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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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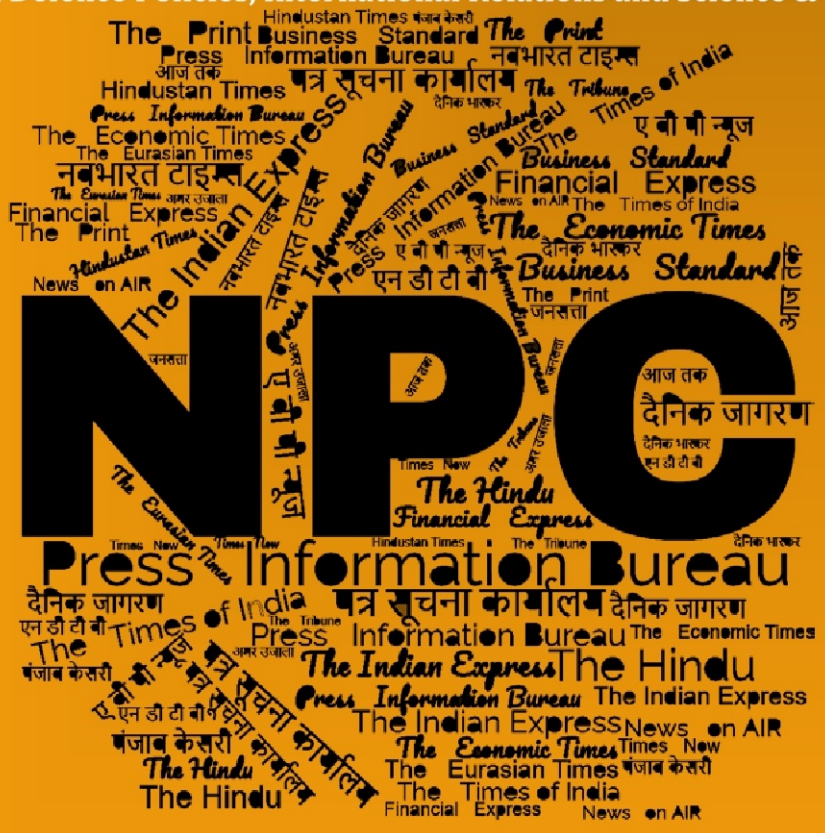

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Defence News

Defence Strategic: National/International

India, Malaysia to boost ties in defence production & AI

Source: The Times of India, Dt. 20 Feb 2025,
URL: https://timesofindia.indiatimes.com/india/india-malaysia-to-boost-ties-in-defence-production-ai/articleshow/118397474.cms

India and Malaysia on Wednesday decided to enhance cooperation in maritime security, defence production and multilateral engagements as well as in emerging areas like cybersecurity and AI. The 13th meeting of the Malaysia-India defence cooperation committee at Kuala Lumpur, co-chaired by defence secretary Rajesh Kumar Singh and his counterpart Lokman Hakim Bin Ali, held wide-ranging discussions on 'effective and practical initiatives' to further expand bilateral defence engagements as well as on regional and global issues.

The two sides also exchanged the finalized 'terms of reference (ToR)' on the establishment of a forum on the Russian-origin Sukhoi-30 fighters that both countries operate. As part of its policy to steadily enhance military ties with Asean countries, India has earlier trained Malaysian pilots to fly the Sukhoi-30 jets.

"The Sukhoi-30 forum will enable closer cooperation between the two air forces in exchanging expertise and best practices in the maintenance of the fighters. There is a growing bilateral defence cooperation between the armed forces of the two countries, with regular engagements in recent years," an official said. "The two sides identified ways to deepen existing defence collaboration, particularly in the industry, maritime security and multilateral engagements. They agreed to form a joint focus group to address non-traditional maritime security threats," the official added.

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Malaysia: Defence Secretary co-chairs 13th Malaysia-India Defence Cooperation Committee

Source: The Economic Times, Dt. 19 Feb 2025,
URL: https://economictimes.indiatimes.com/news/defence/malaysia-defence-secretary-co-chairs-13th-malaysia-india-defence-cooperation-committee/articleshow/118384434.cms

The 13th meeting of Malaysia-India Defence Cooperation Committee (MIDCOM) took place in Kuala Lumpur on Wednesday and was co-chaired by Defence Secretary Rajesh Kumar Singh and Secretary General of Ministry of Defence of Malaysia, Lokman Hakim Bin Ali, the Ministry of

Defence noted. Both of the sides expressed happiness at the growing bilateral defence cooperation with regular engagements between the two Armed Forces in recent years.

As per the Ministry of Defence, the two sides held wide-ranging discussions on effective & practical initiatives to further expand bilateral defence engagements and regional & global issues. Both chairs identified steps to further enhance cooperation in emerging areas such as cyber security and AI. They also identified ways to deepen the existing collaboration, particularly in the defence industry, maritime security, and multilateral engagements and agreed to form a joint focus group to address non-traditional maritime security threats.

