bias often improves a model's overall robustness and generalizability.

▼ The regulatory pacing problem

Current regulatory frameworks like HIPAA and GDPR provide a crucial foundation, but struggle to keep pace with AI's rapid evolution. Key gaps include the “pacing problem,” where technology outpaces regulation; the opacity of “black box” models, which complicates audits; and ambiguity around liability when an AI system causes harm. The path forward demands adaptive, risk-based regulations, global harmonization of standards, and strong ethical guidelines from professional bodies.

▼ In conclusion

The future of AI in healthcare depends on proactive collaboration between technologists, clinicians, regulators, and ethicists. By prioritizing privacy, actively mitigating bias, and developing agile governance, we can ensure that innovation is balanced with ethical rigor, allowing AI to enhance—not undermine—patient trust and healthcare equity. ■

The author is Co-founder and CEO, CLIRNET and DocTube

When AI watches over health data

Ashok Pandey✉ ashokpa@cybermedia.co.in

As AI steps deeper into healthcare, the spotlight shifts to what happens behind the scenes, how algorithms are trained, how privacy is protected, and what it really means to build patient trust through technology. Here's how the future is quietly being reshaped

Chris George, Co-Founder and CEO, **QubeHealth**, isn't interested in buzzwords. For him, AI isn't just about speed or automation, it's about responsibility. In his view, the stakes are too high for anything less. Through layered systems that think ahead and technologies that prioritize consent over convenience, he outlines

how AI is redefining trust in digital healthcare.

▼ **Encrypt, anonymize, adapt:** **AI's security-first reboot**

Forget firewalls and passwords alone. In today's AI-powered systems, protecting sensitive health data means weaving privacy into the very fabric of architecture.

AI now handles tasks once reserved for security engineers: encrypting data based on real-time threat perception and monitoring user behavior to adjust access dynamically. But it doesn't stop at security walls. AI is now key to protecting identities even within data used for model training or analytics. Think natural language processing scanning unstructured records like prescriptions or discharge summaries and stripping out identifiers before the data ever leaves the system.

It's the kind of invisible firewall that doesn't just defend, but anticipates.

▼ Balancing hunger for data with a duty to protect

AI thrives on data. But healthcare demands consent, control, and confidentiality. That's where thoughtful frameworks take center stage.

The "privacy-by-design" approach has emerged as a gold standard. Instead of feeding models raw patient records, developers train AI using anonymized or tokenized data. Some even go a step further—using federated learning, where models learn across decentralized systems, never pulling patient data into a central repository.

Even financial data, like treatment spending, is modeled in aggregate, revealing trends, not identities. Behind the scenes, audit trails and real-time monitoring ensure every data point is traceable, compliant, and accountable.

▼ Fighting algorithmic bias at the root

Bias in AI isn't just a technical flaw, it can create real-world harm. And nowhere is the risk higher than in clinical or financial risk predictions.

The fix starts with diversity. Inclusive datasets drawn from a wide span of geographies, income brackets, and care settings form the foundation. But more than that, the models must face real scrutiny. That includes running fairness audits using defined metrics, simulating edge cases, and validating outputs with clinicians.

When algorithms are tested across scenarios and refined where they fail, AI doesn't just get smarter, it gets fairer.

▼ Outpacing the rulebook: Why regulation must evolve

Regulation often trails innovation but in healthcare AI, that gap matters.

While frameworks like India's DPDP Act



CHRIS GEORGE,
Co-Founder and CEO, QubeHealth

provide direction, challenges remain. What does transparency really mean in an adaptive algorithm? Who's accountable if AI gets it wrong? And how do we govern data that crosses borders as easily as APIs?

Some innovators aren't waiting for answers. They're adopting global standards voluntarily introducing features like real-time compliance checks, lineage tracking, and internal ethics boards to guide governance.

For them, regulation isn't a roadblock. It's a runway.

▼ The quiet transformation behind the screens

What's clear is this: the future of healthcare AI isn't being built in headlines. It's in the lines of code that encrypt patient histories. It's in the logs that flag model drift before it becomes dangerous. It's in the decisions to hold an algorithm back until it proves itself safe.

And it's being led by technologists who understand that in medicine, trust is the real currency.

When AI becomes invisible not because it hides, but because it integrates so seamlessly into ethical, patient-centered systems that's when digital health truly arrives.

AI, ethics, and the future of care

Preeti Anand

✉ preetia@cybermedia.co.in



AI is shaking up healthcare, but it's not all about tech. It's about clean data, sharp minds, and ethical care. From smarter classrooms to stronger laws, the future is forming—one algorithm, one insight, one informed consent at a time

In the fast-evolving landscape of healthcare management, one academic voice is helping decode the real impact of Artificial Intelligence (AI), beyond the jargon. **Dr. Poonam Chauhan, Program Director for the MBA in Healthcare Management, K J Somaiya Institute of Management**, brings a grounded yet forward-thinking perspective on how AI is reshaping patient care, ethics, education, and the future of the industry itself. In this conversation, she unpacks the big questions, and the even bigger shifts.

▼ AI, ethics, and the future of care

In India's healthtech space, Artificial Intelligence (AI) is no longer a future buzzword, it's a living, breathing part of patient care, diagnostics, and the way tomorrow's professionals are being trained. At the heart of this shift is a quiet but firm belief: healthcare must be smarter, more accessible, and deeply human at its core.

AI is rising as a mix of promise, pressure, and persistent learning. And the path ahead? It's layered with messy data, ethical hurdles, and the urgency to train a new generation of thinkers who won't just adapt to change—they'll help define it.

▼ Data: Powerful, but dangerously fragmented

One of the biggest obstacles to building impactful AI in healthcare isn't the algorithm. It's the input. Data, despite being everywhere, remains scattered, disintegrated, and coded without uniformity. The lack of standardized practices creates friction before an AI model can even begin training.

The challenge, then, isn't just collecting data, it's about sanctifying it through regulation. Without informed consent and reliable checks, the entire foundation becomes shaky. Claims, even if made with good intent, lack scientific credibility unless grounded in regulated, ethical sourcing.

▼ AI is giving patients agency

There's a shift happening. Healthcare used to be expert-dependent, expensive, and reactive. With AI-powered applications stepping into preventive care and chronic



DR. POONAM CHAUHAN, Program Director for the MBA in Healthcare Management, K J Somaiya Institute of Management

disease management, things have started to change.

Whether it's robotics aiding in procedures, or algorithms supporting clinical decisions, AI is improving efficiency for care providers, and access for patients. The experience? Smarter. The outcomes? Sharper.

▼ Training future leaders in an AI-first world

The classroom has its own transformation underway. Preparing students for AI in healthcare isn't about coding. It's about understanding the direction of the industry, and staying updated with what's cutting-edge.

Workshops on emerging tech, domain expert sessions, and capstone projects in real hospitals help bridge theory with practice. From sustainability goals in green hospitals to months-long immersion experiences, students aren't just observing change, they're part of it.

▼ Data privacy: The personal gets political

Few things are as sensitive as health data. And with that comes responsibility. In healthcare, a breach isn't just technical, it feels personal.

Too much regulation can hinder tech development. But too little, and the risks

explode. That's why India's Digital Personal Data Protection (DPDP) Act of 2025 plays such a crucial role. It creates checks, insists on informed consent, and sets boundaries before innovation can move forward responsibly.

▼ Are India's AI laws keeping pace?

In a country with both formal and informal care structures, regulation has a lot to catch up with. But the progress is visible. Between the 2023 Data Protection Act and its operational rollout by 2025, there's an effort to match pace with change.

Still, innovation won't thrive on policy alone. It needs more young minds, more disruptive thought, and more grassroots momentum to bring structure where there currently is none, especially in the informal healthcare ecosystem.

▼ Fixing the algorithmic mirror

Bias is a known flaw in many AI systems. And in healthcare, it's not just a statistical error, it can mean the difference between effective care and a dangerous misdiagnosis.

The solution? Localized data. When models are trained on data that reflects the real, diverse population, outcomes become more

representative. Better predictions, better care. That's the goal.

▼ Redefining healthcare, not just extending life

The promise of AI isn't just about high-tech tools. It's about building smarter, more proactive, patient-centered systems. Systems that don't just focus on keeping people alive longer but helping them live better.

As India's population grows older, AI and robotics will play a crucial role in decentralizing care and reducing pressure on central institutions. The future is about enabling healthier individuals—and smarter systems—to support them.

▼ Innovate with intent

The path to meaningful healthcare transformation is neither clean nor linear. But it's clear that AI has a central role to play provided it's guided by ethics, grounded in good data, and built on the foundation of informed, curious minds.

In this evolving equation of innovation, regulation, and education, one truth holds steady: when tech learns to serve people and not replace them, healthcare moves from good to great. ■



Designing medicine with machines

Ashok Pandey

✉ ashokpa@cybermedia.co.in



AI isn't just predicting drug outcomes, it's reprogramming the way therapies are discovered, tested, and delivered. Inside the engine room of drug innovation, algorithms are accelerating timelines and fixing inefficiencies, one insight at a time

FOR **Yash Deshpandey, Heath Analyst** and **Prajakta Kulkarni, Assistant Vice President - Cognitive Solutions Delivery, Findability Sciences**, Artificial Intelligence isn't a supporting act in drug discovery, it's the engine.

The journey from lab bench to bedside is long, costly, and often inefficient. But thanks to AI, what used to take years can now happen in months. Their team is pioneering a shift, using intelligent systems not only to discover better molecules but to break bottlenecks across the entire pharmaceutical value chain.

▼ Rethinking discovery from the ground up

The early stages of drug discovery are notoriously slow. But with proprietary AI platforms scanning massive data sets from genomics and clinical trials to real-world evidence, Findability Sciences has flipped the pace.

Their AI doesn't just analyze, it prioritizes. It hunts for viable targets with a speed and precision that dramatically outperforms traditional methods. The result? Up to 40% reductions in the time taken to identify promising drug candidates.

▼ And that's not where the efficiencies end

The same algorithms extend to optimizing clinical trials, predicting patient enrolment rates with over 85% accuracy and improving site selection through real-world data. When matched with the right people, trials move faster. Cost drops. Time-to-market shrinks. For patients, this means faster access to life-changing therapies.

▼ When data holds you back

Despite the power of AI, there's one recurring challenge: the data itself. As Deshpandey and Kulkarni explain, AI platforms can only be as sharp as the data they're trained on. Bioinformatics, while rich with insight, is riddled with inconsistencies. Missing values, conflicting formats, and noisy datasets continue to slow progress.

That's not just a tech problem, it's a trust issue. To build systems that are both accurate and generalizable, quality and consistency must be solved first. And in bioinformatics,



YASH DESHPANDEY,
Heath Analyst, Findability Sciences



PRAJAKTA KULKARNI, Assistant Vice President - Cognitive Solutions Delivery, Findability Sciences

that's a daily battle. It's also computationally heavy. Interpreting multi-omics data and integrating it into a single AI model isn't just a matter of storage, it demands transparency, domain expertise, and massive processing power.

▼ Regulation: running behind the curve

Innovation loves speed. Regulation prefers caution. That tension is now front and center in AI-driven drug development. While agencies like the FDA and EMA have started issuing guidance, the gaps are still wide. Especially for adaptive systems and continuous learning algorithms, the regulatory path is murky.

Companies face real friction here. Aligning AI validation with existing frameworks isn't straightforward. Add to that the lack of global harmonization and unclear standards for integrating real-world evidence, and the process becomes even more complex.

Instead of slowing down, the team at Findability Sciences treats this complexity as a design challenge. Their approach: build AI systems with transparency and validation baked in, ready for scrutiny, not afraid of it.

▼ From idea to impact, at speed

One of the clearest success stories? How AI redefined trial efficiency during the COVID-19 pandemic. By leveraging machine learning to screen electronic health records and map social determinants of health, trial organizers

dramatically reduced recruitment time. What usually took months, took weeks. Over 44,000 participants were enrolled in under four months an outcome that played a critical role in the rapid delivery of vaccines.

Elsewhere, predictive AI has improved oncology trial recruitment by up to 35%, cutting average enrolment times by two months. That's not just speed for speed's sake. That's meaningful acceleration that directly benefits patients.

▼ The real innovation: responsibility

As the AI era reshapes medicine, the team at Findability Sciences is asking tougher questions - not just "what can AI do?" but "what should it do?" Their answer lies in data discipline, transparency, and an obsession with outcomes that are both fast and fair. Because in the race to discover tomorrow's therapies, intelligence isn't just artificial. It has to be ethical, explainable, and engineered for impact.

And in that pursuit, the smartest algorithms are those built not just to learn but to serve.



Predict, prevent, personalize

Ashok Pandey

✉ ashokpa@cybermedia.co.in



With a homegrown AI stack and 70,000 tests a day, Redcliffe Labs is rewriting the diagnostic playbook. From intelligent test recommendations to predictive analytics and bias-aware models, AI is now your lab partner

In an exclusive conversation with **Aditya Kandoi, Founder & CEO, Redcliffe Labs**, breaks down how AI is no longer a back-end buzzword but the driving engine behind real-time, predictive, and personalized diagnostics. From building an in-house tech stack to solving India's fragmented health data problem, the insights reveal a startup that's not just scaling diagnostics but redefining it.

▼ AI in diagnostics: the new normal

Diagnostics isn't just about detecting

disease anymore. It's about reading between the lines, often before symptoms show up. At Redcliffe Labs, this shift is already underway, powered by a robust AI-driven architecture built in-house.

Unlike traditional labs that focus on prescription-led testing, Redcliffe Labs uses AI not just to detect, but to predict and prevent. The journey starts right at test discovery. Faced with a catalog of over 3,000 tests, most users don't know where to begin. Enter AI-led recommendation tools. By mapping age, location, lifestyle, and chronic illness

data, Redcliffe helps users find relevant test packages in seconds.

