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Quantum computing made measurable progress toward real-world use in 2025

By Skye Jacobs , December 28, 2025

TL;DR: In 2025, quantum computing moved from theory toward tangible impact. From government programs to startup projects, the industry demonstrated that usefulness is no longer hypothetical. Progress is now measured by real performance milestones, signaling that practical quantum applications are becoming a visible, achievable goal.



China's 6G surface could convert enemy radar beams into power for stealth jets

By Aman Tripathi, December 30, 2025

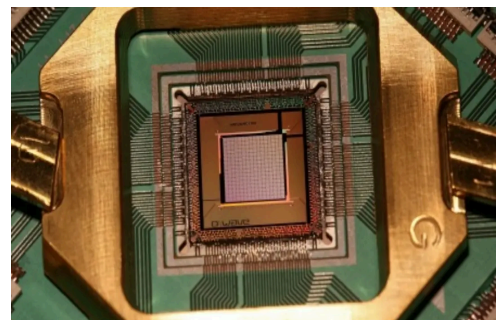
Researchers in China have reportedly developed a smart electromagnetic surface capable of converting ambient electromagnetic waves into electrical power. This development represents an integration of electromagnetic engineering and communication principles.



US scientists make Josephson junction using only one superconductor instead of two

By Ameya Paleja, December 30, 2025

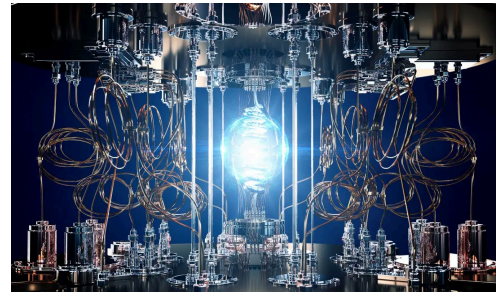
Researchers at the University of Buffalo could add a 'superconducting' twist to magnetic hard drives and random access memories (RAMs) after succeeding in building a Josephson junction using only one superconductor instead of two. The achievement could unlock new, simpler, and more flexible quantum designs in the future.



[Russia builds 72-qubit quantum computer prototype with 94% two-qubit accuracy](#)

By Ameya Paleja, December 30, 2025

Researchers at the Russian state Atomic Energy Corporation Rosatom and Lomonosov Moscow State University have developed a prototype three-zone quantum computer with 72 qubits. This is the third time Russian researchers have unveiled a quantum computer prototype with over 70 qubits, local media reported.



[China's Type 076 assault ship spotted staging combat drones for catapult launch](#)

By Aamir Kholam, December 30, 2025

High-resolution images emerging from Shanghai have revealed China's most tangible step yet toward ship-based unmanned combat aviation. Photos taken at the Hudong-Zhonghua shipyard show multiple low-observable drone airframes positioned dockside near the People's Liberation Army Navy's new Type 076 amphibious assault ship, Sichuan.



[Elon Musk envisions humanoid robots everywhere. China may be the first to make it a reality](#)

By Fridas S., December 30, 2025

Billionaire Elon Musk has put humanoid robots in the spotlight this year, positioning them as central to Tesla's valuation, which he thinks could hit tens of trillions of dollars. But Tesla is yet to sell its flagship humanoid robot Optimus.



[Oversonic Robotics Partners with STMicroelectronics to Integrate RoBee Humanoid Robots into Semiconductor Manufacturing](#)

By Prakash Mishra, December 30, 2025

Oversonic Robotics, an Italian leader in cognitive humanoid robotics, has signed an agreement with STMicroelectronics, a global semiconductor giant, to integrate custom RoBee cognitive humanoid robots into the production and logistics operations at several ST plants worldwide.



[2025 Nobel Prize Recognises Macroscopic Quantisation, Paving Way for Quantum Computers and Sensors](#)

By Rohail T., December 29, 2025

The fundamental laws governing quantum mechanics, traditionally observed at the atomic level, recently expanded to encompass the behaviour of larger, macroscopic systems, a breakthrough recognised with the 2025 Nobel Prize in Physics. John Clarke, John Martinis, and Michel Devoret receive the award for their discovery of macroscopic mechanical tunnelling and energy quantisation in an electric circuit, achievements that promise to revolutionise technologies ranging from computing to sensing.



News Articles

Spectrum plan unveiled for next-gen networks

● DoT releases NFAP-2025 for 5G, 6G services

OJASVI GUPTA
New Delhi, December 30

INA MOVE to pave the way for capacity expansion in 5G, 5G-Advanced and future 6G networks, Department of Telecommunications (DoT) has identified the 6425-7125 MHz band, commonly referred to as the upper 6 GHz band for International Mobile Telecommunications (IMT).