India and Malaysia reaffirmed their commitment towards fully implementing the new initiatives under the defence pillar of Comprehensive Strategic Partnership, as envisioned by Prime Minister Shri Narendra Modi and his Malaysian counterpart Dato' Seri Anwar Ibrahim during the latter's visit to India in August 2024. In a significant development, both sides also exchanged the finalised ToR on the establishment of Su-30 forum as an outcome of MIDCOM. Su-30 Forum will enable closer cooperation between the two Air Forces in exchanging expertise and best practices in Su-30 maintenance.

According to the Defence Ministry, the Defence Secretary highlighted the capability of the Indian defence industry, particularly its potential to collaborate with the Malaysian companies and the Armed Forces in their capability enhancement and modernisation. He congratulated Malaysia on assuming the chairmanship of ASEAN and ASEAN Defence Ministers' Meeting-Plus and wished MoD, Malaysia the best for conduct of ADMM Plus and ASEAN Defence Senior Officials' Meeting meetings this year.

India supports ASEAN centrality and unity, which is a crucial element of India's Indo-Pacific Vision. The Defence Secretary reiterated India's support to Malaysia's endeavours as ASEAN chair in promoting a stronger, unified, and prosperous ASEAN that plays a central role in shaping the evolving dynamics of the Indo-Pacific region. India considers Malaysia as an important partner in the Indo-Pacific as Malaysia lies at the confluence of three key foreign policy visions i.e. Act East Policy, SAGAR (Security and Growth for All in the Region), and the Indo-Pacific Oceans Initiative.

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Third edition of India-Egypt Joint Special Forces exercise CYCLONE-III underway in Rajasthan

Source: The Economic Times, Dt. 19 Feb 2025,
URL: https://economictimes.indiatimes.com/news/defence/third-edition-of-india-egypt-joint-special-forces-exercise-cyclone-iii-underway-in-rajasthan/articleshow/118382618.cms

The third edition of the India-Egypt Joint Special Forces Exercise CYCLONE-III is underway at the Mahajan Field Firing Range in Rajasthan. The military drill which will take place for 14 days will continue till February 23 as per the Indian Army.

The participating troops from both sides are undergoing rigorous combat conditioning and tactical training aimed at strengthening joint operational capabilities. The Indian and Egyptian Special Forces continue to train hard, demonstrating exceptional discipline, teamwork and adaptability, the Indian Army noted.

Their unwavering commitment to operational excellence highlights their readiness to undertake joint missions in challenging environments. Exercise CYCLONE is an annual event conducted alternatively in India and Egypt. The last edition of the same exercise was conducted in Egypt in January 2024, the Ministry of Defence noted.

The Indian contingent comprising 25 personnel is being represented by troops from two Special Forces Battalions. Egypt contingent also comprising 25 personnel is being represented by Special Forces Group and Task Force of Egyptian Special Forces.

As per the Ministry of Defence, the aim of exercise CYCLONE is to promote military-to-military relationship between the two countries through the enhancement of interoperability, jointness and mutual exchange of special operations tactics. The exercise will focus on a high degree of physical fitness, joint planning and joint tactical drills.

Notably, the drills to be rehearsed during the exercise will include advanced special forces skills and various other tactics, techniques and procedures as per the current operational paradigm. The exercise will culminate in a 48-hour long validation exercise to rehearse and validate the tactical drills for counter-terrorism operations in desert/ semi-desert terrain. The exercise will also include a display of indigenous military equipment and an overview of the defence manufacturing industry for the Egyptian side, the Ministry of Defence observed.

Exercise CYCLONE will enable the two sides to share their best practices in tactics, techniques and procedures for conducting tactical operations and also facilitate the development of bonhomie and camaraderie between soldiers of both sides.

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HAL and DIAT forge partnership for advancing aerospace research

Source: The Economic Times, Dt. 19 Feb 2025,
URL: https://economictimes.indiatimes.com/news/defence/hal-and-diat-forge-partnership-for-advancing-aerospace-research/articleshow/118386401.cms

Hindustan Aeronautics Limited (HAL) on Wednesday said its nodal training institute, HAL Management Academy (HMA) has signed a Memorandum of Understanding (MoU) with the Defence Institute of Advanced Technology (DIAT) for collaboration in bridging the gap between industry and academia. The MoU with Pune based DIAT, an esteemed institution under DRDO, also aims at fostering cutting-edge research and driving technological advancements in the aerospace sector.

Under this partnership, HAL executives will have the opportunity to pursue master's and Ph D programmes at DIAT, participate in specialised capsule modules on emerging technologies and engage in faculty and student exchange programmes, the company said in a release.

The MoU also paves the way for joint conferences, seminars and collaborative research projects aimed at strengthening India's defence and aviation capabilities.

This strategic collaboration is set to drive innovation, accelerate skill development and create a robust ecosystem for next-generation aerospace solutions, reinforcing India's position as a global leader in aviation and defence technology, it added.