▼ What your blood says about tomorrow

Once your sample is in, the magic continues. Traditional reports just display numbers; AI tells you what those numbers mean. Is that spike in your LFT a one-off, or part of a trend? Redcliffe's models predict comorbidities and summarize findings in simple language, no doctor needed. Personalized prevention comes next. Your profile, habits, and even genome data shape lifestyle and diet recommendations.

▼ Training without hallucinations

Health AI can't afford mistakes. That's why Redcliffe trained its models for over a year on in-house data, running 15,000 patient cases daily. These models are trained to avoid hallucinations, critical in a field where wrong outputs can be dangerous. Quality and volume of data, plus time-series structuring, ensure that AI stays reliable, relevant, and safe.

▼ All in-house, all integrated

From building its own LLMs to using Google Cloud, Azure, Snowflake, and tools like PyTorch and Keras, Redcliffe's tech backbone is enterprise-grade. No third-party tech is used. AI also helps parse verified global healthcare journals to enhance model training. Every insight is rooted in real-time diagnostic data flowing through their systems.

▼ Bias in, bias out: fixing it early

Redcliffe's AI models ingest city-wise demographic data to localize predictions. Lifestyle, climate, and genetic differences are built into the engine. The result? Actionable, bias-aware health scores. Real-time personalization is already live in 220 Indian cities.

▼ Data privacy: by design

Privacy isn't an afterthought. Redcliffe was among the first to align with India's DPDP law, encrypting personally identifiable data and limiting access. Even internal teams don't have visibility into sensitive data. Patient consent is baked into every digital interaction.



ADITYA KANDOI

Founder & CEO, Redcliffe Labs

▼ Real results, real fast

No case study? No problem. The data speaks for itself. AI-generated summaries now reach users in seconds, often in local languages via WhatsApp. Reports that once required doctor consultations are now understood instantly. Repeat user rates have doubled, and cost-effective packages are being matched intelligently to user needs.

▼ The human layer

A 150-member clinical team manually reviews AI outputs to validate consistency. Detected errors are used to retrain models, ensuring continual learning without compromising trust. That human touch makes the tech stronger, not weaker.

▼ Scaling smart, not just fast

From zero to 70,000 daily tests, Redcliffe's growth is stitched with tech-first thinking. AI is not just part of the workflow: it is the workflow. And with upcoming features like face-scan vitals, it's clear the lab of the future may not even need a needle.

For now, AI doesn't just assist—it leads. And Redcliffe is betting that when AI meets diagnostics, healthcare stops reacting and starts anticipating. ■

No pulse, no panic— just perfect practice

Ashok Pandey

✉ ashokpa@cybermedia.co.in



What if med school felt more like flight school? Where every slip is caught, every move tracked, and AI whispers course corrections in real time. No risk. All feedback. From plastic patients to smart simulators, training is finally catching up with tech

In a insightful conversation with the leadership of **Maverick Simulation Solutions**, **Dr. Sunil Tomar (Director)**, **Kanika Chahal (Co-Founder & Director)**, and **Ajit Kumar (Vice President, Sales)**, we explored how simulation, artificial intelligence, and physiological modeling are

converging to shape the future of medical education and device innovation. The discussion revealed how Maverick's approach is neither theoretical nor futuristic, it's practical, evolving, and already at work.

Simulators as safety nets: preparing minds before touching lives

There's a saying: the eye doesn't see what the mind doesn't know. For medical students, who often begin their journey buried in textbooks, this gap between theory and touch is more than just academic. Simulation, in Maverick's philosophy, becomes the bridge.

Dissection in the first year is still the rite of passage but it's a one-time opportunity. Maverick's digital dissection tools and simulators offer an infinite loop of practice. Repetition, correction, and iteration form the foundation of learning without risking a real patient.

Unlike passive observation, these simulators offer real-time resistance and tactile feedback. From laparoscopic training to full-body interventions, users encounter the same pressures, frictions, and mechanical responses they would in live clinical scenarios.

AR/VR kind of tech just allows for visualization, seeing floating organs, virtual layers but not interaction. Maverick's solution simulates the physical experience, making learners not just observers, but participants.

▼ AI gets clinical: Learning from the learner

Artificial intelligence in simulation isn't a buzzword. It's the difference between a passive plastic model and an intelligent feedback loop. When integrated into simulators, AI captures data from every action, every hesitation, every error, every correction. Over time, it develops patterns, generates best-practice scenarios, and feeds those back into the training loop. This allows for adaptive learning: the machine responds to the learner, shaping the curriculum dynamically.

It's not about replacing trainers but supporting them. Instead of a human observer manually grading CPR accuracy, the simulator tracks metrics like compression depth, rhythm, and oxygen timing, and gives instant feedback.

More importantly, once a trainee hits proficiency, the system levels up. A gamified progression path ensures skill-building without over-reliance on supervision.

▼ Data isn't recorded, it's activated

The intelligence of these simulators is



DR. SUNIL TOMAR, Director,
Maverick Simulation Solutions



KANIKA CHAHAL, Co-Founder & Director,
Maverick Simulation Solutions

rooted in data, but not just raw storage. Every intervention feeds a learning engine. That data then informs real-time decision support, identifies weaknesses, and proposes improvements.

The architecture doesn't rely on speculative AI. It's grounded in decades-old physiological

formulas, now activated by software, electronics, and real-world inputs. The AI doesn't guess. It applies validated models to simulate how human systems respond to medical treatment.

No datasets? No problem. Build them.

One of the most pressing challenges? Lack of clinical datasets. Rather than waiting for ideal data to arrive, Maverick collaborates with hospitals and medical experts to co-develop base models. These foundational scenarios become the training ground. As users engage, new data is generated, feeding back into the system for continuous improvement.

This closed loop creates not only better-trained users, but smarter machines.

During the height of COVID-19, Maverick developed lung simulators, LuSi and TestChest, that helped medical professionals train for disease scenarios not yet fully understood. These devices allowed for the simulation of lung collapse, airway resistance, and other complex conditions in real time. The simulators didn't just teach, they contributed to pandemic response thinking.

▼ Beyond training: Simulators as product labs

Simulation isn't limited to student practice. Maverick's systems are now being used by device developers to test ventilator algorithms. Simulators like LuSi help developers fine-tune features and assess performance, on a device that never dies, always revives, and never says no.

It's a leap in medtech prototyping. And it shows that simulation is more than a teaching tool, it's becoming a foundational layer in healthcare R&D.

▼ Standards, not guesswork

The physiological models powering these systems aren't speculative. They're drawn from published, evidence-based literature. Maverick isn't writing new rules. They're digitizing and operationalizing what's already known in the medical sciences.

While education regulations haven't caught up, the direction is clear: the future of clinical competence lies in experiential, intelligent,



AJIT KUMAR, Vice President, Sales,
Maverick Simulation Solutions

physiology-based training.

▼ Building the future: From static models to intelligent ecosystems

The roadmap ahead is ambitious but methodical. Maverick plans to convert all existing non-intelligent simulators into AI-based models that assess proficiency, adapt complexity, and reduce the need for constant trainer intervention.

Think of it as leveling up in a game. Once a learner masters the basics, the simulator introduces more difficult scenarios. Trainees must demonstrate competency to unlock advanced procedures.

The goal isn't just skill replication, it's real-time judgment, embedded directly into the device.

▼ Multimodal AI and the anatomy of precision

Not every simulation requires AI bells and whistles. But where it matters - neurosurgery, cardiac catheterization, high-stakes precision work, etc. Maverick is integrating NLP, vision tracking, sensor data, and other multimodal AI tools.

These additions don't just log data. They interpret, evaluate, and help build decision trees that guide the user's next move. ■

AI malware meets ghost admins

Harsh Sharma

✉ harshs@cybermedia.co.in



In 2025, AI doesn't just assist hackers, it is the hacker. From shapeshifting malware to deepfake CFO voice notes, cyberattacks are undetectable and relentless. The only defense? Digital twins, AI triage, and teams who fight fire with smarter fire

A I has stopped being a support tool: it is now a core weapon in cyberwarfare. In 2025, malicious payloads evolve mid-flight, phishing messages talk like your boss, and simulated red team breaches mimic real-world attacks so closely that even your SIEM struggles to keep up.

In this exclusive with **Aaditya Uthappa, co-founder, Accorion**, we explore the current state of offensive AI, red teaming in the age of polymorphic threats, and the hard truth behind undetectable cyberattacks.

▼ Lateral movement is now multi-cloud by default

Cloud breaches don't start and end with one vendor. They ripple across AWS, Azure, and GCP in chained exploit sequences. Attackers are chaining trust misconfigurations across cloud platforms, and most companies never see it coming.

Federated tokens, IAM misconfigurations, and legacy API keys form the backbone of lateral cloud movement. Once inside, attackers use standard enumeration to uncover misconfigured services or escalate privileges by exploiting weak identity policies.

Container environments are equally vulnerable. Poorly isolated Docker images, exposed Kubernetes dashboards, and default root containers offer attackers an express lane to host access.

▼ The rise of polymorphic AI malware

2025's threat landscape features polymorphic malware engineered by adversarial LLMs. These payloads rewrite themselves dynamically, evading signature-based detection and behavioral analytics. These payloads don't just evade detection. They adapt to it in real time.

Once deployed, these agents assess the environment: EDR presence, sandbox indicators, and API hooks. They then generate a new encoded dropper if needed. Tools that once took hours to build now evolve within seconds, using AI-generated obfuscation layers that change on every execution.

Recon is also automated. OSINT platforms, paste site dumps, GitHub leaks, and DNS footprinting are crawled at scale to inform



AADITYA UTHAPPA,
co-founder, Accorion

the attack graph.

▼ Deepfake phishing is not theoretical. It is operational

AI has turned social engineering into synthetic precision. Your CEO just called. Or so you think.

Attackers now clone voices to impersonate leadership and send audio phishing via WhatsApp or Telegram. One simulation run by the firm showed a video deepfake of an IT admin that successfully triggered a password reset in real time. The target did not question it. It was familiar, contextual, and convincing. To boost authenticity, some attackers simulate lag and compression artifacts. These mimic real-time video glitches, masking the subtle cues that usually give deepfakes away.

▼ AI-enhanced red teaming is now simulation over penetration

The red team no longer runs basic pen tests. They run adaptive attack simulations using AI. Today's red team isn't asking 'Can I break in?' It's asking 'Will they even notice?'

Agents assess log ingestion delays, firewall rule sensitivity, and alert correlation timelines

before choosing their next move. Payloads are adjusted dynamically. If blocked, the agent reconfigures: replacing PowerShell with Python, rotating C2 channels, or invoking memory-resident implants.

Low-frequency attacks like credential spraying are spread out over days. This avoids triggering brute force alerts or thresholds.

▼ Digital twins offer a real defense

To defend against these evolving threats, the team builds digital twins: complete virtual replicas of live infrastructure. If you're not attacking your own infrastructure daily, someone else will.

These models incorporate the exact firewall rules, IAM roles, network segmentation, and cloud assets of the live environment. AI engines continuously simulate known and emerging threats across the twin. This allows teams to test incident response and patch workflows without risking production.

AI-based triage is equally vital. Behavior baselines, anomaly correlation, and live threat intelligence are cross-validated to reduce false positives and highlight slow, persistent attacks.

▼ Compliance frameworks cannot keep up with AI-native threats

While attackers evolve rapidly, security

standards remain largely static. Your compliance checklist won't save you from an adversary that rewrites itself every hour.

Standards like ISO 27001 and SOC 2 currently lack provisions for model validation, prompt injection testing, or AI-specific supply chain risks. Future frameworks must audit model behavior and origin just as rigorously as software code. Until then, regulation remains several steps behind the adversaries it aims to contain.

▼ The only defense is continuous simulation

The most important shift is clear: move from static prevention to continuous validation. Attackers only need to win once. Defenders need to detect everything, every time.

Detection without verification is no longer enough. The approach blends red teaming, digital twin simulation, and AI-driven triage to constantly test assumptions. The best defense today is proactive. Find the weak points before someone else does.

For organizations still relying on quarterly audits and reactive patching, 2025's threat landscape is already ahead of them.

It wasn't malware that breached the system. It was a voice note from the CFO asking for a file. ■



A war without borders

Ashok Pandey

✉ ashokpa@cybermedia.co.in



As supply chains go digital, cyber threats grow louder. From AI-driven defenses to real-time vigilance and smart SLAs, the battle isn't on the borders, it's in the code. This is the new frontline where resilience, not speed, defines success

As the world becomes more interconnected, the supply chain; the once purely logistical arm of business, has become a complex, digital organism. And like every digital organism, it is now deeply exposed to cyber threats. The digitalization of manufacturing, transportation, and distribution has unlocked extraordinary speed and efficiency, but it has also created cracks—cracks that cybercriminals are eager to exploit.

In a conversation rich with real-world relevance, **Kushika Sharma, Assistant Professor, UPES Online**, delves into how

modern supply chains are vulnerable, why attacks are rising, and how industry needs to respond, not just with tools, but with awareness, partnerships, and people.

▼ The fragile thread of interconnectivity

“Let's begin by understanding why there is a need for cybersecurity first,” Sharma says. That need becomes clear as soon as you consider how digital the modern supply chain has become. Logistics today is not simply about moving goods. It is about integrating warehouse sensors, ERP systems, supplier portals, third-party vendors, and control centers—all in one connected ecosystem.

▼ Every connection is a potential entry point

As supply chains become increasingly digitalized, they are connecting manufacturers, suppliers, logistics providers, and retailers. As the surface area grows, the chances of infiltration multiply. Traditional security tools struggle to keep pace with the evolving threats.

She recalls specific, real-life disruptions, the NotPetya attack, which brought operations of the world's largest shipping company to a standstill across 80 ports, causing a \$130 million loss; the SolarWinds hack, which exposed the systemic vulnerabilities of vendor software; and the 2013 Target breach, where third-party access compromised over 40 million credit card records.

