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समाचार पत्रों से चयनित अंश

Newspapers Clippings

डीआरडीओ समुदाय को डीआरडीओ प्रौद्योगिकियों, रक्षा प्रौद्योगिकियों, रक्षा नीतियों, अंतर्राष्ट्रीय संबंधों और विज्ञान एवं प्रौद्योगिकी की नूतन जानकारी से अवगत कराने हेतु दैनिक सेवा

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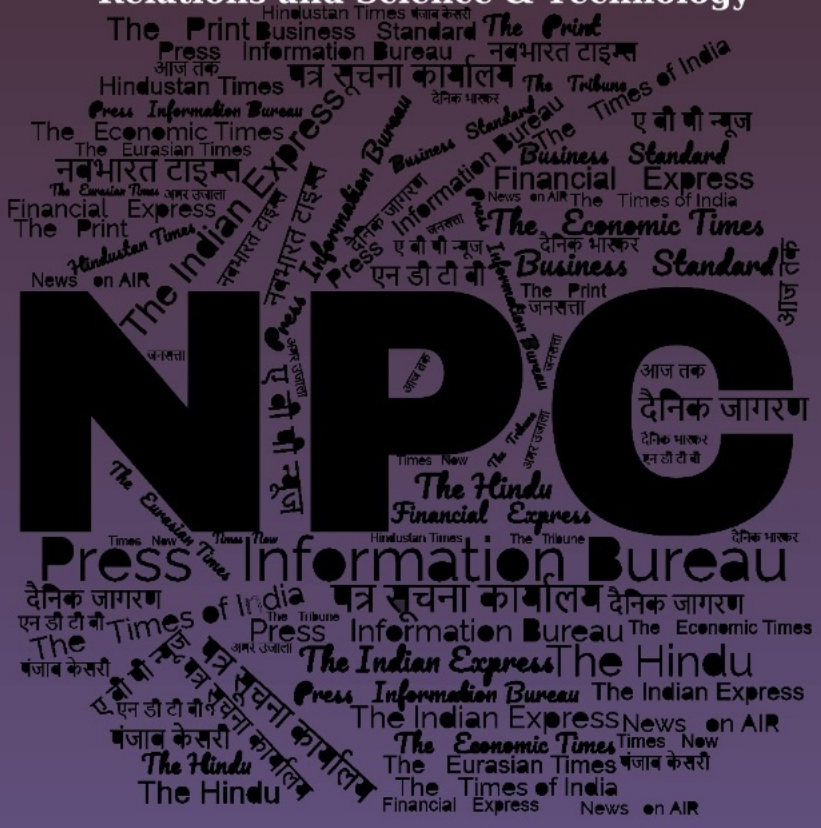

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Defence News

Border Threats

Source: The Statesman, Dt. 31 Jul 2025

On July 25, the Defence Research and Development Organisation successfully conducted flight trials of the UAV-Lau – nched Precision Guided Missile (ULPGM)-V3 at the National Open Area Range (NOAR) in Kurnool, Andhra Pradesh.

Defence Minister Rajnath Singh, in a congratulatory post on X, stated, “Indian industry is now ready to absorb and produce critical defence technologies.” On the other hand, there are concerning reports that state and non-state actors from our neighbourhood are using drones to smuggle drugs and weapons into India. The surge in cross-border drone activity along the Punjab border highlights a growing threat of narco-terrorism, posing serious risks to national security and public safety. Just as the machine gun changed the face of warfare in the early 20th century,drones or Unmanned Aerial Vehicles (UAVs) represent one more tragic turning point ~ this time demanding urgent international action in the form of a comprehensive UN treaty.

If Alexander the Great had drones, he could have aimed his charge precisely at the enemy’s weak point, seeing it clearly from above instead of taking a risk. Then he might have lost the very claims to heroism that made him great. Centuries later, drones ~ initially used for intelligence gathering in the 1990s ~ played a decisive role in the 2020 Armenia-Azerbaijan conflict, tipping the war in favour of the latter. The ongoing Ukraine-Russia war has taken this to a new level. A recent report on “Operation Spiderweb” reveals how Ukraine’s military has deployed so many small, cheap drones to inflict heavy losses on Russia’s high-end fighter jets worth billions. These low-tech systems, often assembled from commercial components, have emerged as powerful asymmetric weapons.

The India-Pakistan scenario ~ involving two nuclear armed rivals ~ carries even higher stakes. Any miscalculation or drone-driven escalation could have catastrophic global consequences. From the

alleged deployment of hundreds of drones by Pakistan targeting critical Indian infrastructure, to retaliatory strikes by India on Pakistani air defenses, the skies above the subcontinent are becoming increasingly congested with unexpected actors. The use of sophisticated Israeli- and Turkish-made drones alongside potentially weaponized commercial models highlights both the accessibility and versatility of this technology. The implications of this drone proliferation are multifaceted. Firstly, drones offer a de – ceptively low-cost, low-human risk tool for asymmetric warfare.

Pakistan's reported large-scale deployment exemplifies this potential ~ attempting to overwhelm Indian defenses with a swarm of flying objects. This could lower the threshold for initiating conflict and trigger a dangerous cycle of retaliation. Secondly, the ambiguity surrounding drone attacks poses a significant risk of miscalculation and unintended escalation. Unlike traditional military engagements, drone strikes can be shrouded in secrecy, making attribution challenging. In volatile contexts like that of India and Pakistan, where mutual suspicion already runs deep, this lack of transparency can easily lead to misinterpretations.

The integration of Artificial Intelligence and machine learning promises greater autonomy, potentially leading to systems capable of identifying and engaging targets with minimal or no human intervention. Without clear international norms and prohibitions, we risk allowing machines to dictate the terms of conflict ~ and the human lives involved. While existing International Humanitarian Law theoretically applies to drone warfare, the unique characteristics of this technology necessitate a more specific and robust legal framework. In December 2024, the United Nations General Assembly adopted Resolution 79/L.77 on Lethal Autonomous Weapons Systems (LAWS), with support from 166 countries.

LAWSbroadly refer to weapons such as advanced drones which select targets and apply force without human instruction. The resolution decided to convene open informal consultations in 2025 to consider the UN Secretary-General's report on LAWS, following a meeting of the Group of Governmental Experts. These consultations are to be open to all Member States, observer States, international and regional organizations, the Red Cross, and civil society – including the scientific community and industry.