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Concerned over Pakistan Army, ISI presence in Bangladesh: Army Chief

Source: The Economic Times, Dt. 19 Feb 2025,
URL: https://economictimes.indiatimes.com/news/defence/concerned-over-pakistan-army-isi-presence-in-bangladesh-army-chief/articleshow/118388620.cms

Concerned over PakistIndia Army Chief General Upendra Dwivedi stated that he was concerned about the presence of Pakistan Army and ISI officials in Bangladesh areas close to India's Chicken's Neck area

Speaking to in an exclusive interview, General Dwivedi said that they must make sure that those anti-India elements must not be able to use that soil to send terrorists to India.

Recently, Pakistan army and ISI officials visited very sensitive areas near Indian border, near the chicken's neck in Bangladesh. When asked if he was concerned about this, the COAS replied in the affirmative.

"I had used the word epicentre of terrorism for a particular country (Pakistan). Now those countrymen, if they go to any other place and they happen to be our neighbor, as far as I am concerned, I should be concerned about it. That they should not be able to use that soil to send terrorists to India. That is as far as that is concerned," General Dwivedi said.

General Dwivedi said that the relations with the administration can be defined only if there is an elected government there.

"As far as the second setup is concerned that how is the administration, my stance is that when we have elected government, then we can say how should be our relationship," he told ANI.

Dwivedi said that the military relationship, however, is very strong with Bangladesh.

"But so the military relationship is concerned is very strong. And we are able to exchange notes whenever we want. And that's what we have been doing it," he said.

When General Dwivedi was asked if Pakistan has understood yet that Kashmir is a part of Indian territory, Dwivedi humourously gave an example of the movie, 'Guide', where a madman says that 'I won't eat until it rains'.

"See, they are stuck in their own words. There is a movie of Dev Anand Ji, I think Narayan Ji has written this book. Do you remember when Devanand Ji became a sadhu in the last? A madman went and announced that he will not have food until it rained. Now Pakistan Army once said that we have to do this. Now they don't have a way out of it. So they will continue to go for it, look, Kashmir, this is point number one. Second thing is, if you read the book, Revenge of Geography, written by Robert Kaplan, both sides of Indus, can they be one? That's a big question you have to see," he said.

Dwivedi further said that Pakistan's agenda is not limited to Kashmir only, and they are only fueling the anti-India stance.

"So, as far as they are concerned, the idea of India is their major criticality. It's not limited to Kashmir only. So to keep Pakistan together, you have to have one common agenda which can keep you together. Is the language same? Are the people same? What is same? Only anti-India stance. So therefore, Kashmir, they will keep hyping up at every point of time," he said.

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India, Saudi Arabia prepare for third 'Al-Mohed Al-Hindi' naval exercise

Source: Hindustan Times, Dt. 19 Feb 2025,
URL: https://www.hindustantimes.com/india-news/india-saudi-arabia-prepare-for-third-al-mohed-al-hindi-naval-exercise-101739960181054.html

India and Saudi Arabia are set to hold their third joint naval exercise among a range of steps to deepen bilateral defence relations, including capacity building and the first defence deal to supply artillery ammunition to the West Asian state, people familiar with the matter said.

The two sides held their first joint naval exercise – Al-Mohed Al-Hindi – in August 2021 and the second in May 2023, and preparations are underway for the third edition of the drill to be held soon, reflecting the steady growth of defence ties, the people said on condition of anonymity.

This comes after India's first defence contract with Saudi Arabia in February 2024, when state-run Munitions Indian Limited (MIL) inked a deal worth $225 million to supply artillery ammunition. This was followed by another deal worth $80 million for artillery ammunition last year, the people said.

"The amounts may be seen as small but India has been able to enter one of the world's markets for military equipment. These deals and the military exercise also reflect the growing recognition of India as a defence partner," one of the people cited above said.

They also pointed to the potential for synergy between New Delhi's 'Make in India' initiative and Riyadh's 'Vision 2030', which envisages the localisation of 50% of defence spending.

"Saudi Arabia is looking to diversify its defence supply chains. India is a good source, given our comfort with the West and our technical capabilities," the person said.

The joint naval exercises have strengthened the position of the Indian Navy, whose area of interest spans from the Strait of Hormuz to the Strait of Malacca, the people said. India and Saudi Arabia had agreed during Prime Minister Narendra Modi's visit to Riyadh in 2019 to focus on ways to secure waterways in the Indian Ocean and the Gulf from "threat and dangers that may affect the interests of the two countries".

India's defence relations with Saudi Arabia received a major boost in December 2020 when former Indian Army General MM Naravane visited Riyadh – the first such trip by an Indian service chief.

There are now regular exchanges of officers and cadets between the two sides for training programmes. For instance, about 80 Saudi naval cadets have trained at the Indian Navy's training establishments in Kochi for the past two years, the people said.

The former chief of the Royal Saudi Naval Forces, Lt Gen Fahd bin Abdullah Al-Ghufaili, became the first naval chief to visit India last year, and this was followed a month later by the first joint land force exercise – Ex-Sada Tanseeq I – in Rajasthan in February 2024.