The numbers speak volumes. "60% of cybercrimes happen via third-party vendors and not through their own sites," Sharma notes, driving home the need for a much broader cybersecurity lens.

▼ Fusion over tradition: The new defense formula

When it comes to defense, Sharma sees no single silver bullet. Instead, she emphasizes what she calls an "era of fusion." Cybersecurity in the supply chain now involves a convergence of AI, machine learning, data science, and predictive analytics.

AI's strength lies in processing vast datasets, identifying risks, optimizing supply routes, and flagging suspicious activities. Data science brings behavioral analytics into play, spotting anomalies like unauthorized access or route diversions in real time. Machine learning and AI-driven intrusion detection systems are becoming very essential tools.

This fusion isn't just about automation. It's about vigilance at scale. And it reflects the transformation of supply chain security from reactive protection to proactive defense.

▼ The hurdles: Why are attacks still happening?

Despite advancements in tools, attacks continue to plague systems worldwide. Why? There are several organizational and systemic obstacles:

- Lack of real-time visibility



KUSHIKA SHARMA,
Assistant Professor, UPES Online

- Shortage of skilled cybersecurity professionals
- Vendor resistance to security upgrades
- Reliance on outdated traditional methods
- Fragmentation in how the supply chain operates across industries

These challenges are especially prevalent in logistics-heavy sectors like defense, retail, cosmetics, and pharmaceuticals; each with unique needs but little alignment on security protocols.

One core issue is the lack of standardization. Supply chain management is not a centralized industry, and many vendors operate without unified cybersecurity policies. But the adaptation of cloud-based integrated platforms and training cross-functional teams in data and security can really make a lot of difference.

▼ SLAs: The missing shield

A major vulnerability is the absence of security-focused Service Level Agreements (SLAs) between companies and their vendors.

Only major enterprises typically enforce SLAs that require partners to implement security standards such as data encryption

or breach notification timelines. Smaller players, particularly SMBs, often have no such protocols in place.

This lack of enforcement leaves gaping holes. If they are trained, they will report any security breach within 24 hours of detection, if it's done on an aggressive basis.

She underlines the importance of turning these best practices into norms rather than exceptions.

▼ Digital war: The new frontline

The urgency of securing the supply chain becomes even more apparent in the current geopolitical landscape. Sharma draws attention to how cyber attacks are becoming the new weapons in digital conflict.

Referring to hostile cyber activities, particularly in the context of the India-Pakistan situation, she observes: "It's a digital war... The way we are handling it, although the media has encrypted it somewhere or not, I would not like to comment on that. But I think we're doing a decent job."

This isn't metaphorical. With control centers replacing boots on the ground, and missiles launched through algorithms rather than armies, Sharma paints a picture of a modern battlefield governed by data and firewalls.

▼ Case in point: Pfizer's data-driven vaccine supply chain

The stakes become even clearer in

Sharma's recounting of Pfizer's cold chain logistics during the COVID-19 pandemic, a moment where cybersecurity, IoT, and data analytics came together to safeguard lives.

Pfizer, needing to maintain a strict -70°C temperature for its vaccines, deployed IoT-enabled thermal sensors and GPS trackers inside containers. Real-time analytics were used to detect temperature anomalies, delayed shipments, or potential tampering, triggering reroutes or replacements before spoilage could occur.

This wasn't just operational efficiency. It was cybersecurity in action, ensuring integrity, transparency, and accountability in one of the most critical supply chain missions in history.

▼ Resilience is the new efficiency

Cybersecurity in the supply chain is no longer optional. It is the backbone of operational continuity, reputation management, and even national safety. Whether it's using AI to scan for threats or establishing SLAs to hold vendors accountable, the path forward is clear.

In Sharma's words: "We are aspiring to do things that are 10 or 15 years ahead of their time. But we must start now."

The future may be digital, but winning in that future will require human strategy, shared responsibility, and relentless vigilance.



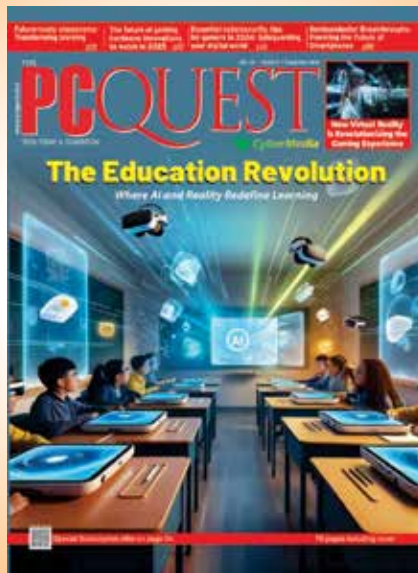
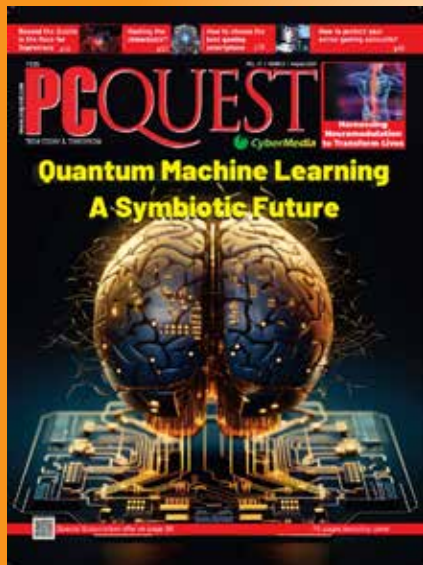
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Code less, scale more

Harsh Sharma

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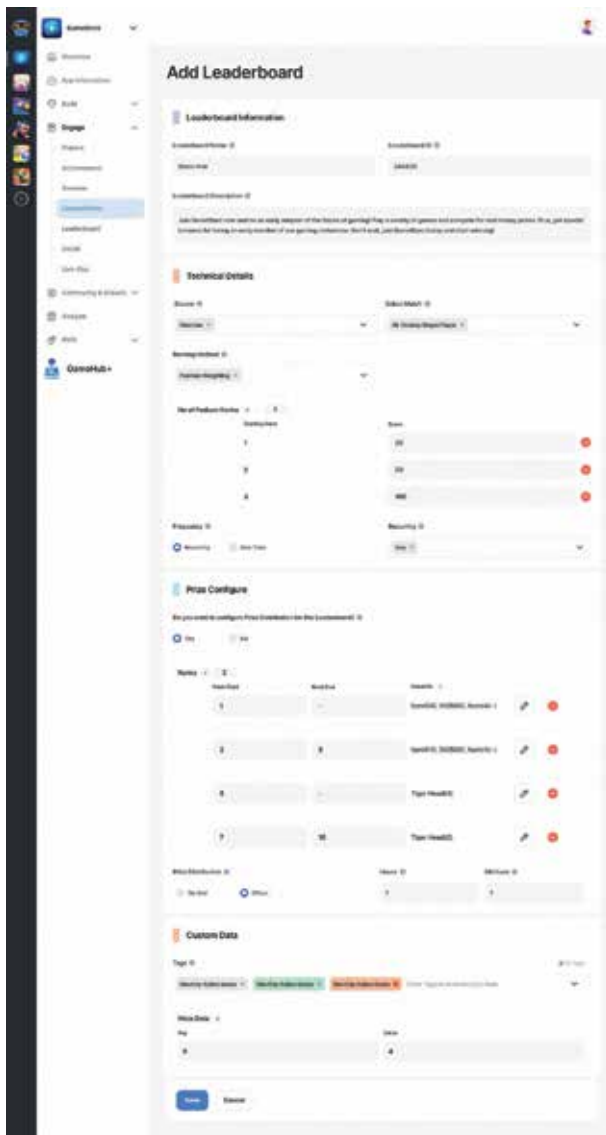
India's game dev scene is leveling up from patchy backends to plug-and-play live ops. With real-time AI, ethical monetization, and zero-server fuss, the new era of mobile-first game development is here: visual, scalable, and built for momentum

Amid the whirl of capes, collectibles, and caffeine at Comic-Con Mumbai 2025, backend tech wasn't supposed to turn heads, but it did. That spotlight belonged to Spectre, a backend-as-a-service platform from Dircube Interactive, co-founded by Mikhail Bhuta and Praan. Built to tame infrastructure chaos and empower Indian game developers, Spectre isn't just a product, it's the internal tool they wish existed five games ago. From indie teams to mobile-first studios, it's now redefining how creators think about scale, live ops, and AI without losing their edge.

▼ Solving backend mayhem with one integrated platform

If you've built a game in India, chances are you've used Firebase for auth, stitched together APIs for leaderboards, and managed your live events in Excel. Spectre was created by developers who lived through that exact pain. We were tired of juggling services just to ship basic features.

Spectre replaces that fragmentation with a unified stack. From authentication and matchmaking to in-game stores and player analytics, the entire flow is handled from a single dashboard. What used to take weeks

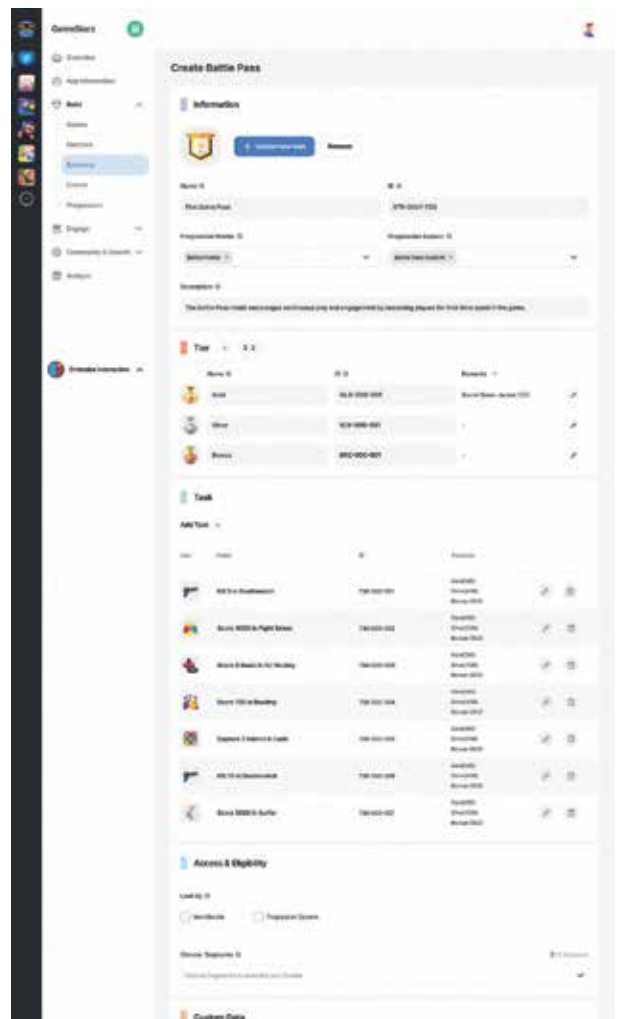
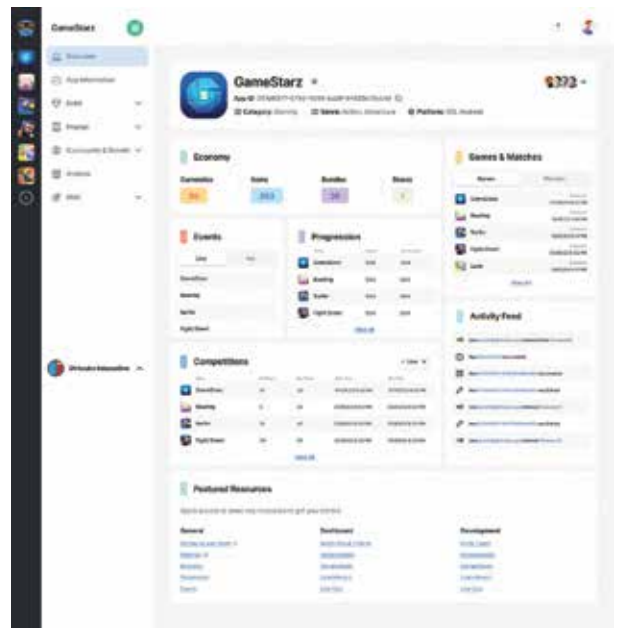


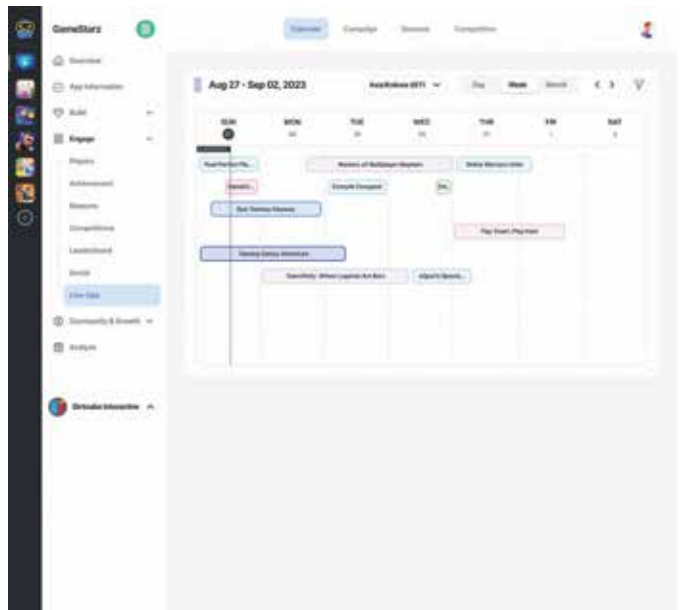
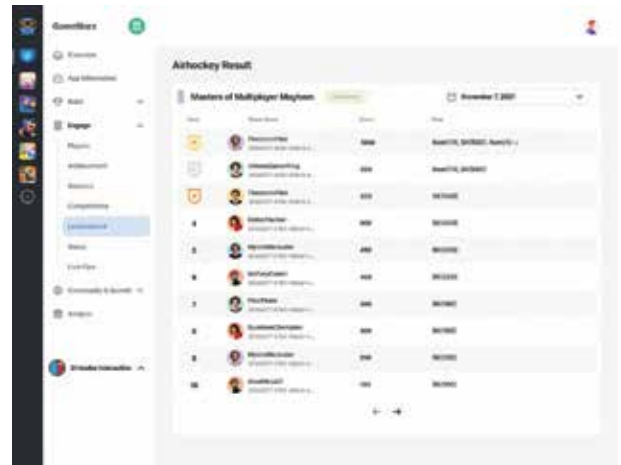
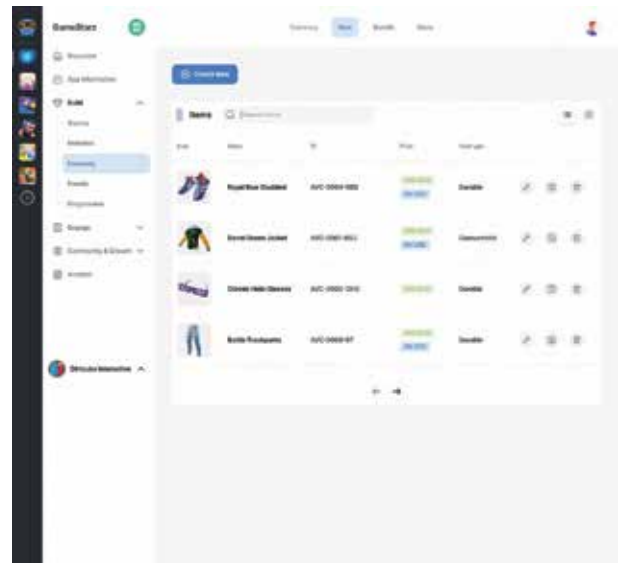
now takes minutes.

