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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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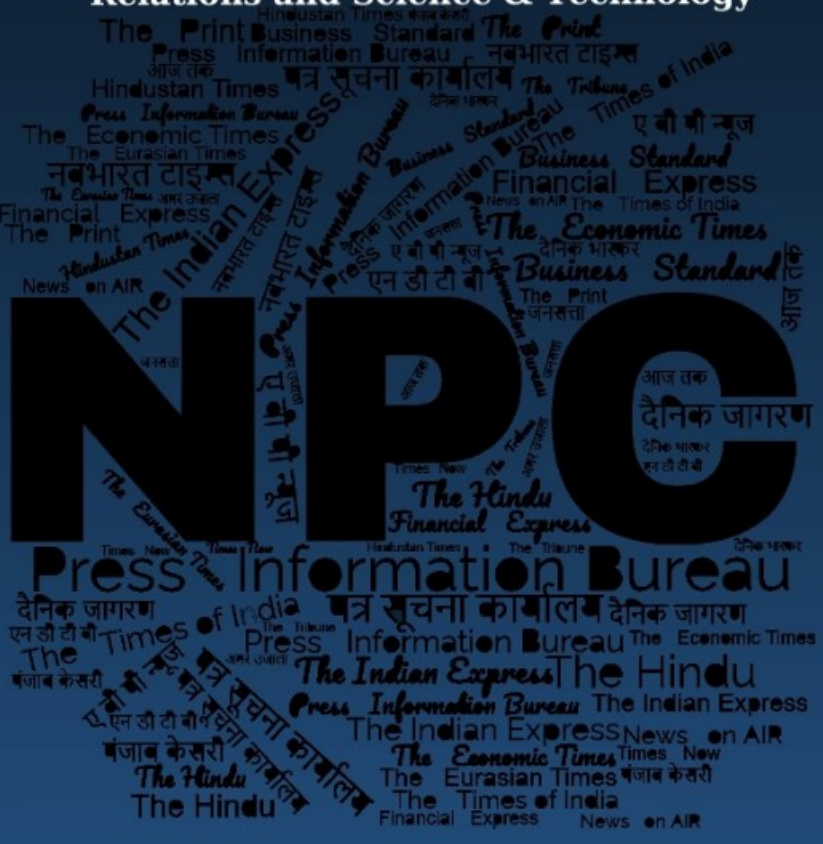

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CONTENTS

DRDO News

Army's MRSAM flight tested four times

Source: The Hindu, Dt. 04 Apr 2025,
URL: https://www.thehindu.com/news/national/armys-mrsam-flight-tested-four-times/article69413399.ece

The Defence Research and Development Organisation (DRDO) and the Army successfully conducted four flight tests of the Army variant of the Medium-Range Surface-to-Air Missile (MRSAM) system on April 3 and 4. The tests took place at the Integrated Test Range (ITR) on Dr. APJ Abdul Kalam Island, located off the coast of Odisha.

Flight test of the Indian Army version of Medium-Range Surface-to-Air Missile conducted by DRDO and the Army, at Dr APJ Abdul Kalam Island off the coast of Odisha. April 4, 2025.

In a statement released on Friday, DRDO confirmed that these operational flight trials were carried out against high-speed aerial targets. The missiles successfully intercepted and destroyed the

designated targets, achieving direct hits in all engagements. The tests validated the system's effectiveness across various scenarios, engaging targets at long-range, short-range, high altitude, and low altitude.

The flight tests were conducted using the weapon system in its deliverable configuration, simulating operational conditions.

Vertical launch short range SAM for Navy test firedDeveloped jointly by DRDO and Israel Aerospace Industries, the MRSAM system includes components such as a multi-function radar, a command post, and mobile launcher systemsAccording to the statement, Army personnel from the Eastern and Southern Commands conducted these trials under the guidance of DRDO scientists. DRDO stated that the successful trials validated the operational handling capability of the participating Army Commands and "paved the way for operationalisation of weapon systems in two regiments."

The performance parameters of the weapon system during the tests were verified using data collected by various range instruments, including radars and electro-optical tracking systems, deployed by the ITR, Chandipur, DRDO added.

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DRDO Chief Expects 90 Per Cent Defence Self-Reliance In Four-Five Years, Envisions India As Global Arms Supplier

Source: Swarajya, Dt. 06 Apr 2025,
URL: https://swarajyamag.com/news-brief/drdo-chief-expects-90-per-cent-defence-self-reliance-in-four-five-years-envisions-india-as-global-arms-supplier

Defence Research and Development Organisation (DRDO) Chairman Sameer V Kamat expressed optimism that India would be able to achieve around 90 per cent self-reliance in defence production in the next four to five years.

However, the DRDO Chairman added that 100 per cent domestic production is not economically viable, but "we must cater to our own needs and remain relevant globally," Outlook Business quoted him as saying.

"India is considered as a neutral player, so we can supply to the USA, Russia, and Southeast Asia. It is only we have to recognise niche technology and products that we can manufacture and become a global supplier," he said.

Kamat emphasised that the Unmanned Aerial Vehicle (UAV) industry is one of the most potentially successful fields for Indian defence startups. He further noted that this would enable the country to become a significant player in the global defence export market.

"Recent wars have demonstrated that UAVs will remain a critical component on the battlefield for the next 5–10 years. They have diverse applications—ranging from surveillance and logistics to weapons deployment," he added.

"However, in the next decade, anti-UAV technologies will begin to dominate space. So, it's not a long runway—if you're quick to capture the market, now is the time to get involved," he said, emphasising substantial opportunities for startup companies.

The head of DRDO emphasised the 'Sensor' sector as another promising field where Indian defense startups can contribute, given its wide range of applications. He highlighted the importance of space for DRDO, referencing the initial developments in the Russia-Ukraine conflict.

Kamat discussed the yearly 'Dare to Dream' competition held by DRDO, which is designed to back the concepts of defence startups that ultimately transform into a product. He further mentioned that venture capitalists would be partnering in the upcoming contest, offering a wider range of opportunities to the startups.

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Defence News

Defence Strategic: National/International

Bilateral Naval Exercise INDRA-2025

Source: Press Information Bureau, Dt. 04 Apr 2025,
URL: https://pib.gov.in/PressReleasePage.aspx?PRID=2119037

The bilateral Naval Exercise INDRA 2025 between Indian and Russian navies was held from 28 Mar to 02 Apr 2025.

This 14th edition of the exercise included a wide range of activities and structured drills designed to enhance interoperability towards countering common maritime threats.

The operations involved complex coordinated manoeuvres and simulated engagements showcasing the combined combat power of the participating navies.

The exercise achieved its aim of enhanced jointmanship and reinforced the shared commitment to upholding the principles of maritime order, promoting global peace and stability.

The drills also provided invaluable operational experience, strengthening collective capacity to address contemporary maritime security challenges. The exercise facilitated the exchange of best practices, fostering a deeper understanding of each other's operational doctrines and enhancing the ability to operate seamlessly in complex maritime environments.