The Secretary-General, António Guterres, has called for a legally binding instrument by 2026, one that prohibits LAWS without human control and regulates others. The report expressed serious concern that LAWS, by lowering the threshold for the use of force, could increase the frequency and intensity of conflicts, precipitate humanitarian crises, and even lead to an arms race ~ as the risk of military casualties for the user state is reduced. The Convention on Certain Conventional Weapons (CCW) remains a key forum, but some States argue it is slow, proposing the General Assembly as a more inclusive and responsive platform.

As systems become less expensive to develop, concerns about their proliferation among both state and non-state actors (e.g., terrorists) are increasing. Virtual Planet Africa emphasizes the need for safeguards to prevent such proliferation. 'Stop Killer Robots' ~ a coalition of approximately 270 civil society organizations ~ emphasizes urgency, citing the risks of automated killing and digital dehumanization. 'The Women's International League for Peace and Freedom' warns that LAWS could also enable gender-based violence, including programm ed sexual violence or the targeting of men as presumed militants. An informal UN meeting in New York on May 12 considered a "two-tiered" approach with both prohibitions on certain types of LAWS and regulations on others.

Drones are the equivalent of making the soldier invisible, effectively allowing nations to wage war without soldiers on the front lines.The rapid proliferation of drones, as seen in conflicts like Ukraine-Russia and India-Pakistan, underscores their deadly impact on warfare. The UN's push for a 2026 Treaty on Lethal Autonomous Weapons Systems is critical, aiming to ban systems without human control and regulate others. Without swift global action, the unchecked spread of drones ~ accessible to states and nonstate actors alike ~ threatens escalated conflicts, humanitarian crises, and even programmed atrocities. However, 2026 may be too late. A robust, inclusive treaty is urgent to govern this lawless sky.

https://www.thestatesman.com/opinion/border-threats-1503464746.html

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समुद्री सहयोग को मजबूत करेगा भारत और संयुक्त अरब अमीरात

Source: Punjab Kesari, Dt. 31 Jul 2025

नई दिल्ली, (पंजाब केसरी): भारत और संयुक्त अरब अमीरात के बीच समुद्री सहयोग को मजबूत करने की दिशा में एक महत्वपूर्ण कदम उठाते हुए, भारतीय तटरक्षक बल और संयुक्त अरब अमीरात राष्ट्रीय रक्षक कमान ने सुरक्षा पर कैबिनेट समिति द्वारा अनुमोदित समुद्री सुरक्षा और संरक्षा सहयोग पर समझौता ज्ञापन पर हस्ताक्षर करके एक सहयोगात्मक ढाँचे में प्रवेश किया। यह मील का पत्थर समुद्री हितों में बढ़ते अभिसरण को दर्शाता है और आइ.सी.जी की समुद्री कूटनीति और परिचालन आउटरीच में एक बड़ा कदम है। भारत और संयुक्त अरब अमीरात के बीच 13वीं संयुक्त रक्षा सहयोग समिति की बैठक के दौरान महानिदेशक परमेश शिवमणि, महानिदेशक भारतीय तटरक्षक बल और ब्रिगेडियर स्टाफ खालिद ओबैद थानी अल शम्सी, तटरक्षक समूह, संयुक्त अरब अमीरात के कमांडर द्वारा महामहिम की उपस्थिति में समझौता ज्ञापन पर हस्ताक्षर किए गए। स्टाफ लेफ्टिनेंट जनरल इब्राहिम नासिर अल अलावी, अवर सचिव, रक्षा मंत्रालय, संयुक्त अरब अमीरात (प्रतिनिधिमंडल के प्रमुख) और श्री राजेश कुमार सिंह, रक्षा सचिव ने आज नई दिल्ली में मुलाकात की।

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India, UAE agree to elevate defence ties

Source: The Hindu, Dt. 31 Jul 2025

India and the United Arab Emirates (UAE) reaffirmed their commitment to strengthening bilateral defence cooperation during the 13th India-UAE Joint Defence Cooperation Committee (JDCC) meeting, held at the Secretary level for the first time, in New Delhi on Wednesday (July 30, 2025).

The two sides agreed to elevate defence ties to match the growing momentum in areas such as trade, investment, and social relations, the Defence Ministry said in a statement.

The meeting was co-chaired by Defence Secretary Rajesh Kumar Singh and the UAE's Under Secretary of Defence, Lieutenant-General Ibrahim Nasser M. Al Alawi, who is leading a high-level defence delegation on a two-day visit to India.

The two sides agreed to enhance military training cooperation and discussed their respective training requirements. India offered to provide customised training courses tailored to the UAE's needs. They also agreed to cooperate on maritime security through real-time information sharing, the Defence Ministry said.

Both countries agreed to pursue joint manufacturing initiatives, including models similar to the collaboration between ICOMM (India) and CARACAL(UAE) for small arms production. The potential for co-developing next generation defence technologies in emerging areas such as artificial intelligence was also discussed, alongside opportunities in shipbuilding, refits, upgrades, and maintenance of common platforms, the Ministry added.

The Indian Coast Guard (ICG) and the United Arad Emirates National Guard Command (UAE NGC) signed a memorandum of understanding (MoU) on maritime security and safety cooperation.

In the run-up to the JDCC meeting, India and the UAE held the fourth Army-to-Army, ninth Navy-to-Navy, and the inaugural Air-to-Air Staff talks from July 28 to 29. These deliberations focused on enhancing military exercises, training, and subject matter expert exchange.

India and the UAE share a robust and growing defence relationship, underpinned by the Comprehensive Strategic Partnership established during Prime Minister Narendra Modi's landmark visit to the UAE in 2015. India's upcoming participation in the Dubai Air Show in November is set to further reinforce this momentum.

https://www.thehindu.com/news/national/india-uae-agree-to-elevate-defence-ties/article69874550.ece

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Industry needs to focus on primary ammunition ingredients: Defence Production Secretary

Source: The Economic Times, Dt. 31 Jul 2025

Indian companies have not been able to focus on producing primary ingredients that are required for manufacturing ammunition and there is an urgent need to generate capacities that can cater not only for domestic requirements but export orders as well, a top defence ministry official said on Wednesday.

In an address to leading ammunition manufacturers of the country, secretary defence production Sanjeev Kumar said that after interaction with both public and private sector companies in May, it was realised that there was not adequate focus on making primary ingredients.