▼ Developer tools that are friendly to non-developers

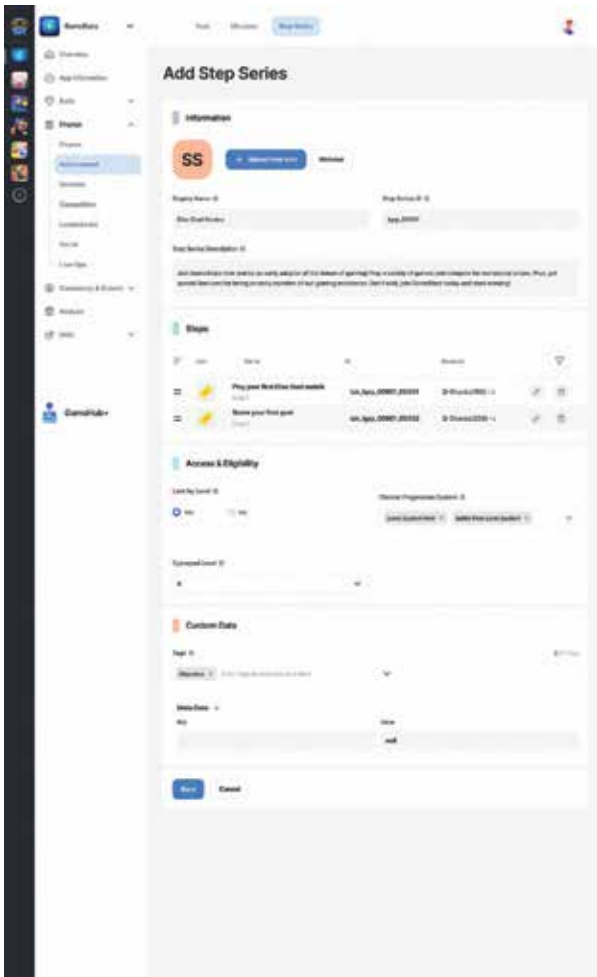
Most backend systems require deep engineering expertise. Spectre makes them accessible to designers and producers who just want to tune a level or push a weekend event.

The platform's Build section lets you manage currencies, items, stores, and progression. The Engage section handles events, achievements, tournaments, and more. It's all visual and intuitive. You don't need to redeploy your app to adjust XP gain. You just click, test, and push from the dashboard.





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challenges. The designer has full control to approve or modify these suggestions.

It's like adding another brain to your live ops team. But one that works 24/7.

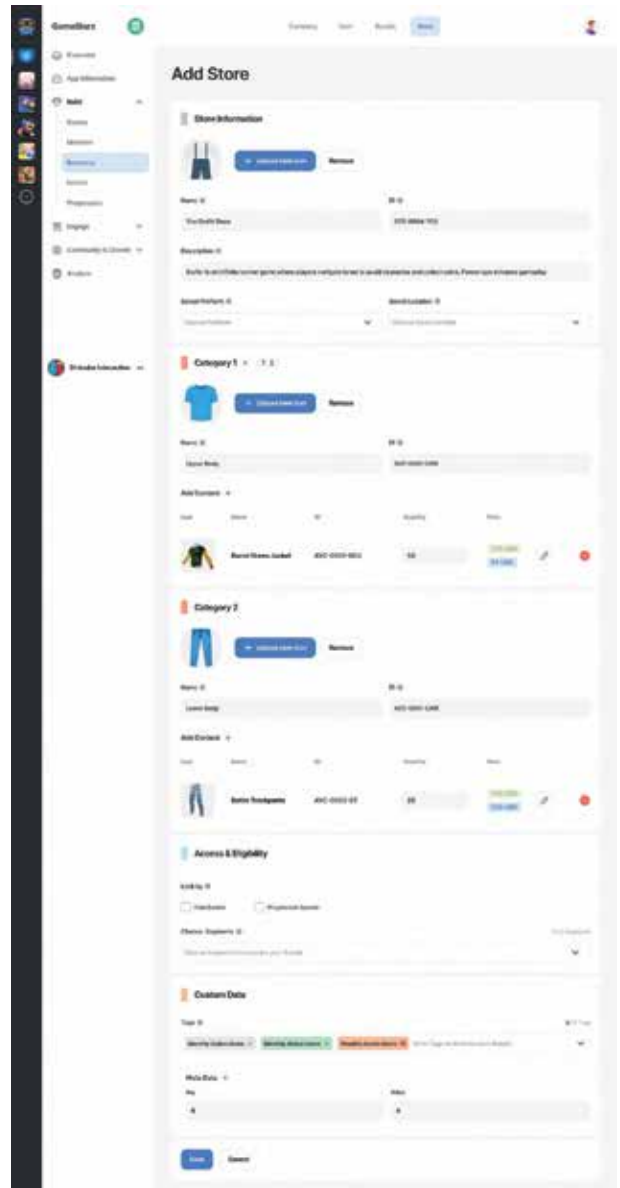
▼ Ethical tech baked into the foundation

With AI now involved in monetization and gameplay, questions around ethics are more urgent than ever. Spectre takes this seriously by building guardrails into the product itself.

Features like behavior-based nudging are restricted with parental controls and transparency layers. Spectre's design allows developers to enable protections for younger players without compromising functionality.

Just because you can nudge a player to spend doesn't mean you should. We believe in giving studios the tools, but also the responsibility.

▼ Getting started with Spectre: A quick



guide for devs who want to build smart, not from scratch

So you've heard the pitch, and now you're wondering: how do I actually start using Spectre?

Good news. Spectre's dashboard is built to be practical, not overwhelming. Whether you're setting up a new game or plugging Spectre into an existing one, the platform gets you operational in just a few steps. No backend team required.

Step 1: Create your game project

Head over to the Spectre dashboard and

GameStarz

Overview
App Information
Build
Engage
Features
Announcements
Comments
Competitions
Leaderboard
Search
Live Ops
Community & Growth
Analytics

Windows Interactive

App Information

Information

+ Upload new icon
Reviews

Name ID
Game ID

Description ID

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Technical Details

Select Game Platform ID

Android
iOS
Steam

OS

Asset Bundle	Asset Bundle Version	Minimum App Version
Upload Bundle	0.1	3.0

Android

Asset Bundle	Asset Bundle Version	Minimum App Version
Upload Bundle	0.0	3.0

Steam

Asset Bundle	Asset Bundle Version	Minimum App Version
Upload Bundle	0.0	3.0

Select Game Location ID

Asia
Germany
Canada
Other countries

Extras

Add Screenshots ID

Click on Screenshot Image

Screenshots.png

Screenshots.png

Screenshots.png

Screenshots.png

Add Promos Videos ID

Click on Promos Video

Promos MP4

Promos MP4

Promos MP4

Promos MP4

How to ID

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Custom Data

Tags ID

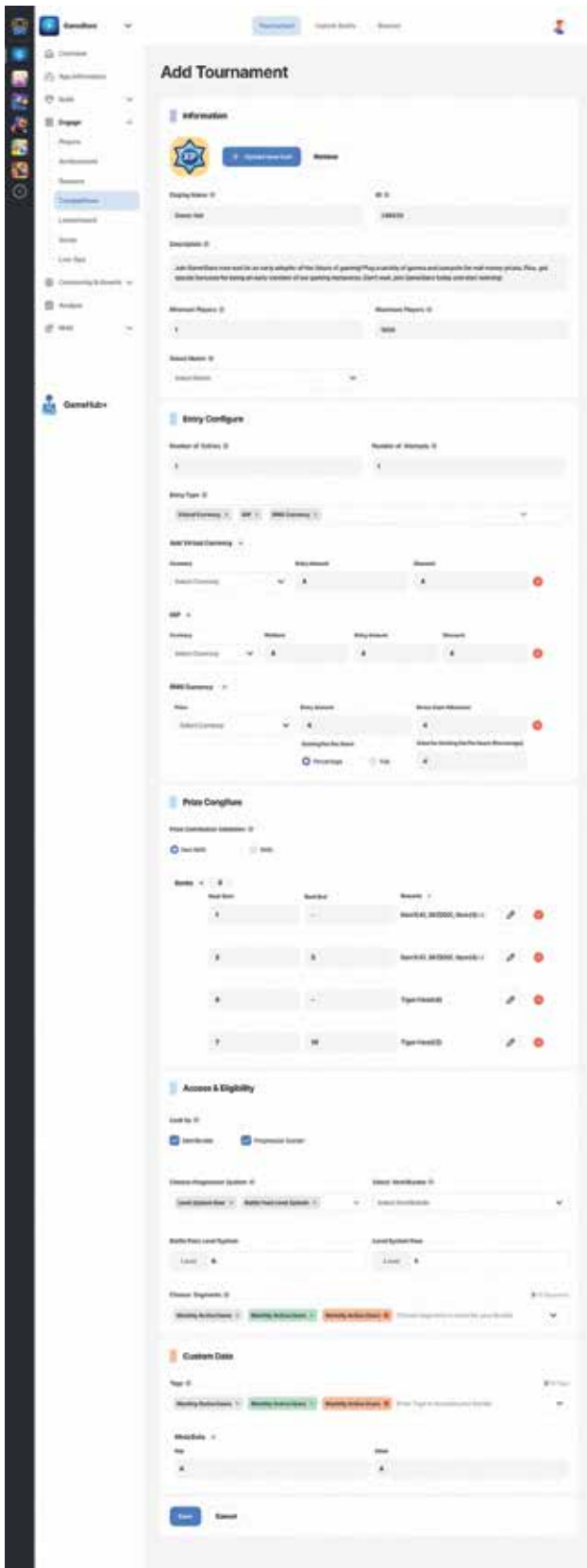
Monthly Active Users
Monthly Active Users
Monthly Active Users

Meta Data

Key
Value

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start by setting up your game environment. You'll name your game, assign it a project ID, and pick your platform (mobile, PC, or console).

Step 2: Build your game logic

Use the Build section to configure core systems like player progression, currencies, gacha items, match rules, and in-game stores. Everything is visual. No XML files or server configs. You can link these to frontend assets via Spectre's API.

Step 3: Set up engagement features

In the Engage tab, create leaderboards, design achievements, schedule events, and automate live competitions. This is also where you manage players (segments, roles, bans).

Step 4: Connect your client

Spectre offers a REST API that works across platforms. Just authenticate with your project key, then start calling endpoints to sync player data, fetch events, or update inventories.

Step 5: Go live and tweak in real time

Once your game is live, Spectre lets you adjust parameters without shipping a new build. Want to buff drop rates for a weekend event? Just toggle the setting and push it live from the dashboard.

You can explore the full user manual at manual.specterapp.xyz, which includes screenshots, API references, and configuration examples. It is designed for developers who prefer shipping code over chasing documentation.

Spectre is not just a tool. It is the toolkit we wish we had five games ago.

▼ Advice for devs aiming to scale smart

Spectre is built by a studio that knows the stakes. So when advice comes from its creators, it's rooted in hard-won experience. Think about live operations from the start. If you wait until launch to plan retention and monetization, you've already lost your edge.

Creativity is still the core of a good game, but scale comes from planning how to evolve that experience over time. Spectre exists to give developers that roadmap.