The INDRA series of exercises have been a cornerstone of India-Russia Defence relations since its inception in 2003 and both countries recognise the importance of maritime security and the need for a collaborative approach to counter common threats and concerns.

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Improvement In Coastal Security

Source: Press Information Bureau, Dt. 04 Apr 2025,
URL: https://pib.gov.in/PressReleasePage.aspx?PRID=2118702

Indian Coast Guard (ICG) has taken following initiative to strengthen India's coastal security:

- ICG deploys 18-20 ships, 30-35 crafts and 10-12 aircraft for surveillance on a daily basis. ICG assets ensure maritime law enforcement to strengthen coastal security and maintain rule based order at sea. Surveillance efforts also focus on Offshore Development Area (ODA) and seas adjoining Island groups (Andaman & Nicobar and Lakshadweep). Surveillance of coastal areas through Coastal Surveillance Network (CSN) and investigation by Remote Operating Station (ROS) and Remote Operating Centres (ROCs) are undertaken. During the last 10 years, ICG has conducted 3,00,296 Boarding Operations for deterrence and to establish identity of personnel, 153 Coastal Security Exercises, 451 Coastal Security Operations, 458 Security Drills and 3,645 Joint Coastal Patrol Sorties.

A total number of 179 boats have been seized and 1,683 personnel arrested over the last 10 years for illegally entering Indian waters. These boats were engaged in various illegal activities like poaching, narcotics smuggling, illegal immigration etc.

Funds utilised towards acquisition of ships and aircraft by ICG towards coastal security (Pan India) is Rs 12,201 crore. Fund utilised for CSN (Pan India) is Rs 1,583.8 crore.

Coastal Security Standard Operating Procedures (SOPs) for Coastal States/Union Territories have been promulgated. These SOPs highlight responsibility of various stakeholder agencies, conduct of operations and response management for various coastal security States.

ICG interactions are focused on maritime safety and security. ICG conducts regular Community Interaction Programmes involving fisher folks. During the interactions, various maritime safety

and security aspects are deliberated. A toll free number 1554 has also been promulgated for reporting of any eventuality at sea. Further, fishermen watch groups have been created by States for reporting of any suspicious activities along the coast. Training is imparted to ICG personnel and Marine Police personnel towards effective Coastal Security and performing their laid down role and functions.

This information was given by Raksha Rajya Mantri Shri Sanjay Seth in a written reply to Shri Krishna Prasad Tenneti in the Lok Sabha today.

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Curtain Raiser: Naval Commanders' Conference 2025

Source: Press Information Bureau, Dt. 04 Apr 2025,
URL: https://pib.gov.in/PressReleasePage.aspx?PRID=2118858

The First Edition of Naval Commanders' Conference 2025 is scheduled to be conducted in two phases (Phase I at Karwar on 05 Apr and Phase II at New Delhi from 07-10 Apr 25). The Conference is the Apex level, biannual, event facilitating deliberations on significant strategic, operational, and administrative issues among the top Naval Commanders. The Conference will play a pivotal role in emphasising India's role as a 'Preferred Security Partner' in the Indian Ocean Region (IOR), bolstering Indian Navy’s contribution to regional peace, security, and stability.

The Conference will commence with Phase I covering 'Flag-Off of Indian Ocean Ship Sagar' by the Hon'ble Raksha Mantri Shri Rajnath Singh on 05 Apr 25 at Karwar. IOS Sagar is an initiative towards continued cooperation with IOR nations in pursuance of GoI's vision of Mutual and Holistic Advancement for Security Across the Regions (MAHASAGAR), as elucidated by the Hon'ble Prime Minister, Shri Narendra Modi, during his visit to Mauritius in Mar 2025.

INS Sunayna is being deployed to the South-West IOR with a combined crew from Indian Navy and nine friendly foreign countries: Comoros, Kenya, Madagascar, Maldives, Mauritius, Mozambique, Seychelles, Sri Lanka, and Tanzania. Post Flag-Off of IOS Sagar, the Hon'ble Raksha Mantri will inaugurate multiple maritime infrastructures and Support Facilities under Project Seabird. He will also be apprised on 'Indian Naval Op Readiness and Future Outlook' during the first phase of the Conference at Karwar.

The Phase II of the Conference will be held at New Delhi, which will witness a comprehensive review of major Operational, Materiel, Logistics, HR Development, Training, and Administrative aspects. The Chief of Defence Staff, Chief of the Army Staff, and Chief of the Air Staff, will also engage with Naval Commanders during the Conference to foster synergy amongst the three Services and further drive the convergence efforts.

The Commanders will also engage with Shri Vikram Misri, Foreign Secretary (GoI), and Shri Amitabh Kant on issues related to foreign policy and international engagement. The Navy's quest to strengthen modernisation, indigenisation, and self-reliance in line with GoI's vision of AatmaNirbharta will be a key focus area during the event.

The Conference will bring out synergy and address critical operational, administrative and materiel issues meriting immediate attention and decisions by Naval Commanders, charting Indian Navy's course in pursuit of being a 'Combat Ready, Credible, Cohesive and Future Ready Force'.

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Raksha Mantri reviews maritime security situation & Indian Navy's operational readiness during the Phase-1 of the first Naval Commanders' Conference of 2025 in Karwar

Source: Press Information Bureau, Dt. 05 Apr 2025,
URL: https://pib.gov.in/PressReleasePage.aspx?PRID=2119284

Raksha Mantri Shri Rajnath Singh reviewed the maritime security situation, operational readiness of the Indian Navy, and the future outlook during the inaugural phase of the first Naval Commanders' Conference of 2025 in Karwar, Karnataka on April 05, 2025. Raksha Mantri interacted with the Naval Commanders, with deliberations focussing on addressing contemporary security paradigms, formulating the way ahead to further the combat capability of the Navy, and addressing strategic, operational & administrative aspects. He was accompanied by Chief of Defence Staff General Anil Chauhan, Chief of the Naval Staff Admiral Dinesh K Tripathi, Defence Secretary Shri Rajesh Kumar Singh and other senior officials.

Addressing the Commanders, Shri Rajnath Singh commended the Navy's contribution in strengthening India's maritime security, surpassing the expectations of the people in every situation, and displaying continued commitment towards serving the nation with new energy & innovation.

Raksha Mantri asserted that it is a necessity to reorient the future roles of the Armed Forces amidst the present unpredictable geopolitical landscape. He referred to the acceptance of global experts that 21st century is Asia's century and India will have a crucial role to play, stating "It is our responsibility to ensure peace and prosperity in the Indo-Pacific as the region has become a focal point for the world".

Shri Rajnath Singh reiterated that India stands for a free, open and rule-based order in accordance with the UN Convention on the Law of the Sea (UNCLOS), urging the Commanders to assess the changing circumstances and ensure planning, resourcing & exercising accordingly, while remaining alert and prepared. "Security is an ongoing adaptation process, wherein there is a need to keep assessing, planning, and coming out with new ideas. We need to analyse how India can make its role more effective," he said.