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Don't Be F-35ed

- by Manmohan Bahadur, retired Air Vice Marshal

Source: The Times of India, Dt. 20 Feb 2025,
URL: https://timesofindia.indiatimes.com/toi-plus/defence-security/dont-be-f-35ed/articleshow/118393433.cms

There's a quick formula that helps keep feet firmly on the ground when a Westerner praises you. Slash the praise by half, evaluate remaining 50% for kernels of correct takes – the outcome is a reality check. That means keep aside compliments India received in Washington, and realistically evaluate Trump's offer of an arms sale – F-35 fighters – to New Delhi.

US pundits have several questions about F-35 fighters. But more important are geopolitical and strategic reasons to have a long think on Trump's offer.

There's a persistent belief among many Indians that US cannot be trusted as an all-weather friend, given the historical baggage of India-US relations. But that's not the point. No nation-state can be blindly trusted in geopolitical power plays. At the bargaining table, it's always each nation guarding its own interests, and turf.

Take Russia, for instance, India's 'accepted' bad-weather friend. The then USSR promptly looked the other way in 1962 when the Chinese attacked India because Moscow wanted Beijing on its side during the Cuban missile crisis. It's a different matter that Moscow came around later as our 'trusted' friend with the Indo-Soviet Friendship Treaty that stood us in good stead in the 1971 war.

Thereafter, it has been a dependable ally for India's armament requirements. The only catch was that, although reliable, Russian products were technologically inferior to Western ones. As a quid pro quo, India retained its neutrality, sidestepping repeated attempts to make us lean West.

French govts have been extraordinary merchants. With their independent stance vis-à-vis Americans and Nato, and no geopolitical ambitions in our part of the world, they sold their wares

to anyone who had the money. However, New Delhi has never received any niche technology from Paris – and they've been selling us defence ware since the 1950s.The British have been no saints – even as we bought their military hardware in the 1950s and 1960s, they teamed up with the Americans during the 1965 war by delaying wheat imports in those food scarcity years, in a bid to coerce New Delhi into arriving at an agreement with Pakistan on Kashmir.

America was a 'great friend' with economic aid in the early years following Independence. However, it twinned this with measures to 'balance' India by propping up Pakistan with aid and armoury. Islamabad was 'used' as long as it suited Washington's geopolitical need. It needed Pakistan as a buffer against Moscow's expansion into Afghanistan – only to be thrown out like the proverbial fly in a teacup on USSR's withdrawal.

After Pokhran II, US was the first country to impose wide-ranging sanctions on India. Restrictions on some select entities remain in force to this day. So, as op-ed columns reverentially note Trump's offer to sell F-35s, Stryker armoured vehicles etc, think, first, not of India's interests, but America's, because that's where US govt's coming from.

Why F-35? Might the delay attributed to 'supply chain issues' in the delivery of GE-F404 aero engines for India's vital Tejas programme – that caused Air Chief's outburst in AeroIndia – be as innocent as it is made out to be? Further, given that Americans take contractual agreements seriously, even the nine-month-and-counting wait for the supply of Apache attack helicopters for the army becomes suspect.

So, what should India do to safeguard its interests? As always, New Delhi is on its own even as the China-Pakistan nexus strengthens. Yes, Beijing has operationalised its fifth generation fighter and flown the next generation prototype. But wars are not going to be fought only with high-end, super-costly trinkets. Missiles and unmanned aerial vehicles are revolutionising warfare. India is doing reasonably well in these sectors.

However, knowing HAL's state of aircraft production, and the likely development trajectory of Tejas Mk2 and Advanced Medium Combat Aircraft (AMCA), some aircraft must be bought to tide over the immediate crisis of IAF's squadron depletion.

Europe, firmly in Trump's crosshairs, offers India with options. No country requires the numbers IAF does – 110 at a minimum. While our fifth generation AMCA is at least a decade away, the interim purchase need not be a small number of ultra-pricey F-35s, like the 36 Rafales we bought. Such an F-35 deal would mean getting too little after spending too much on a machine that would come with its cutting-edge avionics and radar denied to us. It would also, most likely, mean American end-user restrictions of F-35 utilisation vis-à-vis Russian radars deployed by India.

New Delhi has buyer's clout. It should flex that clout to purchase a 4.5 generation machine to make up the numbers urgently. Having done that, GOI should push HAL to deliver Tejas Mk2 and AMCA.

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MArG 45 mobile gun unveiled—A 'go-anywhere' beast with unmatched firepower

Source: The Week, Dt. 19 Feb 2025,
URL: https://www.theweek.in/news/defence/2025/02/19/marg-45-mobile-gun-unveiled-a-go-anywhere-beast-with-unmatched-firepower.html

Kalyani Strategic Systems Limited, a subsidiary of Bharat Forge, unveiled a mobile gun system, MArG 45, at the ongoing defence expo IDEX Abu Dhabi 2025.

MArG 45, mounted on a 4x4 all-terrain platform, boasts unmatched firepower as it can fire beyond 36 km using conventional ammunition.

Weighing 23.5 tonnes, MArG 45 carries 18 rounds with Zone 6 onboard, making it suitable for sustained operations. It is compatible with the NATO standards. With a firing rate of 10 rounds in 3 minutes and a sustained rate of 42 rounds in 60 minutes, it is a reliable and deadly weapon during combat. The custom-designed chassis of the gun helps it to be agile across different terrains.