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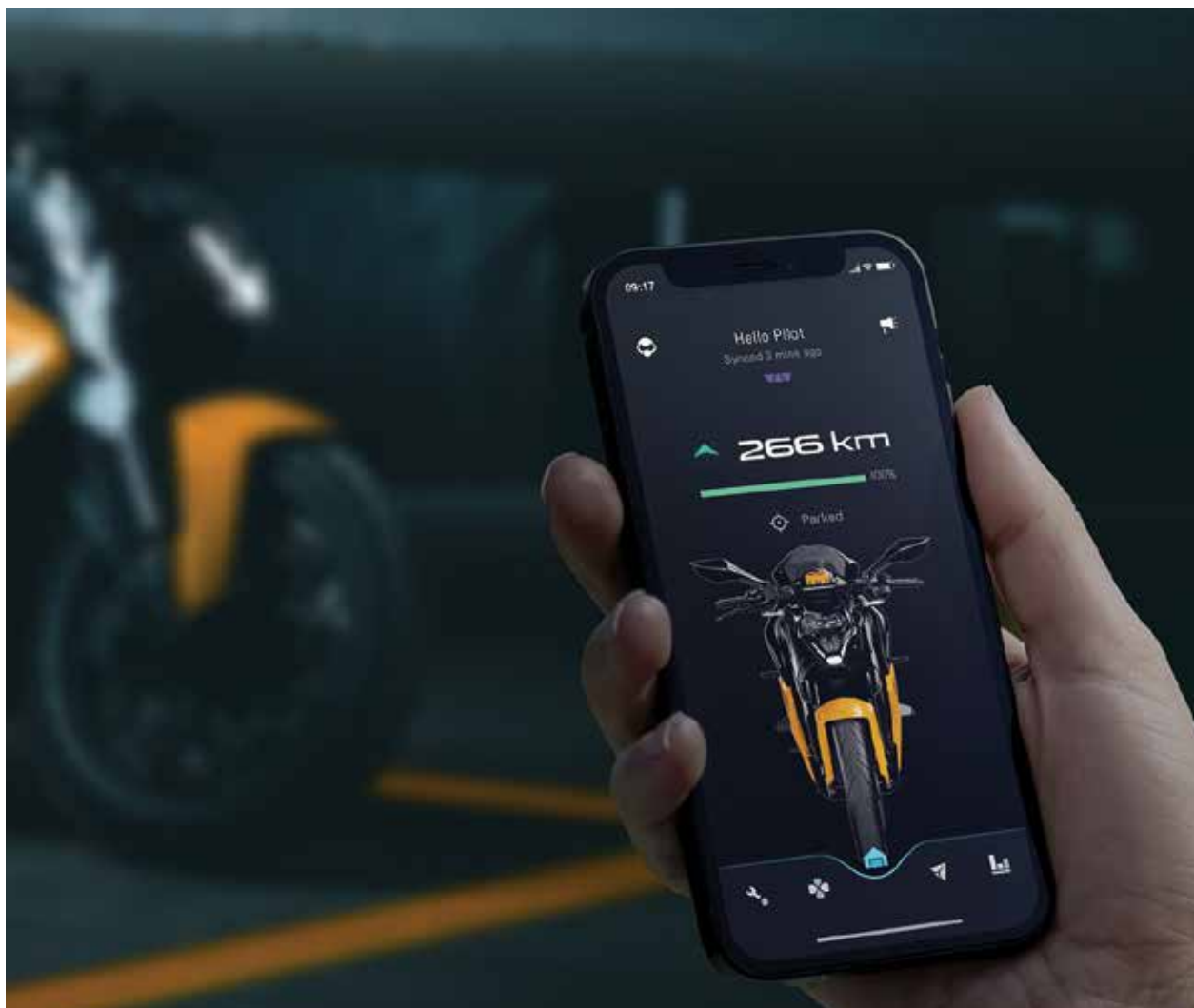
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Reimagining the future of electric two-wheelers

Shipra Sinha

✉ pcquest@cybermedia.co.in



Ultraviolette isn't just building electric bikes—they're engineering a smarter, connected riding future with aerospace tech, AI brains, and global ambition. From India to Europe, it's EV evolution with brains, brawn, and boldness

In a world where electric vehicles often feel like stripped-down answers to sustainability, Ultraviolette is flipping the script. Their strategy? Don't just electrify: elevate.

At the center of this transformation is **Niraj Rajmohan, CTO and Co-founder, Ultraviolette**, who's leading a mission to build a two-wheeler experience that's smarter, safer, and truly global. And this is no ordinary EV journey; it's one deeply rooted in aerospace-level tech, meaningful connectivity, and user-first innovation built entirely out of India.

▼ Engineering India's first truly global two-wheeler tech brand

In terms of the brand in itself and in terms of Ultraviolette as a company, we always said and stood for building world-class tech in India, and it was not meant to be limited to India in any way or form. Today, our bikes have started to ship out to other parts of the world. We have bikes in Germany, Spain, France, the Netherlands, and a few other European countries, and that reflects what we've been working on for the last eight years. We are working towards building a company that is building world-class products right out of here in India. Our benchmarks, in terms of other companies we look up to, are the likes of Sony, Dyson, Tesla, and Apple. That is the quality and scale that we want to get to in the mobility space right now.

▼ Navigating affordability and performance in cost-sensitive markets

The core for us is whatever Ultraviolette is building, we are ahead in terms of technology, performance, and design. Those are three key pillars essential for us. We build these three capabilities without compromise and try to bring it at a price point that is very accessible to the market. Yes, India is a price-sensitive market, and because of that reason itself we started to work on the electric motorcycle technology. Our objective was to work backwards from a price that makes sense in India. Today, the 300 CC motorcycles are all priced in the same range, Rs. 2.5 to 4 lakh. Our first set of motorcycles was intended to be right in the middle of that segment. Our prices start at Rs. 2.99 lakh and Rs. 3.99 lakh,



NIRAJ RAJMOHAN,
CTO and Co-founder, Ultraviolette

which is within the same space as the ICE motorcycles. The same applies to EV scooters, which we offer at a Rs. 1.2 lakh introductory price. We offer capabilities and performance that are 2X that of other EV scooters in the market. So, all of this has never been available, and we made it available at a price point that makes sense both for consumers and for us as well.

▼ Software-defined vehicles: Building beyond the ride

All of our two-wheelers are fully connected vehicles. They all have esim cards. The back-end systems are also developed by us. All of the data that is being transferred is not just for the purposes of data logging and connection but also to enable things for consumers which have never been done before. We have features like Violette AI, which is using all of the data that is being generated from the vehicles as well as offline capabilities; it goes beyond the vehicle operating system. The app will show the statistics in terms of how the person is riding their motorcycle, number of hours the bike is used, top speed, efficiency, kilometers traveled, amount of energy recovered, level of front brake, back brake usage, and much more. It's taking the experience of ownership of a

vehicle beyond just the riding of the vehicle. This is done because of the remote diagnostics capabilities. We can identify problems even before a rider sees them. After-sales is more proactive. So, the capabilities enabled by the platform that we have built—all of this is done in-house.

▼ OTA updates and regulatory intersections

When it comes to an automobile, there are different tiers and levels of types of updates. If it's a very simple theme-related update, we can do it very quickly and easily over the air. But when it comes to things related to performance or functionality of the vehicle, we have to go back to the regulatory authorities to get clearance for those firmware versions and only then plan out the firmware roll-out. Even the roll-out is done in a controlled manner because we have to educate the customers that this update is available. We did something that has never been done before in the industry when we announced traction control on our F77 Mach 2 motorcycles last year. We rolled it out as an update to all the previous-generation motorcycles also out

there. Normally, functional features like that don't come as part of an OTA update; it is usually things that are made for efficiency improvements. This was a new capability that was added to the motorcycle, and the hardware already had the capabilities. We further made sure to make it backwards compatible with the previous-generation hardware and rolled it out as an OTA update with the necessary regulatory approvals in place.

▼ Driving the transition: Approaches to accelerating electric mobility adoption

It's not just making the transition to electric because it's electric. The whole experience of owning and operating an electric vehicle—and even the post-sales experience—is very different. It's way more advanced. We've seen that transition happen for laptops and phones. We've transitioned to some very fundamentally new capabilities that could have never been there with our landlines and desktops. Right now, that similar shift is happening on the electric vehicle side. Of course, it depends on what type of electric vehicle we are talking about, but the ones



that are pushing the limits in terms of tech—similar to what Tesla is doing and some of the companies from North America and other parts of the world are doing in terms of ADAS features—we’re doing something very similar on the two-wheeler front.

▼ **Battery strategy: Modular flexibility vs. fixed practicality**

We built capabilities early on also. When we first announced our motorcycles in pre-COVID times, December 2019, we actually unveiled our motorcycles with a modular battery architecture. We saw it as two things: one is as a technology, and second is as a business. The way that we always saw it was that swapping is a business decision, and the technology must enable it. The way we built our tech stack was like that. If we have to go down the path of swap or modular batteries kind of environment, we should have the capabilities to do that. So, we built the tech and even unveiled it. What we’re seeing today in India is that the entire country for consumer EVs is going down the path of fixed batteries for various reasons. One is charging inside apartments is not easy. It still makes sense in India in some commercial applications where you want a vehicle where the price is very low, so you have to optimize on the size of the battery pack but you allow quick interchange. The downtime is lower; the vehicles are continuously in use. It’s unlike that for consumer-owned vehicles where a lot of the time charging can be done at home or at the office or at different locations where range is more important. So, in different applications, there is room for both technologies, and we’ve built the capabilities for both. What we have now put into production is a fixed battery architecture.

Fixed battery systems will be sustainable in future in an environment essentially where the battery prices are reducing. There is another tricky part, which is the number of extra batteries in the system that will need to be accounted for. There are pros, cons, and benefits, but there is essentially a financial risk that is involved, as well as a counter to that in terms of a premium that is asked from the consumers. So, all of this has to be outweighed when you consider fixed versus

swappable. On the fixed batteries, we have achieved something that is quite remarkable. The maximum warranty that we give with our pre-fixed batteries is up to 8 lakh kilometers and 8 years, which means that the battery packs are really meant to withstand any kind of usage so it retains its value as a vehicle and as an asset.

▼ **Connected ecosystems and service feedback loops**

So, the basics usually involve some level of “where’s my vehicle,” “can I unlock it,” “lock it,” and “see what is the battery status.” Those are the standard features. What we have gone is way more than that with features like Violette AI and what we call our diagnostic features, where we’re able to predict the behavior of the vehicle or any changes to the vehicle much before, and we’re also able to give suggestions on how you can further extend the life cycle of your vehicle and improve your riding experience with some of these capabilities. This keeps getting updated over time. We have navigation that enables users to plan out their route and trips. We provide a view of the charging stations and their availability. So, all of this is enabled as a combination of your vehicle capabilities as well as everything being connected. Our charging stations also have SIM cards. They are also connected, and we can see the live status of each one of them. It’s also monitoring and improving quality over time as well.

▼ **Cybersecurity and firmware integrity**

The first part of it is actually what level of control you give through the online channels. For example, on the motorcycle, anything that has to do with throttle or the riding modes is not given any sort of digital access; it is limited to the physical rider and the person itself. So, there is a clear separation in terms of what capabilities are given to an online platform. The second, in terms of capabilities, is that which firmware is allowed to run on the vehicle—and can you update a firmware only if the signing process is complete—which means that you cannot run an unauthorized firmware on the vehicle or any subsystem. The third is data that has been transferred

from the motorcycle to a server. Both the data at rest and in motion is always encrypted in various forms. There is a certain level of clear distinction in terms of personally identifiable information versus data that is not personally identifiable, and we have to do all of this because we also have EU regulation norms to meet GDPR requirements. There is also now regulation at a draft stage regarding cybersecurity norms in terms of what is possible, and how is it documented, tracked, authenticated, and how is there clear transparency into the entire connected journey of a vehicle.

▼ Advanced rider assistance in two-wheelers

With the newer vehicles, what we've started to introduce is capabilities that we call closer to ADAS functions. It's not autonomously driving the vehicle for you, but it is improving your riding experience by augmenting your capabilities. For example, on a two-wheeler, you don't get features like blind spot detection. It's available in high-end cars, but it's now available on our scooter because we have two radars and two cameras. We have a full view of your surrounding environment, and we're able to give you better situational awareness. It is also able to do things like reverse blind spot detection, which means that you are in someone else's blind spot. Then we have autonomous anticipatory braking that we're working on, which is very advanced and either available or not available in even the four-wheelers that are out there. So, these

are some of the functional aspects of it. Then there are the more connectivity, service, after-sales, and charging-related capabilities that we offer.

▼ Augmentation over automation

It will split into two pathways. One is the very autonomous journey, where your day-to-day transit will get covered in some form of autonomous movement in about the next 10–15 years, where that becomes the norm. It's economical, it's viable, and the focus will be on your transportation experience. So, that's the direction where the industry is going. The other side is where you have more control on your vehicle, where it becomes about freedom, which is always what motorcycling was about. It's a sense of freedom, a sense of autonomy for the rider but with additional capabilities for added safety. For example, what we've done with the scooter and with the motorcycles is, there's a lot of aerospace-inspired technology coming into automotive applications—like the capabilities that pilots have in terms of situational awareness. My surrounding environment: there are things that are happening which I should be aware of without being distracted and able to control a vehicle with minimal cognitive overload. So, these kinds of things can be detected, and we are able to warn the person in advance. That adds to the capabilities and augments the human driving experience. So, at least from our point of view, it will go in these two directions, and they will both coexist in the market. ■





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Long Implementation Process: Achieving full compliance can take **10-12** months for large enterprises.

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- VPs, Directors and GMs of IT and Cybersecurity
- Data Protection and Compliance Leaders
- Cyber Law Practitioners and Cyber Investigators

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vikasm@cybermedia.co.in
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Streaming the spotlight

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How Gamingpro Ocean and Mister Swishy are shaping India's new-age gaming conversations

▼ Ocean – The voice that makes games talk

Before he became a familiar voice in India's esports scene, Ocean was a student who could solve equations faster than he could reload in-game. Known online as Gamingpro Ocean, his journey didn't begin on a streaming platform. It began in the margins of his classroom notebook, where game maps quietly replaced algebra.

"I was academically sound," he says. "But there came a point where my brain wanted something else."

That "something else" was video games. His path into the industry wasn't flashy. It started with YouTube tutorials—simple game breakdowns with some personal insights. The casting? A lucky twist. In 2019, he filled in for a friend at a local tournament.