The official was referring to a series of meetings that the defence ministry held with defence companies in the lead up and aftermath to Operation Sindoor in May, during which options to surge production and provide expedited deliveries to the armed forces were discussed. "When we interacted with the private sector and also public sector during the month of May, then one thing I realised (was) that many of us are not able to concentrate the focus on the primary ingredients which are required in manufacturing of ammunition," Kumar said at a seminar organised by the PHD Chamber of Commerce and Industry.

He added that the reason for this could be the gestation period required to set up such capacities as well as the large capital expenditure required. The official said that relying on the capacity of defence public sector units, like Munitions India Limited, is also not fruitful, as they also do not have adequate capabilities as of now.

"So we need to equally concentrate on the entire value chain of the ammunition, right from the ingredients which are necessary to make propellant, and also the primer or the explosives, so that we can meet the emerging need of not only our country, but also elsewhere," Kumar said, referring to the potential of exports. He asked the industry to work on creating capacities that can be used to surge production when needed, making the point that in the current geopolitical context, it is imperative to be self-reliant.

https://economictimes.indiatimes.com/news/defence/industry-needs-to-focus-on-primary-ammunition-ingredients-defence-production-secretary/articleshow/123004255.cms?from=mdr

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Trump's Russian arms import jibe fires blanks

Source: The Economic Times, Dt. 31 Jul 2025

US President Donald Trump flagged import of Russian weapons by India as he announced a publishing tariff rate but numbers clearly show that New Delhi has been drastically cutting its reliance on Moscow in the past decade and has even walked away from major deals, including joint development of fifth generation fighter jets and transport aircraft.

Over the past decade, India's import bill from Russia for arms has steadily come down - with Russia accounting for 72 percent of imports in 2010-14 to just about 36 percent in 2020-2024. At the same time, domestic production of arms has gone up sharply, with a 174 percent jump since 2014 as several private sector entities have entered the market.

The cutting down of Russian weapons imports has also benefitted countries like the US, Israel and France as their exports to India have increased. The US in particular has managed several big ticket sales to India, including MQ9B drones, P8I maritime aircraft and the Apache and Chinook helicopters.

In fact, the last deal for a major new Russian weapon system was signed in 2019 for the production of AK 203 assault rifles in India. The $680 million contract is however dwarfed by orders to American entities like General Dynamics which got orders for drones worth $3.9 billion in October last year and General Electric (GE) that got engine orders worth $ 720 million in 2021.

India has also over the past decade walked away from several major co development projects with Russia, as it looked to diversify suppliers and get access to cutting edge technology. This includes the joint development of a fifth generation fighter aircraft and a new generation Medium Transport Aircraft. Yet another plan to co produce a light helicopter has also been put in cold storage.

On the other hand, joint development efforts with the US are on the rise under initiatives like the INDUS X and ICET that have identified several areas like maritime domain awareness, space and autonomous systems as priority areas.

https://economictimes.indiatimes.com/news/economy/foreign-trade/trumps-russian-arms-import-jibe-fires-blanks/articleshow/123005008.cms?from=mdr

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Despite Trump's latest threat, India can't decouple from Russian military equipment

Source: The Tribune, Dt. 31 Jul 2025

AJAY BANERJEE
TRIBUNE NEWS SERVICE

NEW DELHI, JULY 30

The threat of US penalties notwithstanding, it would be near impossible for India to decouple itself from Russian-origin military equipment.

New Delhi's war-machine is majorly parented from Russia. This includes large fleets of fighter jets, tanks, rifles, helicopters and the S-400 air defence system, besides the partnership for the BrahMos missile, which proved its efficacy during Operation Sindoor.

The US and its European allies often accuse India and China of buying crude oil and military equipment from Russia, which in turn funds the war machine against Ukraine.

US President Donald Trump today said India would not just face 25 per cent tariff, but also penalties for buying weapons and oil from Russia. He posted on social media platform Truth Social "they (India) have always bought a vast majority of their military equipment from Russia, and are Russia's largest buyer of energy...India will therefore be paying a tariff of 25%, plus a penalty for the above starting August 1".

Though Trump blamed India for buying 'a majority of military equipment from Russia', New Delhi also purchased military equipment from the US that, so far, has been a buyer-seller relationship. Despite spending almost $20 billion in purchases in the past decade and a half, India has not gotten technology transfer from the US on any major equipment. This includes, General Electric F 404 engines, surveillance plane Boeing P8-I, transport planes C-17 and C-130J, helicopters, such as Chinook, Apache and MH60R.

Russia is more amenable to India's demands of technology transfer. Russia has a joint venture to produce the BrahMos in India; a majority of Sukhoi 30 MKI jets were produced in India by Hindustan Aeronautics Limited; T-90 tanks are produced at a factory near Chennai while AK 203 Rifle is made at a facility near Lucknow.

HURDLES TO RAPID TRANSITION

- An estimated 60-70% of India's current military inventory is of Russian or Soviet origin. This creates a significant logistical and operational hurdle to any rapid transition
- India armed forces and their maintenance, repair, and overhaul ecosystem, including manufacturing facilities under licence, a well-trained workforce are deeply ingrained in institutional knowledge of Russian platforms

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Army to organise ‘Surya Dronathon’ in Spiti valley

Source: The Tribune, Dt. 31 Jul 2025

The Surya Command of the Indian Army, in collaboration with the Drone Federation of India, is set to host the Surya Dronathon 2025, a pioneering drone competition that will bring together talented freelancers and Original Equipment Manufacturers (OEMs) from across the country.

This innovative event is scheduled to take place at Sumdo in Lahaul and Spiti, where participants will face one of the highest drone obstacle courses in the country, situated at an altitude of 10,700 ft.

The competition will feature multiple stages, including Obstacle Negotiation, Endurance Race etc. The competition will be held in two phases — phase 1 from August 10 to 15 and phase 2 from August 20 to 24. The last date for registration is August 1. A spokesperson for the Indian Army said the Surya Dronathon aims to harness cutting-edge indigenous technology and foster a robust ecosystem of innovation in the defence sector, aligning with the vision of “Atmanirbhar Bharat” and the Indian Army’s quest for technological advancement.