The gun has an elevation range of -2° to +72° and a traverse of 25° left and right.

“This Mounted Gun Platform represents a significant leap in defense technology, showcasing our commitment to innovation and excellence. It is a testament to our capability to develop ‘Designed and Made in India’ most advanced artillery defence platforms,” Chairman & MD of Bharat Forge Baba Kalyani said.

According to a statement from Kalyani Group MArG 45 exemplifies the company's ingenuity in challenging conventions, integrating firepower, range, and mobility into a single, ground-breaking platform. Kalyani Group said MArG 45 is a “go-anywhere” gun which is built for rapid deployment and has superior manoeuvrability.

The unveiling of MArG 45 marks a significant milestone in mobile artillery, reinforcing Kalyani Group’s commitment to self-reliance and cutting-edge defense innovation, the company said.

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India Equips Cambodian Army with Infantry Training Simulator—A Power Move in Indo-Pacific to Counter China

Source: Republic World, Dt. 19 Feb 2025,
URL: https://www.republicworld.com/defence/indian-armed-forces/india-equips-cambodian-army-with-infantry-training-simulatora-power-move-in-indo-pacific-to-counter-china

India's growing defence partnership with Cambodia is a critical element of its broader Act East Policy and Indo-Pacific strategy. While historically limited, defence ties between the two nations have deepened in recent years, driven by mutual interests in regional stability, countering Chinese expansionism, and fostering military cooperation.

In a significant move towards bolstering regional security and deepening this defence cooperation, the Indian Army officially handed over an Infantry Weapon Training Simulator (IWTS) to the Royal Cambodian Army (RCA) on February 17, 2025. The ceremony, attended by senior officials including H.E. Gen. Hun Manet, the Deputy Commander of the RCA, underscores India's commitment to enhancing Cambodia's military training capabilities and fostering stronger bilateral ties. The donation coincided with the visit of an Indian Navy training squadron to Cambodia, marking a new chapter in India's Indo-Pacific outreach and Act East Policy.

Enhancing Cambodia's Military Capabilities

The Infantry Weapon Training Simulator (IWTS) is a cutting-edge system designed to facilitate marksmanship training and battle handling for soldiers. This modular, wireless system allows troops to train with various small arms, including pistols, carbines, rifles, machine guns, sniper rifles, grenade launchers, and rocket launchers.

The IWTS integrates 3D visualization software with advanced training modules such as:

- Marksmanship Training
- Moving Target Engagement
- Reflex Shooting
- Field Firing & Tactical Engagement
- Judgmental Training
- Annual Range Classification Courses

The system enables real-time monitoring by instructors, who can analyze training sessions, replay recorded exercises, and provide corrective feedback. This advanced simulator is expected to significantly improve the combat readiness of Cambodian forces, enhancing their capability to operate in both conventional and unconventional warfare scenarios.

India's Growing Defence Partnership with Cambodia

India's military engagement with Cambodia is part of its broader Act East Policy and Indo-Pacific strategy, aimed at countering growing Chinese influence in Southeast Asia. While traditionally limited, Indo-Cambodian defence ties have strengthened in recent years, driven by shared interests in regional stability and Fostering military cooperation with ASEAN partners. Another factor is Countering China's military expansionism.

Infantry Weapon Training Simulator

Cambodia's strategic location near the South China Sea makes it a crucial player in the Indo-Pacific power dynamics. India's increasing engagement serves to not only strengthen bilateral relations but also provide an alternative to Cambodia's growing dependency on Beijing.

Why is Cambodia Important for India?

Cambodia lies near key maritime trade routes, making it critical to India's regional security interests. Its proximity to the Gulf of Thailand and the South China Sea (SCS) places it at the centre of great power rivalries between China and the US-led Indo-Pacific coalition, which includes India.

Beijing has invested heavily in Cambodia's infrastructure, including military bases, ports, and economic zones. Reports indicate that China is developing Ream Naval Base on Cambodia's southern coast, potentially granting the People's Liberation Army Navy (PLAN) a strategic foothold in the region.

Cambodia's increasing economic dependence on China has led it to align closely with Beijing's interests in ASEAN discussions, often blocking joint statements critical of China's aggressive actions in the South China Sea.

India's Expanding Footprint in Southeast Asia

By engaging Cambodia, India seeks to reduce Beijing's unchecked military expansion and offer an alternative to Chinese dependency. India's Indo-Pacific vision prioritizes defence and security partnerships with ASEAN nations, and Cambodia plays a pivotal role in this network.

The recent IWTS donation and naval engagements signify a deeper military collaboration between India and Cambodia. India's strategic outreach aligns with ASEAN's broader objective of maintaining a rules-based order in the South China Sea. Strengthening defence ties with Cambodia provides India with a forward presence in Southeast Asia, enhancing its ability to safeguard regional stability.