Emphasising that national security is of paramount importance to the Government, led by Prime Minister Shri Narendra Modi, Raksha Mantri stated that it has always been ensured that the requirements of the Armed Forces are fulfilled. "The speed at which the work of naval modernisation is being carried out for the last 10-11 years is unprecedented. Induction of new platforms, state-of-the-art equipment has significantly enhanced our Naval prowess and the morale

of our brave sailors. It is a testimony to the fact that we are always standing with you in your preparations," he said.

On 2025 being declared as the 'Year of Reforms' in the Ministry of Defence, Shri Rajnath Singh called for concerted efforts of all stakeholders to fulfil their commitment to reforms. "There are two types of reforms. One is policy reforms which are carried out at the level of the Ministries. Many officers look into policy-related issues, obtain feedback from everyone and formulate policies accordingly. The second type is ground-level reform. Whether it is related to training, R&D, financial or manpower reforms, your role is most important in all these. Till the time there is no convergence of top-down approach and bottom-top approach, we will not be able to achieve our reforms' goal in the right manner," he told the Commanders.

The conference is the apex-level, biannual event facilitating deliberations on significant strategic, operational, and administrative issues among the top Naval Commanders. It plays a pivotal role in emphasising India's role as a 'Preferred Security Partner' in the Indian Ocean Region, bolstering the Navy's contribution to regional peace, security, and stability.

The second phase of the conference will be held in New Delhi from April 07 to 10, 2025, witnessing a comprehensive review of major operational, materiel, logistics, HR development, training, and administrative aspects. Chief of Defence Staff, Chief of the Army Staff & Chief of the Air Staff will also engage with Naval Commanders during the Conference to foster synergy amongst the three Services and further drive the convergence efforts.

The Commanders will also engage with Foreign Secretary Shri Vikram Misri and Shri Amitabh Kant on issues related to foreign policy and international engagement. The Indian Navy's quest to strengthen modernisation, indigenisation, and self-reliance in line with Government's vision of Aatmanirbharta is the key focus area of the event.

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Raksha Mantri flags-off INS Sunayna as Indian Ocean Ship SAGAR from Karwar with 44 personnel of nine friendly nations of Indian Ocean Region

Source: Press Information Bureau, Dt. 05 Apr 2025,
URL: https://pib.gov.in/PressReleasePage.aspx?PRID=2119246

Raksha Mantri Shri Rajnath Singh flagged-off Indian Navy Offshore Patrol Vessel, INS Sunayna, as Indian Ocean Ship (IOS) SAGAR (Security & Growth for All in the Region) in Karwar, Karnataka on April 05, 2025. Raksha Mantri also inaugurated modern operational, repair and logistic facilities constructed under Project Seabird worth over Rs 2,000 crore. He was accompanied by Chief of Defence Staff General Anil Chauhan, Chief of the Naval Staff Admiral Dinesh K Tripathi, Defence Secretary Shri Rajesh Kumar Singh and other senior officials.

IOS Sagar

The flagging-off of the ship, with 44 naval personnel from nine friendly nations (Comoros, Kenya, Madagascar, Maldives, Mauritius, Mozambique, Seychelles, Sri Lanka & Tanzania), marks a

significant step in reinforcing India's commitment to regional maritime security and international cooperation.

Addressing the representatives from partner nations of the Indian Ocean Region (IOR), Shri Rajnath Singh termed the launch of IOS SAGAR as a reflection of India's commitment to peace, prosperity, and collective security in maritime domain. He highlighted India's growing presence in IOR, stating "It is not just related to our security and national interests, it also points towards the equality of rights and duties among our friendly countries in the region. Our Navy ensures that, in IOR, no nation suppresses another on the basis of overwhelming economy and military power. We ensure that the nations' interests are protected without compromising their sovereignty," he said.

Raksha Mantri also commended the Indian Navy for emerging as the first responder during incidents such as hijacking of ships and acts of pirates, in the region. He stated that the Navy ensures the security of not just Indian ships but also foreign ones, terming free navigation, rule-based order, anti-piracy and securing peace and stability in IOR as one of its biggest objectives. "Along with other stakeholders, Indian Navy is ensuring peace and prosperity in the region. Equipped with state-of-the-art ships, weapons & equipment and well-trained & motivated sailors, we resolve to move ahead with other friendly nations towards developing IOR as a symbol of brotherhood and shared interest," he added.

The flag-off coincides with the 10th anniversary of the SAGAR initiative and the National Maritime Day. Shri Rajnath Singh referred to Prime Minister Shri Narendra Modi's recent MAHASAGAR (Mutual and Holistic Advancement for Security and Growth Across Regions) initiative and stated that it will expand and strengthen the SAGAR vision in a more advanced and collaborative manner. "Now that India has transitioned from SAGAR to MAHASAGAR, there could be no better time to launch the voyage of IOS SAGAR," he said.

The Raksha Mantri highlighted the historical significance of April 05, when India's first merchant ship, SS Loyalty, sailed from Mumbai to London in 1919, describing it as a fitting occasion to launch the IOS SAGAR mission. "It's a proud moment to see India leading the charge for regional cooperation on the same date we mark our maritime legacy," he said.

Extending his best wishes to the crew, Shri Rajnath Singh exuded confidence that IOS SAGAR will achieve its broader goals of collective security & growth and maritime excellence.

IOS SAGAR is a pioneering effort aimed at bringing together the navies and maritime agencies of the Southwest IOR on an Indian Naval platform. The mission will serve as an opportunity to provide comprehensive training to sea-riders from friendly countries and marks an unprecedented collaboration in maritime security.

INS Sunayna, during its deployment, will visit Dar-es-Salaam, Nacala, Port Louis and Port Victoria. The international crew aboard will undertake training exercises and apply knowledge gained from various professional training schools at Kochi. The exercises/training planned include firefighting, damage control, Visit Board Search and Seizure, bridge operations, seamanship, engine room management, switchboard operations and boat handling - all of which will improve interoperability between the Indian Navy and its international partners.

IOS SAGAR will play a crucial role in shaping the future of the IOR. With this mission, India once again reaffirms its commitment to building stronger ties with its maritime neighbours and working towards a safer, more inclusive & secure maritime environment in the region.

Project Seabird Facilities

The facilities include marine infrastructure designed for berthing ships, submarines and harbour craft, an armament wharf, two piers specifically equipped for refits, marine utility complexes, residential infrastructure consisting 480 dwelling units for sailors and defence civilians, and support facilities comprising 25 km road network, 12 km storm water drainage, water reservoirs, waste management plants and security watch towers.