"It was a positive accident," he recalls. "I didn't plan to be a caster, but once I got on the mic, I realized how much I loved telling the story behind the gameplay."

From that moment, he wasn't just narrating match highlights—he was building narratives, weaving emotion into action. "Casters are story writers," he says. "The players make the moves, but we connect those moments."

Ocean didn't flinch when PUBG Mobile was banned in India. He was already active in high-profile events like PMWL East Orange, and his steady presence helped bridge the shift to BGMI. He even joined a few show matches, including one against Bigetron, Indonesia's elite team.

Off-camera, Ocean mentors upcoming casters and creators. "I believe in celebrating others' wins," he says. "There's space for everyone to succeed."

When asked about the hype around Valorant Mobile, he's cautiously optimistic. The PC player base already exists in India, and he feels that if the mobile version maintains gameplay integrity, it could thrive.

"If the mobile version holds up, it could explode. The real question is whether audiences stay loyal to BGMI or split."

He sees a future with multiple popular titles coexisting—and more room for casters who know how to tell a good story.





▼ Mister Swishy – The vibe that turns games into a party

Where Ocean casts tournaments, Mister Swishy streams the chaos in-between. Real name Sarandeep Singh, he isn't aiming to be the last man standing. He wants to be the funniest person in the lobby—and most days, he is.

Like many streamers, Swishy started with no audience and unlimited optimism. "I streamed for hours without a single person watching," he says. "But I kept showing up."

He eventually shifted gears. He hired a thumbnail artist, chose relatable content, and stuck to collaborations with close friends. "If the collab is forced, the audience knows. So I only play with my five closest friends. That chemistry matters."

Even his name—Mister Swishy—was part of the pivot. "I didn't want to use my real name. I wanted something different, something original." It worked. His humor, quick editing, and honesty built a loyal following.

"You don't need to act shocked every five seconds," he jokes. "Just be real. People connect with that."

Though his channel is growing, Swishy still helps with his family business. He juggles both worlds with smart planning, often ideating while offline. His most frequent collaborator is longtime friend carryminati, who encouraged him to stream in the first place. "We were already entertaining ourselves. Going live just gave it an audience."

His games of choice? A mix of fun-first titles: BGMI, Free Fire, Among Us, and co-op horror games. He's curious about Valorant Mobile but cautious. "Mobile mechanics can get weird," he says. "But if Riot gets it right, it'll be big."

His advice to new creators: don't fake it. "Don't copy. Don't chase. Do what feels right. That's the long game."

▼ Different lanes, same map

Ocean and Swishy play in different arenas—one at the mic for esports, the other behind a webcam cracking jokes—but both are redefining what it means to build a gaming career in India.

Ocean brings tactical storytelling and tournament polish. Swishy offers everyday relatability and unfiltered charm. What binds them is hustle, sincerity, and a respect for the grind.

India's gaming scene is no longer just growing—it's maturing. And with voices like these, it's beginning to sound like its own.

Mind over machine

Ashok Pandey

✉ ashokpa@cybermedia.co.in



What if AI didn't just follow rules but wrote them, watched them, and called for backup when needed? This isn't automation 2.0, it's a thinking ecosystem where agents act, adapt, and align. Welcome to the future of enterprise intelligence

In the evolving world of artificial intelligence (AI), buzzwords come and go, but platforms that deliver measurable outcomes stick around.

For **Jan Wuppermann, SVP & Head of Data & AI, APAC, NTT DATA**, the real game-

changer isn't just generative AI or large language models, it's how modular AI agents are being orchestrated to solve real-world enterprise problems across industries. In this conversation, he shares the architectural vision behind NTT DATA's Smart Agent

Ecosystem, the role of AI governance, and how agentic intelligence is transforming the relationship between traditional automation and emerging AI layers.

▼ From cloud-native to cloud-agnostic

The platform's origin lies in a strategic partnership with Microsoft Azure, which provided a foundation for early tooling and co-creation. But as the ecosystem matured, the architecture evolved into a factory-like model, capable of creating, running, and monitoring AI agents across environments, from Azure to GCP, AWS Bedrock, and even private AI instances.

This shift from single-cloud dependency to cloud-agnostic flexibility was critical. Interoperability, once a challenge, is now a baseline expectation. Hyperscalers that once built in isolation are now aligning on industry standards, making agent orchestration not only possible but scalable.

This move beyond cloud loyalty isn't just technical, it's strategic. It ensures that the ecosystem is ready to scale globally, adapt locally, and integrate rapidly across any tech stack or compliance regime.

▼ APIs as the new glue

The rise of modular agents also brings into focus a crucial piece of the puzzle: how they talk to each other. While the technical depth of agent-to-agent protocols may vary, what anchors the ecosystem is its reliance on standardized APIs. These act as the connective tissue, previously fragmented but increasingly harmonized across hyperscalers.

APIs now serve as both interface and governance framework. As the industry matures, they're enabling agents to interact, collaborate, and trigger workflows across diverse systems, forming the operational backbone of modern enterprise AI.

▼ Responsible AI: governed by design

In regulated industries like finance and healthcare, compliance isn't optional, it's fundamental. But responsible AI isn't enforced at the code level alone. It begins with governance architecture.

Rather than relying on reactive controls, the platform embeds rule-based



JAN WUPPERMANN, SVP & Head of Data & AI, APAC, NTT DATA

observability. This means tracking agent behavior continuously, identifying deviations early, and invoking interventions when autonomous tasks begin to stray too close to compliance boundaries. The system can pause processes or escalate to a human, ensuring accountability remains intact, even in autonomous environments.

This is where AI governance goes from buzzword to business-critical. It ensures that models are not only trained well but also monitored beyond deployment—accounting for drift, hallucination, and the evolving nature of decision-making frameworks. Compliance, in this model, is not an add-on; it's the nervous system.

▼ One region, many rulebooks

Deploying AI across Asia-Pacific means facing a regulatory labyrinth. From Singapore's MAS mandates to India's SEBI requirements and industry-specific frameworks in manufacturing and automotive, the diversity is staggering.

To manage this, the architecture avoids hardcoding rules. Instead, it operates on abstracted compliance logic, minimum common capabilities that can be adapted per

country, sector, or client. Whether it's GDPR-style mandates or local standards like HuAI, the system enables clients to layer in their specific governance needs without reinventing the core infrastructure.

This modularity allows for enterprise-level scalability without regulatory fragility, turning what could be a roadblock into a competitive edge.

▼ When GenAI meets the shop floor

In manufacturing, compliance is often more tedious than technical. For one global automotive supplier, the flood of OEM manuals, certification standards, and environmental reporting created a data nightmare. Engineers were spending hours on spreadsheets, tracking thousands of variables—time that could have been used for actual engineering.

Enter an agentic solution that not only interpreted compliance data but took autonomous follow-up actions like ordering parts and verifying certifications. The result wasn't just productivity; it was precision. Manual work was cut by up to 55%, and engineers shifted from grunt work to real value creation.

This is what agentic intelligence looks like in the real world. It doesn't just analyze. It acts.

▼ RPA is the muscle, agents are the brain

Robotic Process Automation (RPA) was never designed to think. It executes defined tasks with precision but falters the moment it

hits an edge case. That's where AI agents step in. Rather than replace RPA, agents layer on top—detecting fallouts, making decisions, and re-engaging the workflow. They provide the reasoning engine that traditional automation lacks.

This isn't a rip-and-replace philosophy. It's augmentation. A neural handshake between deterministic execution and adaptive intelligence. When built right, RPA becomes the arms and legs, while agents guide the movement.

▼ Future forward: Federated AI, not a single standard

The road ahead is not headed toward one unified AI protocol. Geopolitics, economic interests, and regulatory divergence mean that AI will evolve into a federated model. The U.S., Europe, China; all will have their own governance structures, and Asia will sit at the intersection of these influences.

In this future, businesses that are not AI-first will find it harder to sustain themselves. Agentic systems will underpin enterprise intelligence, and those still relying on rigid, rule-based systems will be left behind.

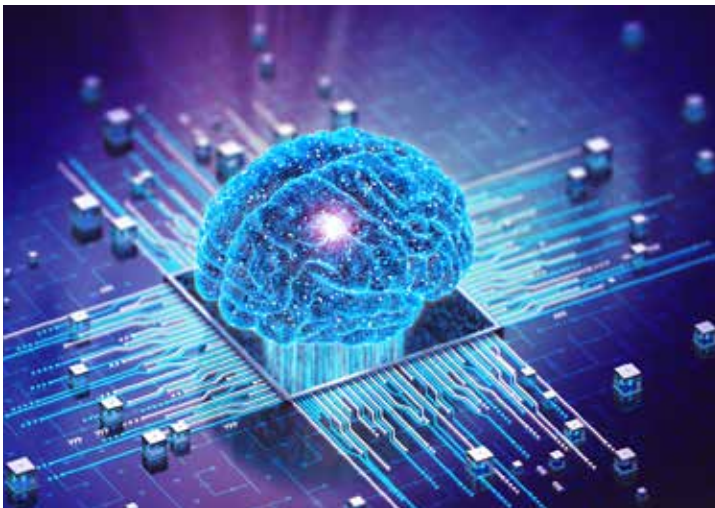
At the same time, the human factor cannot be dismissed. As AI expands, so does the need for empathy, creativity, and judgment. Governance is not about restriction, it's about balance. To stay ahead of AI's evolution, society needs to evolve too.

▼ Final take: From orchestration to impact

Agentic AI isn't just another layer of automation. It's a fundamentally different mindset. One that treats AI not as a tool but as a collaborator, an orchestrator, and, increasingly, a decision-maker.

The goal isn't to replace humans. It's to free them. To let machines handle repetition, while people focus on what only people can do—create, empathize, and innovate.

That's the real promise of the Smart Agent Ecosystem: not just smarter machines, but smarter organizations built for a future where intelligence is everywhere, and the only limit is how well we can orchestrate it. ■



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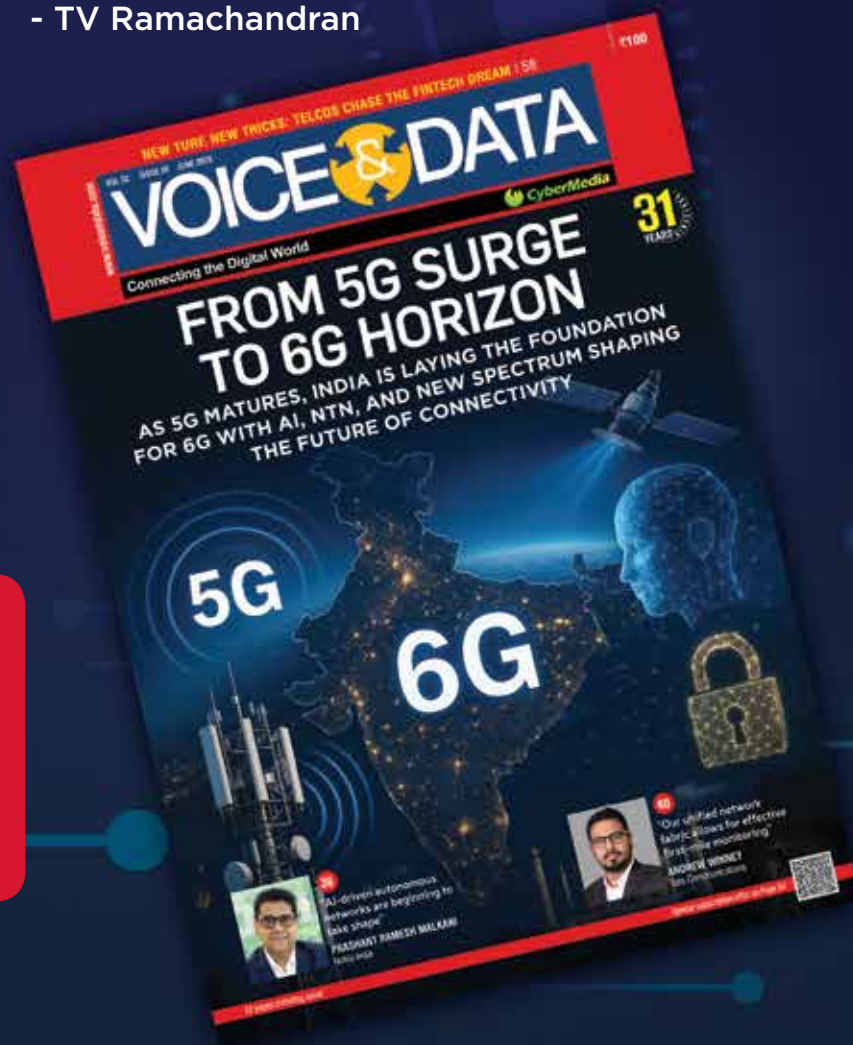
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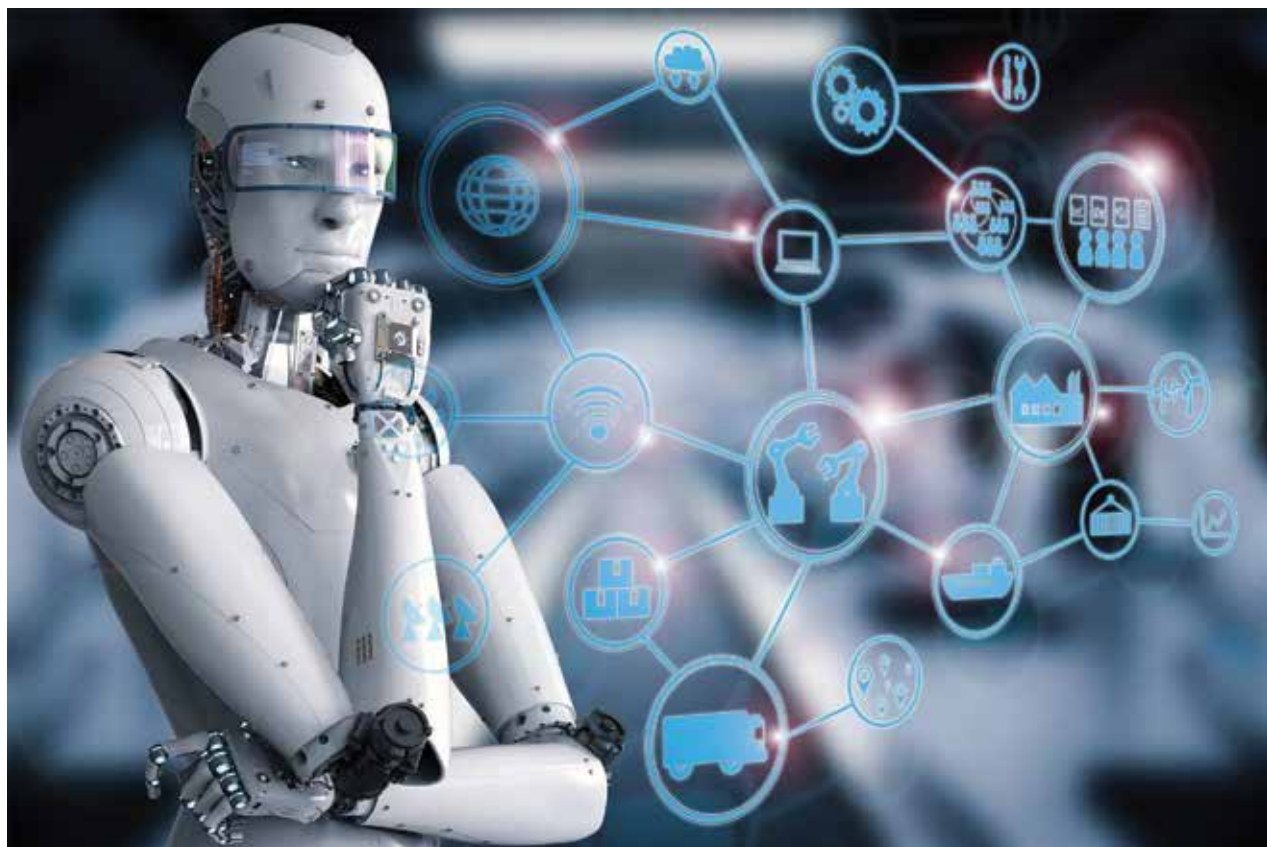
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How Agentic AI adapts to legacy and leads the way