“The key objectives of the competition include promoting indigenous research, development, and manufacturing of advanced drone systems within India, identifying next-generation solutions to address current and future operational requirements, and fostering collaboration between the Army, individual innovators, startups and established defence manufacturers,” the spokesperson added.

https://www.tribuneindia.com/news/himachal/army-to-organise-surya-dronathon-in-spiti-valley/

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Indigenous Hovercraft Construction for ICG Begins at Chowgule Shipyard

Source: Press Information Bureau, Dt. 30 Jul 2025

The Indian Coast Guard (ICG) has kicked off construction of its first indigenously built Air Cushion Vehicle (ACV) with the Girder Laying and Commencement of Erection ceremony at Chowgule &

Company Pvt. Ltd. in Goa, on July 30, 2025. The hovercraft, based on proven Griffon Hoverwork designs, are being built with Indian expertise to suit varied coastal security operations. Once inducted, the ACVs will provide enhanced speed, tactical flexibility, and shallow-water operability, enabling swift response for patrolling, interdiction, and search and rescue missions across India's vast maritime frontier.

The ceremony which marks a major step towards strengthening India's maritime response capabilities was held in the presence of Deputy Director General (Materiel & Maintenance), ICG Inspector General Sudhir Sahni. This follows a contract signed with the Ministry of Defence on October 24, 2024 for six ACVs, underscoring ICG's drive towards operational self-reliance under the Aatmanirbhar Bharat initiative.

https://www.pib.gov.in/PressReleasePage.aspx?PRID=2150049

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Ins Satpura Arrives In Singapore For SIMBEX-25

Source: Press Information Bureau, Dt. 30 Jul 2025

Indian Naval Ship Satpura has arrived at Singapore to participate in the 32nd edition of the Singapore-India Maritime Bilateral Exercise (SIMBEX-25), marking yet another chapter in the strong and enduring maritime partnership between the Indian Navy and the Republic of Singapore Navy (RSN).

The exercise, a hallmark of the deep-rooted naval cooperation between the two nations, commenced with the Harbour Phase, which includes Subject Matter Expert Exchanges (SMEEs), professional interactions, and operational-level discussions. These engagements are designed to share best practices, align doctrines, and conduct deck familiarisation visits onboard participating ships — RSN Vigilant and RSN Supreme.

These activities reaffirm the growing professional synergy and strategic trust between the two navies, in line with India's vision of 'MAHASAGAR' and the Act East Policy, which emphasises robust engagement with neighbour countries. Day 2 of SIMBEX-25 features an official Opening Ceremony, followed by a pre-sail conference. During this conference, the participating naval contingents will hold discussions on the upcoming sea phase of the exercise.

The Sea Phase of SIMBEX-25 — the cornerstone of the bilateral maritime engagement — will witness execution of a comprehensive array of advanced naval operations. These include Air defence exercises, Cross-deck helicopter operations, Precision targeting with surface and aerial platforms, Complex maneuvering drills Visit, Board, Search, and Seizure (VBSS) operations. These exercises aim to enhance interoperability and operational coordination, while reinforcing a shared commitment to maritime security and regional stability in the Indo-Pacific. SIMBEX continues to be a testament to the strong naval ties between India and Singapore, showcasing mutual respect, professionalism and a common vision for a secure and rules-based maritime order.

https://www.pib.gov.in/PressReleasePage.aspx?PRID=2150265

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सेना प्रमुख ने मणिपुर में सुरक्षा की समीक्षा की

Source: Jansatta, Dt. 31 Jul 2025

सेना प्रमुख जनरल उपेंद्र द्विवेदी ने बुधवार को मणिपुर में सुरक्षा स्थिति की समीक्षा की। अधिकारियों के मुताबिक जनरल द्विवेदी ने राज्य में असम राइफल्स और सेना की परिचालन तत्परता का आकलन किया। उन्होंने बताया कि जनरल द्विवेदी को मणिपुर में जमीनी हालात और क्षेत्र में शांति एवं सुरक्षा सुनिश्चित करने के लिए चल रही पहलों के बारे में भी जानकारी दी गई। रक्षा मंत्रालय ने कहा कि जनरल उपेंद्र द्विवेदी ने परिचालन तैयारियों का आकलन करने तथा सैन्य-नागरिक सहयोग बढ़ाने के लिए मणिपुर का दौरा किया। उन्होंने सैनिकों की व्यावसायिकता और दृढ़ता की सराहना की। सेना प्रमुख ने राज्यपाल से भी मुलाकात की और शांति एवं विकास के लिए सहयोगात्मक प्रयासों की पुष्टि की। जनरल द्विवेदी के साथ एक दिवसीय दौरे में सेना की पूर्वी कमान के कमांडर समेत वरिष्ठ अधिकारी भी मौजूद थे।

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Gen Dwivedi on Manipur visit, reviews op readiness

Source: The Asian Age, Dt. 31 Jul 2025

Indian Army Chief Gen. Upendra Dwivedi, on Wednesday undertook a day-long visit to Manipur to review the prevailing security situation and operational readiness of Assam Rifles and army formations deployed in the state.

During his visit, Gen. Dwivedi was briefed on ground conditions and ongoing initiatives aimed at ensuring peace and security. He reviewed the operational preparedness of troops and lauded their high standards of professionalism, resilience and dedication under challenging circumstances.

Gen. Dwivedi also called on the governor of Manipur, Ajay Kumar Bhalla and discussed matters pertaining to security and development. The meeting highlighted the collaborative efforts between civil administration and armed forces in fostering peace and progress in the region.

"The visit underlined the Indian Army's steadfast commitment to stability and development in the region," said senior officials.

Army chief was also scheduled to witness a match of the 134th edition of the Durand Cup at Khuman Lampak Stadium, marking the tournament's return to Imphal after two years.

The ceremony preceding the match will feature a vibrant cultural programme and military displays, showcasing Manipur's rich heritage and the pride of the Armed Forces.