Chinese Presence at Ream Naval Base Concerning

China's presence at Ream Naval Base is particularly concerning for regional powers. A Chinese-controlled naval facility in Cambodia could allow Beijing to:

- Project power deeper into the Indian Ocean Region (IOR).
- Strengthen its military supply chains in Southeast Asia.
- Challenge freedom of navigation in critical maritime corridors.

By deepening defence ties with Cambodia, India encourages Phnom Penh to take a more balanced approach rather than acting as a Chinese proxy within ASEAN. This strategic realignment is critical in preserving regional autonomy and preventing unilateral militarization by any single power.

India's engagement with Cambodia also bolsters the broader ASEAN-India Defence Framework, reinforcing regional security architecture. One key benefit would be reducing China's military influence within ASEAN by offering credible alternatives for defence cooperation.The move is also aimed at enhancing military interoperability between India and Southeast Asian nations through joint exercises, training programs, and strategic dialogues.

As China continues to deepen its hold over key strategic locations, India's proactive diplomacy and defence cooperation with Cambodia represents a crucial step in preserving stability, free navigation, and a multipolar order in the Indo-Pacific.

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From data to dominance, here's how Indian Army is integrating AI amid changes in modern warfare

Source: Firstpost, Dt. 20 Feb 2025,
URL: https://www.firstpost.com/india/from-data-to-dominance-heres-how-indian-army-is-integrating-ai-amid-changes-in-modern-warfare-13864881.html

Artificial intelligence (AI) has fundamentally changed nearly every field in the world. Modern warfare is no different. With its global adversaries accelerating AI adoption, India's armed forces recognise that integrating AI is no longer optional– it has become essential. In a bid to shift lean into data-driven operations and predictive warfare, the Indian Army has moved quickly to embrace

this transformative technology. From the army top brass to industry players and think tanks, the enthusiasm for integrating AI into the Indian Army has been strong.

But how is the push going– and where will it eventually go?

AI, Army, and the focus on data

In an exclusive interview with Firstpost on the sidelines of Aero India 2025, the Chief of Army Staff, General Upendra Dwivedi, spoke about using AI for defence.

“A crucial aspect of AI is having credible data. You must be able to extract intelligence from it,” he told Firstpost. That is to say that the efficacy of the functioning of the armed forces depends upon the legacy of large data management and the ability to arrive at decisions related to operations, operational logistics, and administration. However, decision-making is time-consuming due to either lack of data or excess data. “Introduction of AI with their LLM [Large Language Models] prove beneficial in this regard,” Lieutenant General Dushyant Singh (Retd), Director General of the Centre for Land and Warfare Studies (CLAWS), said.

Where is AI being used in India?

AI applications in the Army are being introduced in a big way for intelligence, surveillance, and reconnaissance (ISR) operations, autonomous systems such as UAVs and UGVs, and cyber security. In ISR, AI enhances data analysis, processing satellite imagery, and signal intelligence. Autonomous systems benefit from AI’s capabilities in decision-making, hazard detection, navigational autonomy, and adaptability.

Cyber security, a critical domain, uses AI for threat detection, intrusion prevention, network protection, and malware detection, Lt Gen Singh explained. AI also has a significant contribution towards simulation and training. Dynamic scenario generation, tactical decision support, and customised training modules prepare soldiers for unpredictable battlefield environments. Discussing AI’s potential in predictive analytics, Gen Dwivedi had said, “Predictive analysis is the first step we are working on, and in terms of generative AI, we are engaging with BEL and other companies. We have begun that in a big way.”

“AI enables predictive threat detection, helping militaries anticipate and neutralise risks before they escalate,” said Pascale Sourisse, President & CEO of Thales International. Predictive maintenance in engineering, supply chain management in logistics, autonomous drones in combat systems, and AI-powered intrusion detection in cyber security are other critical applications.

The ecosystem for AI in defence in India

Since launching its national strategy for AI in 2018, India has made institutional advancements in AI in defence, according to the International Institute for Strategic Studies. The creation of a high-level Defence AI Council and a Defence AI Project Agency in 2019 set the foundation for defence-specific AI integration. By 2021, the Indian Army had already demonstrated an AI-enabled swarm of 75 aerial drones during the Dakshin Shakti military exercise. Government projects focusing on atmospheric visibility prediction, imagery analysis, drone-collision avoidance, and ship tracking suggests that AI is being embedded across military systems. The specifics of these projects remain

classified. On the diplomatic front, India continues to advocate for openness, safety, trust, and accountability in AI.

Global tech giants have taken note. For instance, Microsoft has committed $3 billion to build data centres in Telangana. Thales says that "In India, our engineering competence centres are early adopters of Thales' AI tools, and the teams are actively using them to enhance products." The focus is also on domestic innovation. Gen Dwivedi has suggested the collaborative approach the Indian Army is looking at: "…generative AI will play a very important role. So, working with other companies, we should be part of the journey together," he said.

Looking ahead

In the times to come, AI's role in strategic planning, wargaming, and long-term predictive analysis will be crucial. Lt Gen Singh suggested that the Army may be interested in AI-enabled Manned Unmanned Teaming (MUM-T) between tanks & drones, AI-based intrusion detection, data mining tool for analysis, and AI-based aircraft recognition package, among others.