Ashok Pandey

✉ ashokpa@cybermedia.co.in



What if AI didn't just assist but worked like a team? In finance, Agentic AI is doing just that: teaming up, fact-checking, adapting to legacy systems, and transforming workflows without making a sound. The bots aren't coming. They've already clocked in

When we spoke with **Jon O'Donnell, Chief Operating Officer, Acuity Knowledge Partners**, the conversation quickly moved past the buzzwords. No hype, no generic "AI will change everything" fluff. Instead, what unfolded was

a grounded, detailed look at how Agentic AI, an emerging architecture of autonomous, collaborative AI agents, is quietly transforming the way financial services firms operate.

"We started with copilots," O'Donnell explained, "but quickly realized the future wasn't about single tools. It was about teams,

AI agents that collaborate like humans, validate each other's work, and adapt to real-world data complexities."

And just like that, the frame shifts: from AI as an assistant, to AI as a workforce.

▼ Not just AI: An entire workforce of algorithms

Artificial intelligence is changing. Not in the look, it can summarize a PDF, it let meme behave like a team of analysts, collaborate, flag inconsistencies, and generate outputs at scale. Welcome to the world of Agentic AI.

This new approach doesn't rely on one large model answering all your questions. Instead, it mimics how human teams operate with specialization, coordination, checks, and balances. In sectors like banking, asset management, and private equity, where accuracy and trust are non-negotiable, this model is starting to reshape how work gets done.

▼ From copilots to digital departments

Earlier generations of enterprise AI systems were linear. A prompt in, a response out. At the best, they behaved like copilots, offering suggestions, finishing sentences, and surfacing data, etc. But today's leading financial services firms are experimenting with something more sophisticated: AI "fleets" made up of semi-autonomous agents, each trained for a specific role.

Data extraction. Quality assurance. Research synthesis. Presentation formatting. And most importantly, dispute resolution between conflicting data points. These agents don't just work side-by-side. They collaborate, debate, and validate one another's outputs before anything reaches the human user.

▼ Built like a team, not a tool

Here's how the architecture typically plays out:

- **Data layer:** Hooks into both public and private datasets, 10-Ks, filings, CRMs, data rooms, even legacy SharePoint folders. Many platforms now auto-integrate via API or data extraction agents.
- **Extraction layer:** Specialized AI agents trained to read dense documents, extract



JON O'DONNELL, Chief Operating Officer,
Acuity Knowledge Partners

key insights, and map them back to structured formats. For example, linking footnotes in a financial filing back to a cash flow line item.

- **Orchestration layer:** A central planning agent assigns tasks to specialist agents. Think of it as a project manager coordinating a mini digital team.
- **Critique layer:** Multiple QA agents independently verify outputs. If they agree, the result is considered valid. If not? It's flagged for human review.
- **Application layer:** Outputs plug into templated reports, like investment memos, due diligence summaries, or benchmarking decks, delivered in formats users are already familiar with.

This model isn't just about speed or automation. It's about building confidence. In financial workflows, hallucination isn't just a bug. It's a breach of trust. Agentic systems use internal review loops to reduce that risk.

▼ Why this matters now

The financial services industry has always run on information but rarely has it run this

fast, and this wide. Whether it's due diligence for private equity, credit risk assessment in banks, or quarterly research reports for asset managers, the challenge is the same: how to turn an ever-expanding universe of data into judgment-ready insight.

Agentic AI doesn't just scale human thinking. It reshapes the way thinking happens.

Instead of waiting for analysts to chase discrepancies between documents, an AI fleet can:

- Spot mismatches between a 10-K and 10-Q filing.
- Track changes across amended reports.
- Flag anomalies for review.
- Re-run tasks using alternate data sources if confidence is low.

All before a human even opens the dashboard.

▼ **Modularity matters more than ever**

No two financial institutions operate the same way, especially in markets like India where Tier 3 city banks still rely on legacy infrastructure. Here's where modularity becomes a make-or-break feature.

The best agentic platforms are pre-wired to plug into common systems, but flexible enough to integrate with niche or outdated tools. Some even use AI agents to "learn" how to map new data sources, automating the grunt work of configuration.

In practice, that means a local bank using Excel-based client data and a multinational with a modern cloud stack can both use the same AI system, just with different connectors and workflows. It's not one platform for everyone. It's one architecture that adapts to everyone.

▼ **Zero trust, full control**

Data security isn't a bullet point. It's the battlefield. Especially in the BFSI space, where even minor leaks can have massive consequences. To earn trust, modern AI platforms are being deployed entirely inside client firewalls, mirroring existing access permissions, never transferring data externally, and running on strict zero-trust principles. In effect, the AI behaves like an internal employee, restricted by the same



policies, monitored by the same logs, invisible to outsiders.

No third-party visibility. No shadow copies. Just airtight containment.

▼ **Democratizing intelligence with no code**

One of the silent breakthroughs in this space? Low-code, no-code configuration.

Gone are the days when only engineers could deploy AI tools. Many financial firms now empower analysts, not coders, to spin up custom workflows using drag-and-drop interfaces. These "lightning apps" can be built in weeks (sometimes days), with users selecting agents, data sources, and output formats from a modular palette.

It's not just cost-effective. It's cultural, because it brings AI to the domain experts without forcing them to become developers.

▼ **The invisible transformation**

Agentic AI won't announce itself. You won't see headlines screaming "autonomous financial workflows revolutionize industry." But look closer, and you'll find the signs:

- Faster turnaround on client reports.
- Fewer errors in data reconciliation.
- Workflows running 24/7, regardless of staff hours.
- Analysts spending more time on strategy, less on repetition.

This isn't hype. It's happening; quietly, efficiently, behind the scenes. Agentic AI doesn't aim to replace humans. It aims to work like humans do, only faster, more scalable, and without ever needing a coffee break.

And for an industry built on precision and speed, that's not just evolution. It's inevitability.

Beyond silos

Multicloud file storage now

Ripu Bajwa pcquest@cybermedia.co.in

India's enterprises are syncing cloud, AI, and edge to tame exploding data. Multicloud isn't just tech, it's strategy. As compliance tightens and insights go real-time, data isn't stored anymore, it's mobilized, secured, and put to work

In an increasingly data-driven economy, enterprises in India are turning to multicloud strategies to meet diverse business demands. With the exponential growth of unstructured data across sectors, organizations are looking for ways to manage, access, and protect information seamlessly across cloud platforms. This is not just about storage, it's about building resilient, scalable, and compliant data infrastructures.

According to Gartner, more than 50% of enterprises will use industry cloud platforms by 2028 to drive business innovation and agility. Here are five key trends redefining the multicloud storage landscape in India:

1. Hybrid and multicloud integration: Breaking down data silos

Many Indian organizations adopting hybrid or multicloud models often encounter

data silos that hinder real-time data access and limit analytics capabilities. The rise of integrated multicloud architectures is helping break these silos, enabling a unified view of data across disparate environments.

This shift is particularly crucial in India, where regulatory mandates such as the Digital Personal Data Protection (DPDP) Act and data localization requirements from the Reserve Bank of India (RBI) demand local data storage. Sectors like banking and fintech are centralizing their data storage strategies to meet compliance, while maintaining performance and flexibility across platforms.

2. Cloud-native file storage: Driving scalability and agility

Cloud-native file storage, built specifically for cloud environments, is gaining traction among enterprises seeking flexible and

scalable solutions. These systems allow organizations to expand or contract their storage capacities based on demand—essential for managing spikes in data volumes.

This trend is accelerating in sectors like automotive, e-commerce, digital banking, and telecommunications, where high-speed data processing and real-time analytics are business-critical. The growing scale of UPI transactions, online retail ecosystems, and digital payments in India has further underscored the need for elastic, high-performance storage solutions.

3. Unified data management: Streamlining governance and compliance

Beyond storage, multicloud success hinges on unified data management—centralized frameworks that encompass access control, data governance, and regulatory compliance. Indian enterprises are increasingly implementing consistent data policies to ensure security and transparency across platforms.

Insights from the Protiviti-CII CIO Insights 2024–25 Report indicate that Indian CIOs are focused on enabling seamless access to data while maintaining control and compliance. Leading banks and financial institutions are already adopting hybrid cloud approaches to align with regulatory expectations and improve operational efficiency.

4. AI and machine learning integration: Unlocking real-time insights

Multicloud environments create ideal conditions for AI and machine learning by integrating diverse data sources and enabling faster data mobility. With AI budgets rising in India—36% of Indian firms are now prioritizing AI initiatives within existing IT spend, organizations are using multicloud storage as a foundation for intelligent analytics.

By analyzing data distributed across platforms, AI can drive predictive insights, streamline operations, and support real-time decision-making. This is proving invaluable across industries such as healthcare, manufacturing, and retail, where agility and insight directly impact competitiveness.

5. Edge computing in multicloud: Reducing latency and enhancing sovereignty

As IoT adoption grows and real-time data



RIPU BAJWA, Director of Sales and General Manager of Data Protection and Unstructured Data Solutions, Dell Technologies India

becomes more critical, edge computing is emerging as a key component of multicloud strategies. By enabling data processing closer to the source, edge computing reduces latency, enhances responsiveness, and helps organizations stay compliant with data sovereignty laws.

In India, this approach is gaining momentum across automotive, agriculture, and smart city projects, where immediate data processing can power real-time navigation, predictive maintenance, or precision agriculture. With Gartner predicting that 75% of data will be processed outside traditional data centers by 2026, the fusion of edge and multicloud is becoming a necessity.

▼ The future of multicloud file storage

As enterprises continue generating massive volumes of data, the push toward unified, secure, and scalable storage solutions will only intensify. The multicloud model enables organizations to transcend the limitations of isolated data silos, fostering a more agile, insight-driven, and compliant digital environment.

This shift isn't just about managing data; it's about transforming business operations for the digital age. By embracing a multicloud future, Indian enterprises can unlock innovation, enhance decision-making, and build a sustainable edge in a competitive global economy. ■

The author is Director of Sales and General Manager of Data Protection and Unstructured Data Solutions, Dell Technologies India

Turning air into water

Building a renewable future, one drop at a time

Ashok Pandey
✉ ashokpa@cybermedia.co.in



Turning air into water isn't sci-fi, it's AKVO's reality. From corporate campuses to climate-challenged cities, Navkaran Singh Bagga is reshaping hydration with tech that sips the sky. Sustainability just found its new source

It sounds like something out of a sci-fi movie. A sleek machine humming quietly in the corner of a room, turning the invisible moisture in the air into clean, drinkable water. No pipelines. No plastic bottles. Just pure innovation. While the concept may seem futuristic, it's already here and one entrepreneur has made it his mission to make this the new normal. In this exclusive conversation, **Navkaran Singh Bagga, founder and CEO, AKVO**, the mind behind this bold leap, opens up about the technology, the challenges, and why the world needs to rethink how we drink.

When Navkaran Singh Bagga first looked beyond the comfort of his traditional business portfolio in 2016, he wasn't chasing the buzzwords of solar or wind. Instead, he chose something far more elusive. Water.

"It was underexplored," he said plainly, speaking from experience, not idealism. For him, the appeal wasn't just environmental, it was entrepreneurial. "The sector demanded a new kind of thinking. The turnaround times, the R&D cycles, even the product lifecycle; everything was different from my work in manufacturing, fintech, and hospitality."

That "different" led to a radical bet on air-to-water technology, an idea that had existed in the background since at least the early 2000s but hadn't yet made a commercial breakthrough. AKVO's approach? Reimagine it from the ground up, starting with the basics.