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Science & Technology News

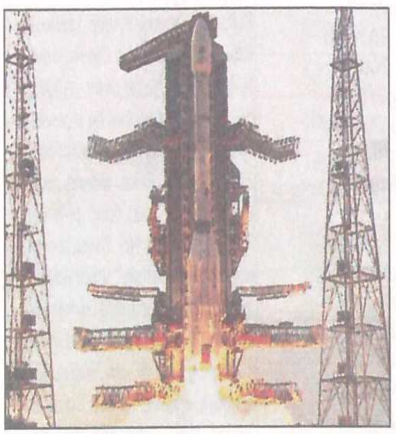
भारत-अमेरिका अंतरिक्ष सहयोग की नई उड़ान, पृथ्वी की कक्षा में पहुंचा 'निसार'

Source: Jansatta, Dt. 31 Jul 2025

जनसत्ता ब्यूरो
नई दिल्ली, 30 जुलाई।

भारतीय अंतरिक्ष अनुसंधान संगठन (इसरो) और अमेरिकी अंतरिक्ष एजंसी नासा के बीच साझेदारी के तहत बुधवार को जीएसएलवी राकेट से 'निसार' उपग्रह को कक्षा में स्थापित कर दिया गया। 'निसार' पृथ्वी अवलोकन उपग्रह को दोनों अंतरिक्ष एजंसियों द्वारा संयुक्त रूप से विकसित किया गया है।

इसरो के जीएसएलवी एफ-16 ने लगभग 19 मिनट की उड़ान के बाद और लगभग 745 किलोमीटर की दूरी पर निसार (नासा-इसरो सिंथेटिक एपर्चर रडार) उपग्रह को सूर्य तुल्यकालिक ध्रुवीय कक्षा (एसएसपीओ) में स्थापित कर दिया। इसरो ने कहा कि जीएसएलवी ने निसार को निर्धारित कक्षा में सफलतापूर्वक स्थापित कर दिया। बुधवार की यह उपलब्धि 18 मई को पीएसएलवी-सी61/ईओएस-09 मिशन की असफलता के बाद आई है, जिसमें इसरो का पीएसएलवी त्रुटि के चलते पृथ्वी अवलोकन उपग्रह को वांछित कक्षा में पहुंचाने में विफल रहा था। इसी प्रकार के उपग्रहों- रिसोर्ससैट और रीसैट शृंखला, जो परिचालनात्मक रूप से भारत पर केंद्रित थे, को सफलतापूर्वक प्रक्षेपित करने के बाद, इसरो 'निसार' मिशन के माध्यम से पृथ्वी ग्रह के अध्ययन की यात्रा पर निकल पड़ा है।



जीएसएलवी-एस16 राकेट की लंबाई 51.7 मीटर है। जीएसएलवी एफ-16 राकेट ने 27.30 घंटे की उलटी गिनती के बाद 2,393 किलोग्राम वजनी उपग्रह को लेकर उड़ान भरी। चेन्नई से लगभग 135 किलोमीटर पूर्व में स्थित सतीश धवन अंतरिक्ष केंद्र के दूसरे प्रक्षेपण स्थल से प्रक्षेपण यान ने उड़ान भरी। राकेट से अलग होने के बाद, वैज्ञानिक उपग्रह को संचालित करने का काम शुरू करेंगे, जिसमें उसे स्थापित करने और मिशन के उद्देश्यों को पूरा करने में कई दिन लगेंगे।

इसरो के अनुसार, एस-बैंड रडार प्रणाली, डेटा हैंडलिंग और हाई-स्पीड डाउनलिंक प्रणाली, अंतरिक्ष यान और प्रक्षेपण प्रणाली भारतीय अंतरिक्ष एजंसी द्वारा विकसित की गई हैं। एल-बैंड रडार प्रणाली, 'हाई-स्पीड डाउनलिंक' प्रणाली, सालिड स्टेट रिकार्डर, जीपीएस रिसीवर, 9 मीटर बूम होइस्टिंग और 12 मीटर रिफ्लेक्टर, अमेरिकी अंतरिक्ष एजंसी नासा द्वारा प्रदान किए गए हैं। इसरो ने कहा कि इसके अलावा, इसरो उपग्रह की कमान और संचालन के लिए जिम्मेदार है। नासा कक्षा

संचालन योजना और रडार संचालन योजना प्रदान करेगा। निसार मिशन को प्राप्त तस्वीरों को डाउनलोड करने के लिए इसरो और नासा दोनों के जमीनी केंद्र से सहायता मिलेगी, जिन्हें आवश्यक प्रसंस्करण के बाद उपयोगकर्ता तक प्रसारित किया जाएगा। इस दौरान एक ही प्लेटफार्म से एस-बैंड और एल-बैंडआर के माध्यम से प्राप्त डेटा से वैज्ञानिकों को पृथ्वी पर हो रहे परिवर्तनों को समझने में मदद मिलेगी। मिशन का उद्देश्य अमेरिका और भारत के वैज्ञानिक समुदायों के साझा हित के क्षेत्रों में भूमि और हिमनद की गतिविधियों, भूमि पारिस्थितिकी तंत्र और महासागरीय क्षेत्रों का अध्ययन करना है।

'निसार' का मिशन जीवनकाल पांच वर्ष है। नासा ने कहा कि 'निसार' मिशन से प्राप्त डेटा सरकारों और निर्णयकर्ताओं को प्राकृतिक और मानव-जनित खतरों के लिए योजना बनाने में महत्त्वपूर्ण जानकारी प्रदान करेगा। 'निसार' खतरों की निगरानी के प्रयासों में मदद कर बाकी पेज ४ पर

सकता है और संभावित रूप से निर्णयकर्ताओं को संभावित आपदा के लिए तैयारी करने के लिए अधिक समय दे सकता है। रडार उपग्रह धरती की भूमि और बर्फ का 3डी दृश्य उपलब्ध कराएगा। उपग्रह डेटा उपयोगकर्ताओं को भूकम्प और भूस्खलन संभावित क्षेत्रों पर लगातार नजर रखने और यह निर्धारित करने में सक्षम बनाएगा कि हिमनद कितनी तेजी से पिघल रही हैं। उपग्रह से हिमालय और अंटार्कटिका जैसे क्षेत्रों में वनों में होने वाले बदलाव, पर्वतों की स्थिति या स्थान में बदलाव और हिमनद की गतिविधियों सहित मौसमी परिवर्तनों का अध्ययन किया जा सकेगा। 'निसार', नासा या इसरो द्वारा प्रक्षेपित अब तक की सबसे उन्नत रडार प्रणाली है। यह उनके द्वारा प्रक्षेपित किसी भी पूर्व पृथ्वी उपग्रह की तुलना में अधिक डेटा प्रदान करेगी। निसार के डेटा से शोधकर्ताओं को यह आकलन करने में मदद मिलेगी कि समय के साथ वन, आर्द्रभूमि, कृषि क्षेत्र किस प्रकार बदलते हैं।

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India launches NASA-ISRO earth observation satellite

Source: The Hindu, Dt. 31 Jul 2025

ISRO's launch vehicle GSLV-F16 carrying the NISAR earth observation satellite lifts off from the launch pad at the Satish Dhawan Space Centre, in Sriharikota, Andhra Pradesh, on July 30, 2025.