These facilities will boost the sustenance of assets operating off the West Coast, and augment the Indian Navy's efforts in maintaining a future-ready force. The infrastructure has been developed in pursuit of the Government's vision of Aatmanirbhar Bharat with more than 90% of the material and equipment being sourced from within the country. The progressive operationalisation of the Karwar base will generate industrial growth and enable substantial support to the local economy in the Uttar Kannada Region.

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India plans to set up nuclear submarine base in Andhra Pradesh next year

Source: The Times of India, Dt. 07 Apr 2025,
URL: https://timesofindia.indiatimes.com/india/india-plans-to-set-up-nuclear-submarine-base-in-andhra-pradesh-next-year/articleshow/120046893.cms

India plans to commission its strategic new naval base for nuclear submarines and other warships in coastal Andhra Pradesh next year, with an eye on China's ever-expanding naval forays into the Indian Ocean Region. India is also progressively upgrading the Karwar base in Karnataka on the western seaboard.

The strategic base located near the small coastal village of Rambilli, about 50km south from the Eastern Naval Command headquarters at Visakhapatnam on the eastern seaboard, has underground pens and a network of tunnels to house nuclear submarines.

This will enable the submarines to quietly slip into the Bay of Bengal without detection from spy satellites and quickly head towards the critical Malacca Strait and beyond on deterrent patrols.

"The first phase of the Rambilli base under Project Varsha is almost complete. After commissioning in 2026, it can be expanded and upgraded in phases, much like what is under way at the Karwar base under Project Seabird," a source said.

It has taken well over a decade for the construction of the nuclear submarine base to reach this stage after overcoming major technological, environmental and other challenges.

Phase-IIA of Project Seabird will enable Karwar to berth 32 warships

The source said, "The inner harbour is ready. Work on the outer harbour, with the requisite breakwaters and jetties, is in progress." Concurrently, India this year will also commission its third nuclear-powered submarine with nuclear-tipped ballistic missiles (called SSBN in naval parlance), INS Aridhaman, with a displacement of 7,000-tonne, to add more teeth to the underwater leg of the country's nuclear triad.

Slightly bigger than the first two operational SSBNs, INS Arihant and INS Arighaat, INS Aridhaman will be able to carry more K-4 missiles with a strike range of 3,500km.

While a fourth submarine is also under construction under the secretive over ₹90,000 crore advanced technology vessel (ATV) project, there is also the plan to eventually build 13,500-tonne SSBNs, with much more powerful 190 MW pressurised light-water reactors instead of the existing 83 MW ones, as reported by TOI earlier. In Oct last year, the PM-led Cabinet Committee on Security also approved the construction of two 9,800-tonne nuclear-powered attack submarines (SSNs) for ₹40,000 crore.

The eventual plan is for six SSNs, which are armed with non-nuclear missiles and other weapons for conventional warfare. On the West coast, defence minister Rajnath Singh on Saturday inaugurated additional operational, repair and logistic facilities worth over 2,000 crore under Project Seabird at the Karwar naval base, which provides the Navy with both strategic depth and operational flexibility, especially against Pakistan.

Already the home base for over a dozen frontline warships, the completion of the ongoing Phase-IIA of Project Seabird will enable Karwar to berth 32 major warships and submarines as well as 23 yard-craft. A dual-use naval air station, a full-fledged naval dockyard, four covered dry berths and logistics for ships and aircraft are also part of this phase of construction.

After Phase-IIB, currently in the planning stage, the Karwar base spread over a 25-km expanse will be capable of basing 50 warships and submarines as well as 40 auxiliary craft, which will also go a long way in decongesting the Mumbai harbour.

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India, Sri Lanka sign major defence pact

Source: The Economic Times, Dt. 05 Apr 2025,
URL: https://economictimes.indiatimes.com/news/defence/india-sri-lanka-sign-major-defence-pact/articleshow/120021849.cms

India and Sri Lanka on Saturday signed seven Memorandums of Understanding (MoU) across a slew of sectors including defence, energy, digital infrastructure, health and trade as PM Narendra Modi received a grand welcome in Colombo for the first foreign leader hosted by the Dissanayaka government.

Modi was also honoured with Sri Lanka's highest civilian award, Mithra Vibhushana, for his exceptional efforts in bolstering the ties between the two nations and highlighting the spiritual and cultural heritage of both countries.

New Delhi and Colombo will move strategically closer in terms of joint maritime surveillance, military exercises, and equipment support with the defence agreement.

The other MoUs focus on implementing India's UPI payment system in Sri Lanka, enhancing renewable energy trade through a proposed grid connectivity project, and ferry and aviation services to improve people-to-people ties.

The Modi and the Lankan President virtually inaugurated the construction of the Sampur solar power project. They also inaugurated the recently completed temperature-controlled warehousing facility at Dambulla, which is possibly the first facility of its kind in the island, and a project for supply of solar rooftop systems to nearly 5,000 religious institutions across Sri Lanka.

Lauding the "resilience" of the Sri Lankan people, Modi, with President Aruna Kumar Dissanayake by his side, said, "I am proud that Sri Lanka is on the path back to recovery...We have always stood by Sri Lanka - be it during Covid, or the terror attacks or the recent economic crisis."

Modi said that he had also raised India's concerns and declared that Sri Lanka has agreed to the immediate release of Indian fishermen held for straying into Lankan waters and the prompt return of their boats.

Modi has said that India has converted loans worth more than USD 100 million into grants in the last six months and decided to reduce interest rates on existing credit, marking a shift towards providing more immediate and concessional aid to its crisis-hit neighbour.

"In the last si months alone, we have converted loans worth more than USD 100 million into grants. Our bilateral 'Debt Restructuring Agreement' will provide immediate assistance and relief to the people of Sri Lanka," Modi said.

The Indian Prime Minister described the debt restructuring agreement as a step forward in helping Sri Lanka navigate its economic crisis, signalling India's commitment to the country's recovery. "Today we have also decided to reduce interest rates. It symbolises that even today, India stands with the people of Sri Lanka," he added.

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Won’t allow use of Sri Lanka soil to target India, Dissanayake tells PM; Modi conferred highest civilian award

Source: The Indian Express, Dt. 06 Apr 2025,
URL: https://indianexpress.com/article/india/pm-modi-sri-lanka-president-dissanayake-talks-highest-civilian-honour-9926414/

As Colombo and Delhi signed pacts on defence cooperation, power, health, digital technology and a special assistance package for the island nation’s eastern provinces, President Anura Kumara Dissanayake, who held bilateral talks Saturday with Prime Minister Narendra Modi, said the Sri Lankan government will not permit its territory to be used in any manner inimical to the security of India and regional stability.

Dissanayake honoured Modi, who headed to Colombo from Bangkok after the BIMSTEC Summit, with the Mitra Vibhushana, Sri Lanka's highest civilian award to a foreign head of state.

"I reaffirmed Sri Lanka''s stand that it will not permit its territory to be used in any manner inimical to the security of India as well as towards regional stability."