The National Frequency Allocation Plan 2025 (NFAP-2025), released by DoT on Tuesday defines the road map for future spectrum usage by all national authorities ranging from the telecom and space departments to information and broadcasting and defence ministries.

The NFAP 2025, effective from December 30, seeks to cover the allocation of radio-



FUTURE ROADMAP

- DoT has identified the 6425-7125 MHz band, commonly referred to as the upper 6 GHz band for International Mobile Telecommunications
- Move reflects bids by Jio, Airtel, Vi to secure large contiguous blocks of 6 GHz spectrum
- Tech Amazon, Apple, Cisco, Meta, HPE & Intel wrote to TRAI saying the mobile ecosystem for 6GHz isn't ready yet and that TRAI should reconsider the allocation
- The 6GHz band have so far been considered crucial for both Wi-Fi 7 & future 6G mobile tech

frequency spectrum to various radio-communication services from 8.3 kHz to 3000 GHz.

"It serves as an essential reference for spectrum managers, wireless operators, and telecom equipment manufacturers," DoT said in the release.

The move reflects bids by major carriers including Reliance Jio, Bharti Airtel and Vodafone Idea (Vi) to secure large contiguous blocks of 6 GHz spectrum for licensed mobile broadband, arguing that the full 1,200 MHz range (5925-7125 MHz) should be made available for IMT to

support high-capacity services and avoid future "spectrum crunches."

However, tech majors like Amazon, Apple, Broadcom, Cisco, Meta, Hewlett Packard Enterprise and Intel had recently written to The Telecom Regulatory Authority of India (TRAI) saying the mobile ecosystem for 6GHz is not yet ready. They had asked TRAI to reconsider allocating the upper 6 GHz band to mobile services and instead preserve it, or portions of it for unlicensed Wi-Fi use and other low-power applications, citing concerns over

technical readiness for cellular deployment in the band.

The 6GHz band have so far been considered crucial for both Wi-Fi 7 and future 6G mobile technology.

In May 2025, DoT had issued draft rules proposing to delicense 500 MHz of spectrum in the 6 GHz band (5925-6425 MHz) for low-power indoor Wi-Fi use for enabling the rollout of Wi-Fi 6E and Wi-Fi 7 devices. At present, Wi-Fi services operate on around 700 MHz of unlicensed spectrum across the 2.4 GHz and 5 GHz bands.

TRAI's new norms to allow foreign SIMs in IoT devices

OJASVI GUPTA
New Delhi, December 30

TELECOM REGULATORY AUTHORITY of India (TRAI) has recommended a separate regulatory framework to permit the import and sale of foreign telecom operators' SIM and eSIM cards in India for use in machine-to-machine (M2M) and IoT devices that are meant for export, seeking to unlock the market potential for Indian exporters and importers operating in the segments.

TRAI has recommended for regulation to occur through a light-touch service authorisation under the Telecommunications Act, 2023, terming the new service as "International M2M SIM Service Authorisation".

Source: Financial Express Newspaper, 31-12-2025
Page No 03

Link: <http://epaper.financialexpress.com/4100202/Mumbai/DECEMBER-31-2025#page/5/2>

'AI is the centrepiece of every major IT firm's growth strategy'

Indian IT is strategically repositioning for an AI-driven future, leveraging its vast talent pool and focusing on high-margin AI-led services, aiming to maintain its global leadership in technology services. According to Nasscom president Rajesh Nambiar, AI is set to dominate the IT sector in 2026, with technology firms anticipating increased IT budgets and widespread AI project adoption. In this interview, he speaks to Sudhir Chowdhary on the key trends and IT sector outlook. Excerpts:

What's fuelling India's IT sector growth? What were the key trends in 2025?
In 2025, global strategic realignment has accelerated,

and India's technology industry has responded by steadily deepening its role across the global technology value chain. Across services, GCCs, and startups, there was a sharper and more sustained focus on next-generation technologies such as generative AI, agentic AI, and cybersecurity. Indian startups made notable progress in building sovereign AI capabilities, multilingual models, and deeptech solutions that address both domestic priorities and global market needs, strengthening India's innovation credibility beyond services alone. This shift has been most visible in the evolution of GCCs. India GCCs are now

driving value for not just the parent organisations but also innovating as a separate entity, driving revenue, creating jobs and innovating through AI led capabilities. Equally important, talent and skilling remained central across the industry.

What's your assessment of AI and automation maturity within Indian IT firms today?