NASA-ISRO Synthetic Aperture Radar (NISAR) satellite was successfully launched on Wednesday (July 30, 2025) from the Satish Dhawan Space Centre at Sriharikota in Andhra Pradesh. The

Geosynchronous Satellite Launch Vehicle (GSLV)-F16 rocket carrying the earth observation satellite lifted off from the second launch pad of the space centre at 5.40 p.m. Eighteen minutes later, it injected the satellite into a sun-synchronous orbit. “The GSLV-F16 vehicle has successfully and precisely injected the NISAR satellite weighing 2,392 kg into its intended orbit,” Indian Space Research Organisation (ISRO) Chairman V. Narayanan said after the launch.

First joint venture

The NISAR, which has a mission life of five years, is the first satellite jointly developed by the ISRO and the U.S.’s National Aeronautics and Space Administration (NASA). Casey Swails, Deputy Associate Administrator at NASA, said NISAR will give decision-makers the tools to monitor critical infrastructure, respond faster and smarter to natural disasters such as earthquakes, floods, and landslides, as well as map farmland to improve crop output and more.

24-hour data

The NISAR satellite will scan the earth and provide all-weather, day-and-night data at 12-day intervals, and enable a wide range of applications. “NISAR can detect even small changes on the earth’s surface, such as ground deformation, ice sheet movement, and vegetation dynamics.

Further applications include sea ice classification, ship detection, shoreline monitoring, storm characterisation, changes in soil moisture, mapping and monitoring of surface water resources, and disaster response," the ISRO stated. NASA said that mission controllers for the NASA-ISRO NISAR mission had received full acquisition of signal from the spacecraft.

NISAR is the first satellite to observe the earth with a dual-frequency Synthetic Aperture Radar (SAR) — NASA's L-band and ISRO's S-band — both using NASA's 12-metre unfurlable mesh reflector antenna, integrated with ISRO's modified I3K satellite bus.

It will observe earth with a swathe of 242 km and high spatial resolution, using SweepSAR technology for the first time. According to NASA officials, its Jet Propulsion Laboratory (JPL) built the radar antenna reflection, radar antenna boom, L-Band SAR and engineering payload, while the ISRO developed the spacecraft bus, solar array S-band SAR and the launch vehicle.

The NISAR mission is broadly classified into different phases – launch, deployment, commissioning and science phases. The launch phase has been accomplished with the launch of the GSLV-F16 rocket. During the deployment phase, a 12-metre reflector antenna will be deployed in orbit nine metres away from the satellite by a complex multistage deployable boom.

The deployment process will begin on the 10th day after the launch. This will be followed by the commissioning phase.

"The first 90 days after launch will be dedicated to commissioning, or in-orbit checkout, the objective of which is to prepare the observatory for science operations. Commissioning is divided into sub-phases of initial checks and calibrations of mainframe elements followed by JPL engineering payload and instrument checkout," the ISRO said.

The final science operations phase begins at the end of commissioning and extends till the end of NISAR's five-year mission life.

"During this phase, the science orbit will be maintained via regular manoeuvres, scheduled to avoid or minimise conflicts with science observations. Extensive calibration and validation activities will take place," the ISRO said. This is the first time that a GSLV has put a satellite in a sun-synchronous polar orbit.

Relief to ISRO

The successful launch of the NISAR comes as a relief to the ISRO as it had suffered back-to-back setbacks. Its previous launch, the PSLV-C61/EOS-09 mission on May 18, 2025 could not be accomplished due to a technical glitch. The space agency also suffered a setback with the NVS-02 satellite, which was launched by a GSLV on January 29, 2025.

Post launch, the ISRO was unable to perform the intended orbit-raising operations for the NVS-02 satellite due to a valve malfunction.

https://www.thehindu.com/sci-tech/science/gslv-f16-with-nisar-satellite-onboard-lifts-off-from-sriharikota/article69873660.ece#goog_rewarded

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हर 12 दिन में धरती का मानचित्र बनेगा निसार

Source: Dainik Jagran, Dt. 31 Jul 2025

- भारत-अमेरिका अंतरिक्ष सहयोग की उड़ान शुरू, 19 मिनट में अपनी कक्षा में पहुंचा
- पूरी धरती पर नजर रखेगा इसरो व नासा की ओर से विकसित उपग्रह, दुनिया का सबसे महंगा मिशन
- जीएसएलवी एफ-16 ने 19 मिनट की उड़ान के बाद 745 किलोमीटर की दूरी पर उपग्रह को स्थापित किया, अनुमानित लागत 1.5 अरब डालर

श्रीहरिकोटा, प्रेट्र : भारतीय अंतरिक्ष अनुसंधान संगठन (इसरो) और अमेरिकी अंतरिक्ष एजेंसी नासा की साझेदारी से बुधवार को जीएसएलवी राकेट के जरिये निसार उपग्रह को कक्षा में स्थापित किया गया। यह उपग्रह 240 किमी चौड़े रडार क्षेत्र का उपयोग करके हर 12 दिन में धरती का मानचित्र बनाएगा, जिससे विज्ञानियों व आपदा प्रतिक्रिया एजेंसियों को हिमालय में ग्लेशियरों से लेकर दक्षिण अमेरिका में संभावित भूस्खलन क्षेत्रों तक हर चीज पर नजर रखने के लिए डाटा उपलब्ध होगा। यह पूरी धरती पर नजर रखेगा।

इसरो के जीएसएलवी एफ-16 ने 19 मिनट की उड़ान के बाद 745 किलोमीटर की दूरी पर निसार उपग्रह को सफलतापूर्वक सूर्य समकालिक ध्रुवीय कक्षा (एसएसपीओ) में स्थापित किया। इसरो के अध्यक्ष वी नारायणन ने कहा कि बुधवार का मिशन कथित तौर पर दुनिया का सबसे महंगा मिशन था, जिसकी अनुमानित लागत 1.5 अरब डालर थी। इसके अलावा यह सूर्य समकालिक ध्रुवीय कक्षा के लिए पहला जीएसएलवी मिशन भी था। अब तक सभी जीएसएलवी मिशन जियोसिंक्रोनस ट्रांसफर आर्बिट (जीटीओ) में ही गए हैं। सभी प्रणालियों का प्रदर्शन अपेक्षा के अनुरूप सामान्य रहा।

श्रीहरिकोटा से बुधवार को निसार सेटेलाइट के साथ प्रक्षेपित जीएसएलवी-एफ16 राकेट ● रायटर