Modi said, "We believe that we have shared security interests. The security of both countries is interconnected and codependent. I am grateful to President Dissanayaka for his sensitivity towards India's interests. We welcome the important agreements made in the area of defence cooperation. We have also agreed to work together on the Colombo Security Conclave and security cooperation in the Indian Ocean."

Regarding the ethnic Tamil minorities, Modi said, "We also discussed 'reconstruction and reconciliation' in Sri Lanka. President Disanayaka apprised me of his inclusive approach. We hope that the Sri Lankan government will meet the aspirations of the Tamil people and fulfil its commitment towards fully implementing the Constitution of Sri Lanka, and conducting provincial council elections."

Dissanayake said, "We are on a journey towards change, and this is to have a country with economic progress, social equality and justice, and any citizen of the country should have a path towards prosperity in this backdrop. So as historical friends and neighbours, we should work together to develop a prosperous future for our countries and the peoples."

On the issue of fishermen, Modi said, "We also discussed issues related to fishermen's livelihood. We agreed that we should proceed with a humane approach in this matter. We also emphasised on immediate release of the fishermen and their boats."

In this context, Dissanayake sought a ban on fishing by bottom trawlers. "We requested the intervention of Prime Minister Modi… the need to have an intervention regarding the fishermen's matter… recognising the irreparable ecological damage caused by bottom trawling, which is a banned practice in both countries… required measures (are) to be taken to stop this practice."

Modi said, "As Prime Minister, this is my fourth visit to Sri Lanka. My last visit in 2019 came at a very sensitive time. It was my firm belief at the time that Sri Lanka will rise, and rise stronger. I applaud the courage and patience of the Sri Lankan people, and today, I am happy to see Sri Lanka back on the path of progress. India is proud to have fulfilled its duties as a true, friendly neighbour. Whether it was the terrorist attack of 2019, the Covid pandemic, or the recent economic crisis, we have stood firmly with the people of Sri Lanka during every difficulty."

And quoting Thiruvalluvar, he said "in the face of challenges and enemies, there is no stronger assurance than a true friend and the shield of his friendship".

The Sri Lankan President said he conveyed to Modi that India's assistance to the island nation in times of need and continuing solidarity are deeply cherished.

Foreign Secretary Vikram Misri said, "Demonstrating our continued commitment to assist Sri Lanka in its economic recovery, India has concluded the debt restructuring process with Sri Lanka, with the exchange of the bilateral amendatory agreements on debt restructuring. We have, as you would be aware, been pursuing an investment-led strategy with Sri Lanka, together with a grant

assistance-oriented approach to ensure that Sri Lanka is firmly on the path to sustainable and long-term economic recovery."

India also firmed up debt restructuring agreements as part of economic assistance for Colombo and decided to reduce interest rates on loans.

Modi said, "In the last six months alone, we have converted loans worth more than USD 100 million into grants. Our bilateral 'Debt Restructuring Agreement' will provide immediate assistance and relief to the people of Sri Lanka. Today we have also decided to reduce interest rates. It symbolises that even today, India stands with the people of Sri Lanka."

For the social and economic development of the eastern provinces of Sri Lanka, a support package of approximately 2.4 billion Lankan rupees will be provided, he said.

The two leaders virtually inaugurated the construction of the Sampur solar power project. They also inaugurated the recently completed temperature-controlled warehousing facility at Dambulla, which is possibly the first facility of its kind in the island, and a project for supply of solar rooftop systems to nearly 5,000 religious institutions across Sri Lanka.

An important agreement that the two sides inked was on developing Trincomalee as an energy hub. "The Sampur solar power plant will help in Sri Lanka's energy security. All the people of Sri Lanka will benefit from the agreements signed for building a multi-product pipeline and developing Trincomalee as an energy hub," Modi said.

The grid interconnectivity agreement between the two countries will open up options for Sri Lanka to export electricity, he said. Modi said Sri Lanka has a "special place" in India's Neighbourhood First policy and Vision MAHASAGAR.

"In the last four months, since President Dissanayake's visit to India, our cooperation has progressed significantly," he said.

Ahead of the bilateral talks, Modi was accorded a ceremonial welcome at the historic Independence Square in the heart of the Sri Lankan capital, in the first such honour given to a foreign leader. He was received at the Square by Dissanayake.

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Chinese airfield plan in Bangladesh district close to Chicken's Neck area raises Indian concerns

Source: The Economic Times, Dt. 06 Apr 2025,
URL: https://economictimes.indiatimes.com/news/defence/chinese-airfield-plan-in-bangladesh-district-close-to-chickens-neck-area-raises-indian-concerns/articleshow/120043332.cms

India is studying reports of a Chinese plan to build an airfield in Bangladesh's Lalmonirhat district which will emerge as a challenge for New Delhi's security interests along the eastern border, including the Chicken's Neck area.

The proposed airfield might have figured during Bangladesh interim regime's chief adviser Md Yunus visit to China, though there is no reference to the project in official documents, ET has learnt.

Lalmonirhat is strategically located in northwestern Bangladesh, closer to Jalpaiguri and Coachbehar districts of West Bengal. The Chicken's Neck is geographically closer to the area. It is a narrow stretch of land in West Bengal that connects the northeastern states to the rest of India and is bordered by Nepal, Bangladesh, Bhutan and China. The Indian military has a strong presence in the area.

Iran retaliates to Trump's Bombing threat: 'We are ready with missiles'Iran retaliates to Trump's Bombing threat: 'We are ready with missiles' While no Chinese air force fighter jet has been stationed in India's eastern neighbourhood so far, any such proposal has serious security implications for India as the entire northeast, Sikkim and West Bengal will be vulnerable, according to Bangladesh watchers.

Meanwhile, Pakistani foreign minister Ishaq Dar will visit Bangladesh from April 24 and foreign secretary Amna Baloch is scheduled to visit the country from April 17. This will be the first ministerial visit from Pakistan to Dhaka since 2012 and several MoUs may be signed during the visits.

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View: India needs long-term strategy for fighter jet buys

Source: The Economic Times, Dt. 07 Apr 2025,
URL: https://economictimes.indiatimes.com/news/defence/view-india-needs-long-term-strategy-for-fighter-jet-buys/articleshow/120043896.cms

It is heartening that the Ministry of Defence (MoD) has resumed the process of procuring a new fleet of multi-role fighter aircraft after an inexplicably long lull. The process, originally initiated in 2018 for procurement of 114 aircraft in the ‘Make In India’ format through the strategic partnership model, got stalled after the preliminary shortlisting of a few models. Seven years have been lost at a time when induction of new fighter squadrons is overdue.