In a nutshell

As Pascale Sourisse of Thales aptly put it, "Integrating AI into defence ensures armed forces can respond swiftly, precisely, and efficiently to evolving threats while safeguarding national security." Future conflicts are likely to be shaped as much by data and algorithms as by manpower and firepower. By collaborating with technology partners, investing in AI-driven systems, and embedding AI into its core operations, India is positioning its military to tackle these evolving security challenges.

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Science & Technology News

India and Nepal Deepen Science and Technology Partnership with New Agreement

Council of Scientific and Industrial Research (CSIR) and Nepal Academy of Science and Technology (NAST) Sign MoU to Strengthen Indo-Nepal Scientific Cooperation

Source: Press Information Bureau, Dt. 19 Feb 2025,
URL: https://pib.gov.in/PressReleasePage.aspx?PRID=2104672

Marking a significant milestone in Science and Technology (S&T) cooperation between India and Nepal, the Council of Scientific and Industrial Research (CSIR), India, and the Nepal Academy of Science and Technology (NAST) formalized a Memorandum of Understanding (MoU) on 18th February 2025 at CSIR-National Physical Laboratory (CSIR-NPL), New Delhi.

The agreement, signed and exchanged by Dr. N. Kalaiselvi, Director General, CSIR, and Secretary, DSIR, and Prof. Dr. Dilip Subba, Vice-Chancellor, NAST, establishes a broad framework to promote bilateral scientific and technological collaboration.

CSIR and NAST share a long history of cooperation, dating back to 1994, when an agreement between CSIR and then-RONAST (now NAST) was signed to promote joint research and technological development in areas of mutual interest. To execute the agreement, two Working Programmes were signed in 1997 and 2002, leading to the organization of several joint workshops and training programs that continued beyond the official period of these agreements.

The newly signed MoU seeks to rejuvenate and expand this collaboration, enhancing scientific engagement between the two institutions.

The renewed partnership under the 2025 MoU will be implemented through various collaborative activities, including the exchange of scientific information, research materials, and scientists, the organization of joint S&T seminars, workshops, and training programs, the execution of joint research projects, access to each other's major research facilities, technology partnerships, and the twinning of institutions for capacity development.

The cooperation will focus on mutually agreed areas, including biological sciences, food science and technology, water and environmental technologies, fuel and mining sciences, metallurgy, material sciences such as glass, ceramics, biomaterials, and nanotechnology, alternative energy, leather and footwear technologies, metrology, polymer sciences, and drug discovery.

The apex-level meeting held during the signing was attended by senior leadership from CSIR, the Ministry of External Affairs (MEA), Government of India, and NAST. Discussions centred on the most effective modes of collaboration and key focus areas for joint research and development efforts.

Dr. N. Kalaiselvi, DG, CSIR, emphasized CSIR's keen interest in strengthening its technology and capacity-building partnerships with Nepal through NAST. She underscored the enormous untapped potential for collaboration in multiple sectors and stressed the importance of swiftly putting the MoU into action with a targeted implementation plan.

Vice-Chancellor of NAST, Prof. Dr. Dilip Subba, reaffirmed NAST's commitment to this partnership, highlighting the value Nepal places on scientific cooperation with India. He noted that this MoU and the discussions held today would pave the way for a strengthened and enduring S&T relationship between the two nations. He also proposed the formation of subject-specific working groups to facilitate structured collaboration in priority areas.

With the exchange of this MoU, CSIR and NAST have reaffirmed their shared vision of leveraging scientific and technological advancements to drive progress, innovation, and economic growth.

The agreement marks a new era in Indo-Nepal scientific collaboration, opening new avenues for joint research and knowledge exchange between the two countries.

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No mega rocket for crewed Moon mission, Isro to rely on-docking

Source: The Times of India, Dt. 20 Feb 2025,
URL: https://timesofindia.indiatimes.com/india/no-mega-rocket-for-crewed-moon-mission-isro-to-rely-on-docking/articleshow/118398404.cms

India will not build a large rocket for its planned crewed mission to the Moon, but instead rely on multiple launches and satellite docking technology, as per Isro's current plans for the mission targeted for 2040.

"One option is to build a huge rocket and take a single module. But what will you do with that rocket thereafter? Economically, we have to understand and really look at all aspects. So, we are not going to build a huge rocket. We are going to have multiple modules. Maybe right now, our thinking is two modules. You take them separately and dock," Isro chairman V Narayanan told TOI in an exclusive interview.

The approach builds on India's recent success with the Space Docking Experiment (SpaDeX) mission, which achieved its first docking manoeuvre on Jan 16. The mission involved two 220-kg satellites initially separated by 11 km, orbiting at approximately 28,400 km per hour.

Docking technology is crucial for India's upcoming space initiatives, including the planned space station project comprising five modules, and the crewed lunar mission. The space station modules too will be launched separately and assembled in orbit, with the first module already receiving govt approval.