आपदा से निपटने को मिलेगा अधिक समय

नासा ने कहा कि निसार से प्राप्त डाटा सरकार और प्रशासन को प्राकृतिक और मानव-जनित खतरों से निपटने के लिए योजना बनाने में महत्वपूर्ण इनपुट मुहैया कराएगा। निसार खतरे की निगरानी के प्रयासों में मदद कर सकता है और संभावित रूप से प्रशासन को संभावित आपदा से निपटने के लिए तैयारी करने हेतु अधिक समय दे सकता है।

भूकंप व भूस्खलन संभाव्य क्षेत्रों की निगरानी

निसार उपग्रह पृथ्वी की भूमि और बर्फ का 3-डी तस्वीरें प्रदान करेगा। यह उपग्रह डाटा यूजरों को भूकंप व भूस्खलन संभावित क्षेत्रों की निरंतर निगरानी करने में सक्षम बनाएगा कि ग्लेशियर व बर्फ की चादरें कितनी तेजी से बदल रही हैं।

भूमि और बर्फ के बदलाव पर रहेगी नजर

इसरो के अनुसार, इस मिशन का प्राथमिक उद्देश्य अमेरिकी और भारतीय विज्ञानी समुदाय के साझा हित के क्षेत्रों में भूमि और बर्फ के बदलाव, भूमि पारिस्थितिकी तंत्र और समुद्री क्षेत्रों का अध्ययन करना है।

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'Two-eyed' NISAR satellite will scan every piece of Earth

Source: The Times of India, Dt. 31 Jul 2025

The NASA-ISRO Synthetic Aperture Radar (NISAR) programme cost the US and India over $1.5 billion. But there is an important question to be asked: What was the need for such a huge investment when hundreds of earth observation satellites are already in space? The answer is that the world had never developed a dual-frequency band satellite.

NISAR has two synthetic aperture radars of different bands that will operate in tandem. It will be a 'satellite with two eyes in space" keeping a hawk's eye on the Earth and scanning every piece of our planet for minute details.

"Our planet surface undergoes constant and meaningful change. Some change happens slowly. Some happens abruptly. Some changes are large, while some are subtle," Karen St Germain, director of Nasa's Earth Science division, explained. Calling NISAR "the most sophisticated radar we've ever built and a model for the next generation of Earth-observation capabilities", Germain said, "We'll see land substance and swelling, movement, deformation and melting of mountain glaciers and ice sheets covering both Greenland and Antarctica, and, of course, we'll see wildfires".

Congratulating Isro and Nasa, space minister Jitendra Singh called the NISAR mission a “game changer in precise management of disasters”.

The L-band SAR, provided by Nasa, uses higher wavelength microwaves and can penetrate tree cover for vegetation, sand and ice. It will capture minute details of surface undulations and see through dense forest cover. The S-band SAR, provided by Isro, which has a shorter wavelength, will capture larger features like crop fields and water bodies.

L-band and S-band SARs together will provide a comprehensive picture of the observed area — generating detailed imagery that is not possible even by integrating data of two separate satellites with different bands. Putting two radars of different bands on the same satellite was therefore the biggest engineering challenge for both Nasa and Isro, which they finally managed to overcome, though it took them 10 years to develop the 2,392-kg marvel.

Equipped with a 12-metre dish that will unfold in space, NISAR will record nearly all of Earth's land and ice twice every 12 days from an altitude of 747 km.

By picking up tiny changes in the vertical movement of the Earth's surface — as little as 1 cm (0.4 inches) — scientists will be able to detect precursors to natural and human-caused disasters, from earthquakes, landslides and volcanoes to aging infrastructure like dams and bridges.

The data from NISAR will be turned into three-dimensional maps that will not only help scientists and policymakers respond to natural disasters but also assist farmers by monitoring soil moisture and crop growth.

Indian space industry representative Anil Prakash, DG, SatCom Industry Association (SIA-India), hailed the NISAR mission and Indo-US space collaboration. "The successful Nasa-Isro collaboration on the $1.5 billion NISAR mission marks a defining moment in global space diplomacy. It brings together cutting-edge American L-band SAR systems and India’s expertise in engineering, integration, and cost-effective launch capability via GSLV-F16,” Prakash said. "Isro’s contribution, including the S-band radar, satellite bus, launch services, and mission operations, once again demonstrates India’s ability to build and deliver complex systems with remarkable reliability. With a legacy of over 400 international satellite launches, Isro has emerged not just as a collaborator, but as a co-architect of next-generation Earth science missions,” he added.

https://timesofindia.indiatimes.com/india/two-eyed-nisar-satellite-will-scan-every-piece-of-earth/articleshow/123005655.cms

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Scheme to Incentivise R&D in Private Sector

Source: Press Information Bureau, Dt. 30 Jul 2025

On July 1, the Union Cabinet approved the Research, Development, and Innovation (RDI) Scheme to incentivize private sector participation in research and development (R&D).

The Government of India is already actively implementing a range of Flagship initiatives such as the Atal Innovation Mission, the National Supercomputing Mission, and the India Semiconductor Mission laid the early groundwork for a robust innovation ecosystem for manufacturing and advanced technology development. Building on this foundation, newer programs like the National Quantum Mission, the India AI Mission, and the National Green Hydrogen Mission reflect the government’s strategic intent to lead in next-generation technologies.

A new RDI scheme has a total outlay of ₹1 lakh crore over 6 years. Technology sectors of strategic importance have been identified under the RDI Scheme. These include energy security, climate action, and deep technologies such as quantum computing, artificial intelligence, biotechnology, and the digital economy. The scheme also covers sectors critical for strategic and economic security, with the flexibility to include additional sectors based on approval from the Empowered Group of Secretaries (EGoS). The nature of financing under this scheme includes long-term loans (at low or no interest), equity financing, and contributions to the Deep-Tech Fund of Funds. Grant financing and short-term loans are not envisaged under the scheme.

A Special Purpose Fund (SPF) under the Anusandhan National Research Foundation (ANRF) will serve as the Level 1 Fund Custodian. Implementation will be carried out by Second-Level Fund Managers (SLFMs), including Alternate Investment Funds (AIFs), Development Finance Institutions (DFIs), Non-Banking Financial Companies (NBFCs), and Focused Research Organizations (FROs), such as BIRAC, TDB, and IIT Research Parks, with approval from the Empowered Group of Secretaries (EGoS).