▼ How do you extract water from thin air?

There's no magic here, it's pure science and a fair bit of sweat. Bagga broke it down: "It's similar to refrigeration or HVAC. You cool a surface below dew point, and water condenses from the air onto it. The challenge isn't the theory, the real challenge is making it work continuously, efficiently, at scale."

With a team of four to six engineers, it took eight months to build AKVO's first working prototype. The result, a system capable of generating 1,000 liters of drinking water per day. That's 40 liters per hour. "It felt like a miracle," he confessed, "and it kept us going."

But building the machine was only the start. The bigger challenge was creating awareness. "People still don't get how it works. We're not



NAVKARAN SINGH BAGGA,
founder and CEO, AKVO

just building tech, we're educating an entire market."

▼ Innovation is rarely a solo act

Bagga isn't one to romanticize originality. "Most innovations are iterations. Take the mouse pointer, Xerox invented it. Apple commercialized it. Microsoft popularized it. PhDs don't always become billionaires, because they often stop at invention. Entrepreneurs push it forward."

It's a reminder that technology, no matter how brilliant, needs the right ecosystem and attitude to move beyond the lab.

▼ The eco question: What about the carbon footprint?

It's the inevitable follow-up. How green is green, really?

AKVO's machines use non-CFC refrigerants, sidestepping the usual environmental critique. Still, concerns linger about depleting humidity. His response, "The atmosphere isn't a finite pool. It's a cycle. You can't extract all the moisture. Nature refills it."

As for power usage, "yes, we consume electricity, but even using gray power, our carbon footprint is 70% lower than packaged drinking water." Why? Because there's no

bottling. No plastic. No trucking thousands of kilometers. “We’re cutting emissions and plastic waste at the same time.”

▼ Targeting the corporate thirst

Currently, 90% of AKVO’s clientele are corporate offices with massive drinking water needs, think IT parks and large campuses. “Traditional systems rely on RO, packaged water, and logistics-heavy setups, we offer an alternative. One that’s clean, reliable, and local. You don’t buy the machine. You pay per liter. We own the asset. You pay for the output.” That pay-per-use model means less risk for clients and consistent recurring revenue for AKVO. Win-win.

▼ Cost of a liter? It depends on the air

How much does it actually cost to pull water from the air? “Climate and power costs matter,” Bagga said. “Chennai’s high humidity makes it ideal. One liter costs around Rs. 1.75 to Rs. 2.50. Bangalore’s drier air pushes that to Rs. 3.50.”

Efficiency isn’t static, like any renewable

tech, performance swings with the environment. “We tell clients upfront; air is our raw material. Some places are just more fertile.” Despite that variability, the model works. In fact, 80% of AKVO’s sales are exports, mostly to the Middle East and Southeast Asia, regions where water is even scarcer and humidity more abundant.

▼ We’re the new normal

“We’re not just a machine company. We’re the go-to solution for corporates looking to source water sustainably.”

The formula is simple, yet powerful:

- **Environmentally friendly** (no plastic, fewer emissions).
- **Economically viable** (OPEX model, predictable cost).
- **Operationally efficient** (localized water production, no supply chain dependency).

In a world where water is becoming the new oil, AKVO isn’t just solving a need—it’s reframing the problem.



ACER

Swift 14 AI

Price: ₹89,999

LAPTOP

The Acer Swift 14 AI is among the first Copilot+ PCs to hit the shelves, and naturally, expectations run high. At first glance, this 14.9mm slim, 1.32kg laptop looks clean and premium, with a magnesium-aluminum alloy chassis and a quiet confidence in its design. But let's not beat around the bush—this machine is about what's inside.

▼ Snapdragon Inside: A Big Shift

This is one of the first Windows laptops to ship with Qualcomm's new Snapdragon X Elite chip. For years, Windows on ARM felt like a beta test, half-baked app support, sluggish performance. That changes here. The Swift 14 AI boots fast, runs cool, and delivers surprisingly smooth performance across most tasks. Paired with 32GB RAM and a 1TB SSD, it zips through web browsing, video editing, and even AI-heavy features like live captions and Windows Studio Effects. But here's the rub: not every app plays nice yet. Some legacy Windows apps still require emulation, which can feel hit-or-miss. For most folks using Edge, Office, Spotify, and Photoshop, you're in the clear. Gamers, though, don't get your hopes up.

▼ AI Features: More Than Hype?

With Copilot+ at its core, the Swift 14 AI brings tools like Recall (delayed for now), Cocreator, and live captioning into daily use. They work... mostly. Cocreator lets you sketch and get an AI-generated image in return, handy for content creators, even if not mind-blowing. Studio Effects smooth out video calls, and live captions work impressively well, even across languages. But calling this a must-have right now? Not quite.

▼ Battery Life and Display

Battery life hits around 10–12 hours on mixed use. Not bad. The 14.5-inch 2.5K IPS screen is sharp, but not stunning. It's anti-glare and gets the job done, though colors could pop more for creative work.

▼ Smooth Operator, With a Few Bumps

In real-life use, the Acer Swift 14 AI feels



SCORE

Overall:

8/10PRICE: **8/10**PERFORMANCE: **8/10**FEATURES: **9/10**

KEY SPECS

Processor: Intel Core Ultra 5 226V (up to 3.4 GHz, 8-core); **Operating System:** Windows 11 Home + MS Office; **Memory:** 16GB LPDDR5X (onboard dual-channel); **Storage:** 512 GB PCIe Gen4 NVMe SSD; **Display:** 14" WUXGA OLED, 1920 x 1200, 499 nits, CI-P3 100%; **Graphics:** Intel Arc Integrated Graphics; **Webcam:** 1440p QHD (2560 x 1440) with Temporal Noise Reduction; **Battery:** 65 Wh, 3-cell Li-ion; **Wireless:** Wi-Fi 7, Bluetooth 5.4; **Ports:** 2x USB 3.2, 2x USB-C (DC-in), 1x HDMI; **Weight:** Approx. 1.25 Kg

PROS

Stunning OLED display with rich colors and 16:10 aspect ratio; Silent fanless operation with no heating issues in regular use; Decent AI performance with NPU and evolving Copilot Plus tools; Great battery life, easy lasts a full workday; Slim, light and premium build at just 1.25 kg; QHD webcam and clear mic setup are great for video calls; No dongle required; wide port selection covers basics

CONS

Not suitable for gaming or heavy graphics work; Arc 130V is limited; No memory upgrade option; RAM is soldered; Speakers lack punch despite good clarity; Recall feature rollout paused; Microsoft plans secure opt-in relaunch

snappy and responsive. Boot times are near-instant, apps launch quickly, and multitasking is smooth, even with multiple browser tabs, media playback, and a couple of productivity tools running in the background. Everyday tasks like browsing, video calls, and light editing don't faze it. Even some AI features like live captions and background blur during video calls run effortlessly without heating up or draining the battery too fast. That said, occasional app compatibility hiccups pop up with older software, especially ones not yet optimized for ARM. But, the overall experience is fluid and dependable. ■

Bottomline: The Swift 14 AI is a quiet, capable laptop with great battery, a vivid OLED screen, and AI-ready hardware. A smart pick for work and study, but not built for gaming.

ASUS

ExpertCenter P5

PC

Price: ₹26,990 + Taxes

The ASUS ExpertCenter P5 (P500) doesn't chase trends, and that's a good thing. At a time when even business PCs are trying to look like gaming rigs or creative powerhouses, this one sticks to basics and does them well. It's clearly built with a purpose: to be reliable, quiet, and easy to maintain. Whether it's a school, office, startup, or even a home workspace that demands long hours of dependable performance, this desktop is designed to sit quietly under the desk and handle the load without fuss. No RGB, no gimmicks, just practical hardware in a compact, office-friendly form factor. And if you're someone who values a solid machine over bells and whistles, the P500 makes a strong case.

▼ Design That Stays Out of the Way

You won't find RGB lighting or wild design curves here. The P500 looks like your typical office tower: black, boxy, and serious. But look closer and you'll notice solid build quality. The case is compact enough to fit under most desks and has a nice grip on airflow, thanks to the side vents and internal layout.

There are ports aplenty up front, including USB-C, USB-A, and audio jacks—making life easier when plugging in peripherals.

▼ Performance: Steady and Strong

Our review unit came with a 13th Gen Intel Core i5, 16GB DDR4 RAM, and a 512GB SSD. For everyday business use—think web apps, spreadsheets, video calls, and multitasking—it doesn't miss a beat. It handles loads well and stays quiet under pressure. There's no high-end GPU here, so this isn't for creative professionals or gamers, but for finance, admin, education, or IT roles? Spot on.

Boot times are fast, and navigating through Windows 11 is smooth. There's room for upgrades, too—RAM slots, an extra drive bay, and a PCIe slot if your workload grows.



SCORE

Overall: **8/10**PRICE: **8/10**PERFORMANCE: **9/10**FEATURES: **8/10**

KEY SPECS

CPU: Intel Core i7-13620H (10-core, 16-thread, 95W); **GPU:** Intel UHD Graphics (optional RTX A400 or RTX 3050); **RAM:** Up to 64GB DDR5 (2x SO-DIMM); **Storage:** Dual M.2 PCIe Gen 4 and one 3.5-inch SATA bay; **Cooling:** Triple heat pipe with 90mm PWM fan; **Noise:** As low as 24 dB (Silent Mode); **Connectivity:** USB-C, DisplayPort, HDMI, Wi-Fi 6, Bluetooth 5.4; **Security:** TPM 2.0, NIST BIOS compliance, McAfee+ 1-year; **Durability:** MIL-STD-810H certified; **Power Supply:** 180W Bronze or 330W Platinum; **Operating System:** Windows 11 Pro, Home, or Free DOS

PROS

Small footprint (15L, 6 kg) with quiet operation; Strong productivity performance and cooling; Built-in AI tools like transcription and live subtitles; MIL-STD-810 certified with tool-free access and upgrade options

CONS

Integrated graphics are not ideal for heavy 3D work; AI features run via CPU, with no separate NPU onboard

▼ Cooling and Noise

You'd expect some fan noise from a machine this compact, but ASUS has done a neat job with cooling. The airflow design keeps temperatures under control without sounding like a jet engine. Even after hours of use, it stays cool and quiet—ideal for conference calls or focused work.

▼ Security and Reliability

ASUS throws in some business-focused features—firmware TPM, Kensington lock support, and an easy-to-access tool-less chassis. The build feels sturdy, and ASUS backs it with military-grade durability claims. It's clearly made to run long hours without complaint. ■

Bottomline: A compact, quiet, and capable business PC built for reliable productivity and efficient AI-assisted tasks.

UBON

Gold Edition SP-70 Deluxe Portable Speaker

Price: ₹1,499

If your playlist is ready but your speaker isn't, the Ubon Gold Edition SP-70 Deluxe might be the quick fix you're after. It's not going to headline a rave, but for ₹1,499, it gets the job done—and then some.

▼ Looks Simple, Feels Solid

First impression? Surprisingly decent. The SP-70 Deluxe doesn't scream budget. It's made from ABS plastic with a matte finish that doesn't attract fingerprints or feel flimsy. Ubon added a metallic grille upfront that does more than just look cool—it protects the dual 45mm drivers and adds a touch of flair.

It's light enough to throw in your bag and tough enough to survive that "oops" moment when it slips off the table. It blends in nicely with home setups or park outings. No gimmicks, just clean design.

▼ All the Ways to Plug In

This speaker's got options. Bluetooth v5.3 handles your wireless needs without random dropouts. But if you're feeling old school (or your friend refuses to pair their phone), there's also Aux, USB, TF card support, and even FM radio.

Range holds up around 10 meters. That's enough to walk around the house with your phone in your pocket while the speaker stays put. Switching between modes is easy, and you won't need to fight with any clunky menus.

▼ Sound That Knows Its Limits

Let's talk performance. The SP-70 Deluxe isn't trying to shake the windows, but it sounds clean. Vocals come through clearly, and instruments don't get lost in the mix.

Bottomline: The Ubon Gold Edition SP-70 Deluxe is a solid pick for casual listeners who want decent sound without spending big. It's compact, easy to carry, and good enough for small parties or solo sessions. If you aren't chasing heavy bass, it delivers exactly what you need at this price.

PORTABLE SPEAKER

SCORE

PRICE: **9/10**PERFORMANCE: **7/10**FEATURES: **8/10****Overall: 8/10**

KEY SPECS

Loudspeaker Frequency Range 302Hz~435 KHz; Audio Noise Ratio >= 60dB; Battery Capacity 2000mAh; Playtime Up to 6 hours (moderate use); Charging Time 2 Hours; Audio Inputs 3.5mm Aux, USB, TF Card; Wireless Range 10 meters

PROS

Compact and easy to carry; Decent sound quality for casual listening; Good battery life at moderate volumes; Multiple connectivity options (Bluetooth, Aux, USB, TF Card, FM); Affordable price

CONS

Bass output could be better; Build is sturdy but not premium

There's bass, but not the kind that makes your neighbors hate you.

If your playlists lean more chill than club, you'll be happy. Classic rock, lo-fi beats, even soft EDM—it handles most genres well at moderate volumes. Max it out, and you'll hear the limits, but for casual listening, it does the trick.

The SP-70 Deluxe isn't trying to overdeliver—it just shows up and works. Good enough sound, flexible connectivity, and a build that doesn't feel cheap. That's a win at this price.

It's not built for bass heads or audio snobs. It's for students, casual listeners, or anyone who wants their music to follow them without following them into debt.

▼ Battery: Mostly True to the Promise

Ubon says six hours, but here's the deal. At full blast, you'll get just over three hours. Keep the volume around 60%, and you can cruise past five hours comfortably.

Charging is no-frills. Plug in the Type-C cable, wait two hours, and you're good to go again. No fast charging, but no weird delays either. ■

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