The technology Isro is developing through SpaDeX will provide valuable insights for future crewed Moon landing missions. While the successful first docking marked a milestone, Isro will conduct multiple manoeuvres at various orientations to thoroughly understand the dynamics involved. Each iteration will provide new insights that will inform the development of future space systems.

Narayanan, who took charge as Isro chairman on Jan 13, explained the complexity of the docking process: "Imagine two buses going on the road with each traveling at 100 kilometre per hour speed…And if both have to be get docked, you know, lot of things has to be done. Number one, you have to come exactly within millimetre level."

More docking in mid-March

The satellites, which were previously controlled independently, now function as a single unit. The next phase involves establishing power transfer between the modules, a crucial step for future missions including Chandrayaan-4, where multiple docking operations will be required.

While Isro has completed the first crucial docking manoeuvre, SpaDeX will continue for an extended period.

"The satellites are currently in an elliptical orbit, where power generation varies based on position. This is not a one-time operation. We'll conduct multiple docking attempts to demonstrate our

capability to perform the procedure reliably and repeatedly beginning mid-March," Narayanan said.

The key objectives are to evaluate: How precisely Isro can execute multiple docking maneuvers, how well the algorithms perform under various conditions, how the integrated inertial systems function and how the propulsion system performs during repeated operations.

"This is truly a multidisciplinary endeavor. Through these multiple trials, we will generate extensive data to support future applications. Before conducting any actual experiments, we thoroughly test everything in our ground simulator. We validate our understanding and approach through simulation first, then proceed with the real operation only when we are fully confident. This careful approach is essential to prevent any mistakes," he said.

Isro's methodical approach involves gathering extensive data to refine the technology for future applications. While the initial docking marked a milestone, Narayanan indicated that the mission would continue for an extended period, with numerous experiments planned to master this complex capability.

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Microbes in microgravity: Indian students' nanosatellite aims to help astronauts stay healthy in space

Source: The Economic Times, Dt. 19 Feb 2025,
URL: https://economictimes.indiatimes.com/news/science/microbes-in-microgravity-indian-students-nanosatellite-aims-to-help-astronauts-stay-healthy-in-space/articleshow/118387452.cms

On 30 December 2024, India made history with the launch of RVSAT-1, a student-built microbiological nanosatellite. Aboard ISRO's PSLV C-60, the satellite was part of the SPADEX/POEM-4 mission. Designed and developed by students from Bengaluru's RV College of Engineering, the project aims to study how gut bacteria behave in space—critical knowledge for the health of astronauts on long missions.

For Team Antariksh, the student group behind RVSAT-1, the mission was more than an academic project. "It is a leap into the future of space exploration," they said in a TOI report. The journey was filled with challenges, but every successful test brought them closer to their dream of launching a satellite into space. That dream became a reality when RVSAT-1 lifted off from Sriharikota.

Why Gut Bacteria Matters in Space

Gut bacteria are essential to human health, aiding digestion and boosting the immune system. Studying their behaviour in microgravity could help scientists develop strategies to keep astronauts healthy during extended space travel.

"Our satellite mission was only for three days. We collected a lot of data soon after the launch," H Nandish, a third-year aerospace student involved in the project told TOI. "The study was to

measure the growth of gut bacterium, Bacteroides thetaiotaomicron, in space and how it behaved in zero gravity. Study of data will not only help in space medicine but will also provide clues for applications on Earth, such as advanced waste recycling systems and combating antibiotic resistance. Data will also help ISRO find solutions to keep astronauts healthy for a long space journey."

Cutting-Edge Engineering in a Tiny Satellite

Building RVSAT-1 was no easy feat. The team had to miniaturise complex laboratory equipment—like incubators and spectrophotometers—into a compact 2-U nanosatellite. "The bacterial growth curve is plotted utilising optical density measurement. This gives a quantitative measure of the variation of growth patterns in space," explained Aditi Arun, project manager for the satellite mission in the TOI report. RVSAT-1's design included a sophisticated microfluidic system and an optical setup to analyse bacterial growth. The experiment also incorporated prebiotic supplementation, which could lead to groundbreaking insights into maintaining astronaut gut health.

Pushing Limits Through Rigorous Testing

Before reaching space, RVSAT-1 had to prove its durability. It underwent multiple high-stress tests, including thermal vacuum (T-VAC), vibration, a 1,500g shock test, and electromagnetic interference and compatibility assessments. Each test simulated the harsh environment of space, ensuring the payload could withstand extreme conditions. "The testing phase was demanding, but each success strengthened our confidence," said Nandish. Despite the challenges, the team pushed through, determined to see their mission succeed.

A Future-Shaping Research Project

The data collected from RVSAT-1 will be analysed and published in a research paper, which will be made available to ISRO, academia, and the broader scientific community. "We will publish a research paper after finding results from our nanosatellite data and put the report in public domain for its use by ISRO, academia and others," Nandish confirmed. "Data will basically help in astronaut health, waste management and antibiotic development."

Beyond its scientific contributions, RVSAT-1 is a symbol of what student-led innovation can achieve. It showcases the immense potential of young researchers in advancing India's space ambitions, proving that great scientific breakthroughs can come from the most unexpected places.

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