The scheme is intended to finance RDI projects with transformative potential at TRLs 4 and above, avoid overlap with the ANRF, and allow for the acquisition of strategically important technologies. However, the financing excludes next-generation R&D labs, RDI financing for government entities, and short-term loans. Financing will be limited to a maximum of 50% of the project's assessed cost, with the remaining funds arranged by the project proponent. In exceptional types of projects/sectors, the financial limit for government share in financing can be relaxed with the approval of the EGoS.

The Department of Science & Technology is the nodal agency for the scheme. Oversight and governance are provided by the Governing Board of ANRF, while the EGoS, Executive Council (EC), and Investment Committees (ICs) are responsible for sector approvals, fund manager selection, project evaluation, and overall performance review.

The Department of Science and Technology (DST) held extensive consultations with over 10,000 stakeholders, including experts from academia, industry, start-ups, and the research community during the Post-Budget Webinar. Subsequently, several follow-up meetings were conducted with industry personnel, financial institutions, and subject-matter experts to deepen the deliberations and incorporate sector-specific inputs. These consultations were aimed at gathering diverse perspectives to inform the formulation and implementation process. A report has also been prepared based on the recommendations received during the Post-Budget Webinar. Furthermore, inter-ministerial coordination and discussions were undertaken in consultation with the Department of Economic Affairs (DEA).

The relevant guidelines are currently under formulation and will be finalized in consultation with the Department of Economic Affairs (DEA) and the Department of Expenditure (DoE).

A total amount of ₹20,000 crore has been allocated for the Financial Year 2025–26.

This information was given by Dr. Jitendra Singh, Union Minister of State (Independent Charge) for Science and Technology, Earth Sciences, MoS PMO, MoS Personnel, Public Grievances & Pensions, Department of Atomic Energy and Department of Space, in a written reply in the Lok Sabha today.

https://www.pib.gov.in/PressReleasePage.aspx?PRID=2150124

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Research, Development And Innovation Scheme

Source: Press Information Bureau, Dt. 30 Jul 2025

On July 1, the Union Cabinet approved a Research, Development and Innovation (RDI) Scheme. The scheme has a total outlay of ₹1 lakh crore over 6 years, with ₹20,000 crore allocated for FY 2025–26. Technology sectors of strategic importance have been identified under the RDI Scheme. These include energy security, climate action, and deep technologies such as quantum computing, artificial intelligence, biotechnology, and the digital economy.

The scheme also covers sectors critical for strategic and economic security, with the flexibility to include additional sectors based on approval from the Empowered Group of Secretaries (EGoS). The nature of financing under this scheme includes long-term loans (at low or no interest), equity financing, and contributions to the Deep-Tech Fund of Funds. Grant financing and short-term loans are not envisaged under the scheme.

A Special Purpose Fund (SPF) under the Anusandhan National Research Foundation (ANRF) will serve as the Level 1 Fund Custodian. Implementation will be carried out by Second-Level Fund Managers (SLFMs), including Alternate Investment Funds (AIFs), Development Finance Institutions (DFIs), Non-Banking Financial Companies (NBFCs), and Focused Research Organizations (FROs), such as BIRAC, TDB, and IIT Research Parks, with approval from the Empowered Group of Secretaries (EGoS).

The Department of Science & Technology (DST) is the nodal agency for the scheme. Oversight and governance are provided by the Governing Board of ANRF, while the EGoS, Executive Council (EC), and Investment Committees (ICs) are responsible for sector approvals, fund manager selection, project evaluation, and overall performance review.

Funding under the scheme is intended only for projects that have achieved a certain level of technological maturity — specifically, Technology Readiness Level (TRL) 4 and above, and allow for the acquisition of strategically important technologies. However, the financing excludes next-generation R&D labs, RDI financing for government entities, and short-term loans. Financing will be limited to a maximum of 50% of the project's assessed cost, with the remaining funds arranged by the project proponent. In exceptional types of projects/sectors, the financial limit for government share in financing can be relaxed with the approval of the EGoS.

This information was given by Dr. Jitendra Singh, Union Minister of State (Independent Charge) for Science and Technology, Earth Sciences, MoS PMO, MoS Personnel, Public Grievances & Pensions, Department of Atomic Energy and Department of Space, in a written reply in the Lok Sabha today.

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Virtual labs with AI scientists produce promising result

Source: The Asian Age, Dt. 31 Jul 2025

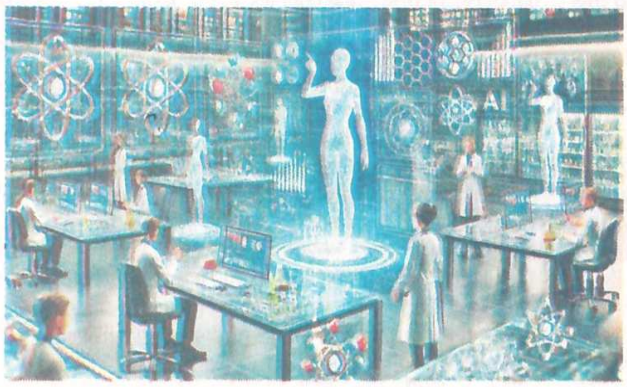
Stanford, July 30: Virtual scientists in a virtual lab at Stanford University are coming up with unorthodox ways to address clinical challenges, researchers reported on Tuesday in *Nature*.

The virtual lab is modelled after a well-established Stanford School of Medicine research group, complete with a principal investigator and seasoned scientists, the report says.

As in human-run research labs, the virtual lab has regular meetings during which agents generate ideas and engage in a conversational back-and-forth. They also have one-on-one meetings, allowing the virtual lab members to meet with the virtual principal investigator individually to discuss ideas.

Unlike human meetings, the virtual gatherings take a few seconds or minutes.

When humans tasked the virtual team with devising a better vaccine for the SARS-CoV-2 virus that causes Covid-19, they equipped the virtual scientists with tools and software to stimulate creative "thinking" skills.



The virtual scientists even created their own wish list.

"They would ask for access to certain tools, and we'd build it into the model to let them use it," study leader James Zou said in a statement.

Instead of opting for the usual vaccine design using an antibody, the AI team came up with using a nanobody, an antibody fragment that's smaller and simpler.

"From the beginning of their meetings, the AI scientists decided that nanobodies would be a more promising strategy," Zou said.

"They said nanobodies are typically much smaller than antibodies, so that makes the machine learning scientist's job much easier," Zou said. — *Reuters*

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