The strategic partnership (SP) policy was formulated in 2017 to nurture private sector capability in manufacturing major platforms like aircraft, submarines, helicopters, tanks, and armoured fighter vehicles (AFVs). It was an initiative meant to give a leg-up to the private sector stunted by the overwhelming preference for defence public sector units in major acquisitions. Unfortunately, the policy was diluted later to accommodate the public sector also. The procurement process through the SP route for manufacturing submarines is in progress and expected to be finalised soon. The number of aircraft going to be procured being very large, indications are that the MoD will float an open tender seeking RFI for manufacturing the aircraft in India through a joint venture partnership. It also has the option to ask the original equipment manufacturer (OEM) to set up a plant and manufacture in India as per anewly-introduced procedure.

Irrespective of the procedure adopted, it should lead to capabilitybuilding for manufacturing fighter aircraft in the private sector. Over the years, India’s defence procurement system has been

quite shy of leveraging buyer power despite being one of the largest importers of equipment. This is visible in the administration of offsets. We have not been able to get key technologies transferred as countries like South Korea have done. Diplomatic pressures also undermine buyer power.

The procurement of over six squadrons of a new aircraft should place India in a strong position vis- a- vis the OEM in negotiations regarding technology transfer. This project is of great importance to India as a strategic roadmap for creating a vibrant aerospace ecosystem which is indispensable for self- reliance. Here, the role of the Indian partner is crucial.

Companies with long-term commitment to aerospace manufacturing have to be in the reckoning. The Tata Airbus venture for manufacturing the C295 transport aircraft to replace the AVROs, the first of its kind in the private sector, has demonstrated that Indian companies have the technical capability and grit to enter such projects. There is no reason why such entities cannot handle a fighter jet programme in collaboration with the OEM. There has to be a first time and someone has to be the pioneer.

It is equally important to enable the OEM and the Indian company to establish a production system which can drastically improve the Indian partner’s learning curve and facilitate acquisition of some key technologies. Self-reliance in fighter aircraft manufacturing cannot be achieved in a single project. Indigenisation involves the protracted process of manufacturing several upgrades of the aircraft through stages of assimilation, R&D and innovation utilising the abundant startup talent available in the country. This reality needs to be factored into the bidding process instead of taking a narrow view focussing on the immediate objectives.

Such a crucial project has to be taken forward with courage. Negotiations have to be hard but done with pragmatism, maturity and vision. Possible pitfalls that plagued past negotiations need to be avoided. Unrealistic expectations on issues like technology transfer could derail the project. For instance, some key technologies may be imported by the OEM itself. Similarly, the degree of import dependence of the OEM may prove to be politically risky in an era of international sanctions and deal-making transactionalism. Other issues like control and quality assurance which have stalled projects before have to be handled with finesse. The bidding conditions should give flexibility to the Defence Acquisition Council (DAC) for resolving deadlocks without compromising the basic integrity of the process. Minor technicalities should not be allowed to stall negotiations. The acquisition process needs to take a long-term view of capability and eco-system building. The project should not end with manufacturing the first batch of 114 aircraft. Apart from life cycle support, upgradations leading to new generations of the aircraft have also to be included in the partnership.

This will require that the Indian private sector partner have a long -term commitment to the project with the vision of acquiring the capability to design and manufacture an Indian model in future. This will make future procurements seamless and enable the Indian partner to invest for the future. Our flagship defence projects have to be driven with long-term vision and not with a short-term objective of acquiring a platform. It should not be influenced by diplomatic pressures. Apart from national security, the key factor driving it should be the country’s long-term interests and self-reliance. It is hoped that the MoD will achieve a break-through this time.

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What is the protocol for defence exports?

Source: The Hindu, Dt. 06 Apr 2025,
URL: https://www.thehindu.com/news/national/protocol-for-defence-exports-explained/article69417442.ecelch

The story so far: India's robust legal and regulatory framework on strategic trade continues to guide overseas commercial ventures by its companies, the Ministry of External Affairs said last week. It was responding to a U.S. media report it termed "factually incorrect and misleading", which claimed that Defence Public Sector Undertaking (DPSU) Hindustan Aeronautics Limited (HAL) supplied items sourced from a British firm to Russia.

What did the MEA say?

The MEA said the Indian entity mentioned in the report has scrupulously followed all its international obligations on strategic trade controls and end-user commitments. It observed that the report had tried to "frame issues and distort facts" to suit a "political narrative". This is not the first time such an allegation has been made. There have been similar allegations in the last couple of years, since the beginning of the Ukraine war in 2022.

Why is the regulation important?

The primary objective of strategic trade controls/export controls is to prevent the proliferation of Weapons of Mass Destruction (WMD) and their delivery systems, as well as the uncontrolled transfer of conventional arms/military items, states the Handbook on India's Strategic Trade Control Systems released by the Directorate General of Foreign Trade (DGFT), under the Ministry of Commerce and Industry. "Accordingly, India maintains a harmonised list on export control of dual-use and military items, including software and technologies, having potential civilian/industrial applications as well as military and WMD use. It is restricted/permitted under an export authorisation or licence (unless specifically exempted), except for certain items that are prohibited," it states.

Effective export controls are critical as India looks to significantly expand its defence exports with a current target of reaching ₹50,000 crore by 2029. On April 1, the Defence Ministry announced that defence exports have hit a new high of ₹23,622 crore for FY 2024-25, a growth of ₹2,539 crore or 12.04% over the previous financial year. The government, in the last few years, has taken a series of steps to boost exports by simplifying licensing requirements. As reported by The Hindu, defence sources had stressed that in the initial days of the Gaza offensive, Israel had requested artillery shells but India took a policy decision not to supply them; it similarly decided to stay neutral between Russia and Ukraine and took a stand to not supply "kinetic equipment" to either of them.

How does the licensing system work?

India is a member-signatory to international conventions on disarmament and non-proliferation such as the Chemical Weapons Convention (CWC) and Biological Weapons Convention (BWC). India is also a member of major multilateral export control regimes — the Missile Technology Control Regime (MTCR), the Wassenaar Arrangement on munitions and military items; and the

Australia Group on biological and chemical items. In line with this, India maintains a list of items controlled for export under the Special Chemicals, Organisms, Materials, Equipment and Technologies (SCOMET) list. There are eight categories under the SCOMET list and the Department of Defence Production (DDP) issues authorisation for export of Munitions List items covered in Category 6.

According to a December 2024 report, the Defence Secretary informed the Parliamentary standing committee, “I will tell you very briefly that we are exporting to more than 100 countries and most of them are done by our PSUs. But now the private sector is also coming forward. The major platforms we have done are Dornier 228 aircraft, 155 mm advanced towed artillery gun, Brahmos missile, Akash missiles, radar simulators, Pinaka rockets etc. There are many things, but most of the exports are PSU-driven.”

What are the steps taken to boost exports?

Various policy measures have been adopted to ease the approval/certifications for Indian firms for defence production while maintaining effective controls. The Defence Products list requiring industrial licences has been rationalised and the manufacture of most of the parts or components does not require an industrial licence. A Defence Production and Export Promotion Policy has also been formulated. The DDP issues the authorisation for export of items on the Munitions List. In a written reply to Parliament in February 2023, the Defence Ministry stated that, “These equipment are exported to different countries all over the world. Names of the countries with whom contracts have been signed and negotiations held cannot be divulged due to strategic reasons.”