Largely, the conversation has shifted from "what can

GenAI do?" to "where does GenAI genuinely move the needle?" That is a healthy sign. We are seeing companies reassess use cases, prioritise deeper integration over cosmetic wins, and set more realistic expectations with their boards. Spending on AI readiness has increased. Enterprises in the last one year (as of CY2024) are

spending more than 10% of their digital budget on AI. If we look at the September quarter, every major firm outlined AI as the centrepiece of its growth strategy; co-developing AI-embedded cloud and digital solutions with clients; building sovereign AI data centres in India to strengthen data residency and trust and advancing agentic AI platforms that enable autonomous, contextual decision-making.

What are the key demand drivers and investment priorities right now?
2026 is

shaping up as a year of selective acceleration rather than broad-based expansion. Enterprises are expected to remain disciplined on spend, but demand will be resilient and increasingly concentrated around technologies that deliver measurable productivity, resilience, and business outcomes. As cost pressures persist globally, enterprises will prioritise investments that compress time-to-value, reduce operating costs, and improve decision quality.

This places AI, particularly GenAI and emerging agentic AI systems, at the centre of technology investment, as organisations move from pilots to scaled deployment across functions such as software engineering,

operations, customer experience, finance, and supply chains. Cybersecurity and trust frameworks will remain non-negotiable, especially as AI adoption expands attack surfaces and regulatory scrutiny intensifies.

How is India's tech sector strengthening its preparedness for 2026?

Nasscom along with the industry is working closely with governments and global partners to diversify delivery models, deepen engagement in priority markets through our country councils, and align with evolving regulatory and policy frameworks. At the same time, the sector is investing heavily in capability-building for the next wave of technology.

How will India leverage frontier technologies and advance responsible AI governance?

It cannot be a single lever, be it technology, partnerships, or policy, working in isolation. India's approach has always been anchored in capability building, collaboration, and trust. As frontier technologies such as AI, advanced computing, semiconductors, and next-generation digital systems continue to evolve, the focus is on moving from adoption to sustained capability creation through national policy-led initiatives, industry-led platforms, GCC-driven innovation, and a growing deeptech startup ecosystem.

ENTERPRISES HAVE ALLOCATED MORE THAN 10% OF THEIR DIGITAL BUDGETS TO AI OVER THE PAST YEAR



Source: Financial Express Newspaper, 31-12-2025
Page No 04

Link: <http://epaper.financialexpress.com/4100202/Mumbai/DECEMBER-31-2025#page/5/2>

RIL unveils plan for affordable AI

CORE PROCESSES SUCH as procure-to-pay, order-to-cash, hire-to-retain and plant-to-plant will be re-engineered to eliminate manual handoffs, close “digital breaks” and enable real-time visibility and decision-making.

“This is not a technology project. This is a new way of working,” he said. AI and agentic automation, he added, will be used to remove friction, cut repetitive manual effort and improve the quality and speed of decisions, while retaining clear human accountability. “It is not about replacing people. It is about raising standards and releasing our organisation’s collective potential.”

A common 12-layer digital functional core blueprint will standardise data, integration, security and controls across the group, while allowing individual businesses ownership of their platforms. Govern-



nance, audit trails and human-in-the-loop controls will be embedded by design to ensure that faster execution and greater autonomy do not compromise safety, compliance or trust.

Execution will be driven by small, cross-functional “pods” with single ownership and clearly measurable goals. These teams will move from experimentation to scaling and then stable operations,

supported by continuous data, operations, governance, learning and automation flywheels.

Ambani said the same logic of AI-led productivity could be applied beyond the group. “Just as we can drive a 10x improvement in velocity, efficiency, quality and outcomes by AI-transforming our workflows, we can also achieve a 10x impact on India through our businesses and philanthropic initiatives,” he said. The manifesto invites employees to contribute ideas on deploying AI across Reliance’s portfolio, ranging from telecom and retail to energy, materials, life sciences, financial services, media and philanthropy. Ambani pointed to the potential to leverage platforms such as Reliance Jio, with over 500 million subscribers, and the country’s largest retail network to expand AI access and adoption

at scale.

He also flagged opportunities in AI-powered discovery of new materials, green energy solutions, healthcare and education breakthroughs, and more inclusive financial services. Indigenous AI hardware, robotics and energy-efficient systems were highlighted as areas where Reliance could contribute to technological self-reliance while improving efficiency and sustainability.

The group’s philanthropic arm, Reliance Foundation, will also be part of the push, with Ambani asking how AI could further enhance its work in healthcare, education, rural transformation, disaster mitigation, culture and conservation.

Ambani has invited employees to submit suggestions between January 10 and January 26, after which the manifesto will be finalised.

Source: Financial Express Newspaper, 31-12-2025

Page No 10

Link: <http://epaper.financialexpress.com/4100202/Mumbai/DECEMBER-31-2025#page/5/2>



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