The Defence Ministry further informed the standing committee that the standard operating procedures for export have been streamlined, an Export Promotion Cell has been set up and DPSUs have been assigned geographical areas for marketing. A Defence Export Promotion Scheme was launched in 2018 to promote Make in India products. A complete end-to-end online portal for receiving and processing export authorisation permission has been developed. The applications submitted on this portal are digitally signed and the authorisation is also issued digitally, improving the pace, according to the Defence Ministry. “The requirement of government signed End User Certification in cases of providing engineering services (transfer of technology) related to Munitions List to Wassenaar Arrangement (WA) countries has been dispensed with,” the Defence Ministry said.

Further, the Home Ministry through a notification in November 2018 has delegated its powers to DDP to issue export licence under Arms Rules 2016 for parts and components of small arms. With this DDP becomes the single point of contact for the export of parts and components of small arms and ammunitions, the Ministry said. The government has also notified the Open General Export Licence (OGEL) — a one-time export licence — which permits the defence industry firms to export specified items to specified destinations, enumerated in the OGEL, without seeking export authorisation.

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सेना के टैंकों के लिए चाहिए प्लेटफॉर्म आधारित काउंटर ड्रोन सिस्टम, ड्रोन अटैक से बचाने के लिए जरूरी

Source: NavBharat Times, Dt. 05 Apr 2025,
URL: https://navbharattimes.indiatimes.com/india/indian-army-to-deploy-indigenous-anti-drone-systems-to-enhance-tank-protection/articleshow/120020417.cms

भारतीय सेना को अपने टैंकों को ड्रोन अटैक से बचाने के लिए प्लेटफॉर्म आधारित काउंटर ड्रोन सिस्टम की जरूरत है। जिसके लिए सेना ने सभी स्वदेशी कंपनियों और पीएसयू से जानकारी मांगी है। सेना अपने टैंकों के लिए इन काउंटर ड्रोन सिस्टम को मेक इन इंडिया के तहत लेना चाहती है। सेना को अपने T-90 और T-72 टैंकों के लिए इस तरह के करीब 75 प्लेटफ़ॉर्म आधारित काउंटर ड्रोन सिस्टम की जरूरत है।

क्यों जरूरी है एंटी ड्रोन सिस्टम?

सेना के एक अधिकारी के मुताबिक दुनिया भर में चल रहे अलग अलग युद्धों ने ये दिखाया है कि टैंक के लिए खतरा सिर्फ सामने से ही सीमित नहीं है बल्कि युद्ध के मैदान में अलग अलग तरह के ड्रोन की मौजूदगी बढ़ने से यह खतरा हर दिशा से हो गया है। टैंक में आर्मर प्रोटेक्शन बढ़ाकर उसकी सुरक्षा बढ़ाने का ज्यादा स्कोप नहीं है क्योंकि उससे उसकी गतिशीलता और घातकता भी प्रभावित होती है। इसलिए टैंकों को प्लेटफ़ॉर्म आधारित एंटी ड्रोन सिस्टम से लैस करना जरूरी है। सेना ने अपनी जरूरत बताते हुए कहा कि टैंकों के लिए ऐसा सिस्टम हो जिसमें ड्रोन को पहचाने की एक्टिव और पेसिव क्षमता हो। सिस्टम सभी तरह के ड्रोन जैसे फर्स्ट पर्सन व्यू (FPV) ड्रोन, स्वार्म ड्रोन, लॉटिरिंग UAV और कामिकाज़े ड्रोन की पहचान कर सके। साथ ही सॉफ्ट किल और हार्ड किल का सिस्टम हो। यह सिस्टम इस तरह का हो कि और T-72 टैंकों में इस तरह इंटीग्रेट किया जा सके, जिससे टैंकों की युद्धक क्षमता पर कोई गलत असर ना पड़े।

चीनी सीमा के पास भारत के ताकतवर टैंक तैनात

भारत ने T-72 और T-90 टैंक रूस से लिए थे और T-90 टैंक 2003 से ही आर्मी का मेन बेटल टैंक है। ईस्टर्न लद्दाख में एलएसी पर जब चीन के साथ तनाव शुरू हुआ और चीनी सैनिक जब पैंगोग लेक के उत्तरी किनारे में फिंगर एरिया में काफी आगे आ गए थे तब भारतीय सेना ने दक्षिणी किनारे की ऊंची चोटियों पर कब्जा किया और यहां टी-90 टैंक भी पहुंचा दिए थे।

कम लागत के ड्रोन बहुमूल्य टैंक के लिए खतरा

रूस-यूक्रेन युद्ध में दिखा कि कैसे यूक्रेन ने कम कीमत वाले ड्रोन से रूस के कई हजार डॉलर कीमत के टैंकों पर अटैक कर उन्हें नष्ट किया। जिसके बाद रूस को अपनी सैन्य रणनीति में बदलाव भी करना पड़ा। पिछले साल रूस के मॉडिफाइड T-72 और T-90 टैंकों के विडियो सामने आए जिसमें टैंक की छत को ड्रोन हमलों से बचाने के लिए उन पर मेटल की जालीनुमा संरचनाएं लगाई गई थी, लेकिन यह तरीका टैंक को बचाने के लिए असरदार साबित नहीं हुआ। इस तरह की जालीनुमा संरचना का इस्तेमाल पहली बार आर्मेनिया-अजरबैजान युद्ध के दौरान दिखा। भारतीय सेना ने भी लद्दाख में अपने टैंकों में इस तरह की मेटल रूफ (छत) लगाई है।

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Projects worth Rs 24,000 crore to be outsourced to private firms in LCH deal

Source: India Today, Dt. 06 Apr 2025,
URL: https://www.indiatoday.in/india/story/government-outsourcing-lch-projects-private-sector-hal-2705003-2025-04-06

The government is planning to outsource projects worth approximately Rs 24,000 crore to private sector firms as part of the Light Combat Helicopter (LCH) deal signed between the Centre and Hindustan Aeronautics Limited (HAL) last week. Defence officials stated that tenders will be issued soon to involve private sector companies in the LCH manufacturing process.

The deal for the purchase of 156 Light Combat Helicopters worth over Rs 62,500 crore for the Indian Army and Air Force from HAL was signed last week.

In a similar move under the Light Combat Aircraft (LCA) project, different sections of the aircraft, such as the fuselage and wings, have been assigned to private companies, including Larsen and Toubro and Vem Technologies. Approximately 40 per cent of the total Rs 62,500 crore project is expected to be outsourced to private firms, as per official sources.

HAL is currently manufacturing helicopters at its facilities in Bengaluru and Tumkur in Karnataka. The first rear fuselage for the LCA Mk1A, produced by the private sector company Alpha Tool Engineering Services Private Limited, was recently delivered. Defence Minister Rajnath Singh was present at the occasion.

HAL is planning to further increase its collaboration with the private sector across its projects. The company has an existing order book exceeding Rs 2 lakh crore and anticipates receiving additional orders worth over Rs 70,000 crore.

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Keeping Up On The Robotic Battlefield: Why Autonomous Systems Are Indispensable For Indian Army

Source: Times Now, Dt. 07 Apr 2025,
URL: https://www.timesnownews.com/india/keeping-up-on-the-robotic-battlefield-why-autonomous-systems-are-indispensable-for-indian-army-article-151360866

In high-altitude Ladakh, where thin oxygen and biting chill test human endurance daily, Indian Army personnel once had to rely on binoculars and thermal scopes to monitor Chinese positions across icy ridgelines. Now, those lookouts are increasingly mechanical.

Unmanned aerial vehicles (UAVs) loiter quietly and stream high-definition visuals back to command centres kilometres away. This change is part of a far-reaching evolution: the Indian Army is embracing unmanned and autonomous systems, not just as gadgets, but as foundational elements of its future warfighting doctrine.

A Three-Front Revolution: Land, Air, and a Hint of Sea

The Army's unmanned arsenal now spans land and air, with use cases in peculiar maritime environments also evolving.

From combat drones to robotic mules and bomb-disposal bots, the Army has steadily moved from niche deployments to more ambitious, scaled induction.

UAVs: In the air, the Indian Army fields a growing fleet of UAVs, ranging from imported Israeli-made Heron and Searcher drones to smaller tactical platforms like the indigenous Switch UAV. Designed for use in high-altitude areas like the LAC (Line of Actual Control), Switch offers crucial tactical overwatch in areas where human patrols are difficult and dangerous.

More recently, the Army has inducted loitering munitions (effectively flying bombs) that can circle above a battlefield before striking. The SkyStriker and Warmate drones now give special forces and infantry units a kind of precision-strike capability once reserved only for fighter jets and attack helicopters.

But the real watershed lies ahead. The Indian Army has partnered with DRDO to trial the TAPAS-BH-201– a medium-altitude, long-endurance drone being developed indigenously. It's designed to reduce dependence on foreign UAVs and could eventually replace or supplement the Israeli Heron fleet. Even more significantly, the weaponised Archer drone, now under development, signals a move into armed drone warfare with Indian-made platforms.

UGVs: On the ground, the Indian Army's investments in unmanned systems are equally transformative. The DRDO-developed Daksh Remotely operated vehicle (ROV) has long been a staple for explosive ordnance disposal teams. But newer systems like the Muntra series of tracked unmanned ground vehicles (UGVs) are taking on surveillance, mine detection, and even nuclear-chemical reconnaissance roles.

What is truly striking, however, is the arrival of India-made multi-role UGVs like the Krushna and Xploder. The former is a lightweight, thermal-camera equipped robot suited for mountain reconnaissance. The latter, developed by an Army officer, can carry out surveillance, breach enemy hideouts with explosives, and even perform "kamikaze" missions. Hundreds are set for deployment in counter-insurgency operations in Jammu & Kashmir and the Northeast.

Adding to the futuristic feel are quadruped resembling dog-like robots, or robot mules, that were inducted in 2024 for high-altitude logistics support. Capable of navigating uneven terrain autonomously, these mules are a glimpse into what infantry patrols might look like in a decade: man-machine teams moving through hostile terrain with quiet precision.

Maritime unmanned systems: As for the maritime domains, the Army has a limited footprint. However, there is a strong use case developing. A handful of unmanned weaponised boats are earmarked for deployment in the high-altitude Pangong Tso lake in Ladakh that saw violent skirmishes in 2020. These autonomous boats, equipped with sensors and remote-controlled weapons, will provide patrol capabilities without exposing soldiers to direct risk.

Why Unmanned Systems Are Now Indispensable

The global battlefield is changing, and unmanned systems are not a luxury; they're a necessity. The wars in Ukraine, Syria, and Nagorno-Karabakh have shown the devastating efficacy of small drones, loitering munitions, and robotically coordinated swarm offensives.

For India, with its long, contested borders and the constant threat of low-intensity conflict, autonomous systems provide a unique asymmetric edge. In the mountainous terrain along the LAC with China or the LoC with Pakistan, humans tire, but machines endure. Where visibility is low and weather conditions brutal, UAVs and UGVs can operate beyond human limits.

Moreover, India's adversaries are moving quickly. China is aggressively fielding combat drones, swarm systems, and robotic ground vehicles as part of its "intelligentized warfare" doctrine. Pakistan, though less advanced, has already deployed Turkish and Chinese drones for ISR and strike roles. Without a countervailing capability, India risks being outpaced in a domain that increasingly defines modern combat.

Autonomous systems are not for replacing soldiers, but to multiply their effectiveness. A single operator today can control a fleet of drones scanning an entire valley. A special forces team can scout a building with a palm-sized nano-drone before entry. A convoy in insurgency-hit zones can be led by a robotic scout vehicle, saving lives in the event of an ambush or IED.

A Strategic Investment in an Uncertain Security Landscape

India's security threats are layered and evolving. From conventional threats like a two-front war with China and Pakistan, to unconventional challenges like cross-border terrorism, insurgency, and grey-zone tactics, the battlefield is more fluid and multi-dimensional than ever.

1. Autonomous systems offer versatility in this uncertain landscape. They can:

2. Perform ISR (intelligence, surveillance, reconnaissance) without escalation.

3. Conduct precision strikes with minimal collateral damage.

4. Deliver supplies and surveillance in high-altitude, inhospitable regions.

Monitor and secure critical infrastructure from sabotage or infiltration.

Perhaps most importantly, they offer scalability. A fleet of drones can be quickly deployed, redeployed, or even sacrificed with minimal political or human cost. As warfare becomes more networked, data fusion from autonomous platforms will drive faster, smarter military decisions.

India's push for indigenous development under the "Aatmanirbhar Bharat" initiative further accentuates the strategic logic. Instead of importing black-box drones, the Indian Army is fostering partnerships with startups and research institutes. From HAL's collaboration on VTOL logistics drones to the DRDO's combat drone programs and the Army's Innovation for Defence Excellence (iDEX) projects, a domestic unmanned ecosystem is taking shape. This will not only reduce strategic dependence on foreign suppliers but also create a resilient supply chain for wartime needs.

The Battlefield Is No Longer Fully Human

India's military doctrine is undergoing a subtle but significant transformation. Where once autonomy was a fringe idea—associated with expensive, unreliable tech—it is now central to the future force structure. The Indian Army has not only recognised this but is acting on it with deliberate speed.

In coming years, Indian infantry may carry loitering drones in their rucksacks. UGVs could lead urban assaults or mine-clearing ops. Robotic mules might deliver ammunition to a post cut off by avalanche. Surveillance swarms may shadow enemy patrols along the Himalayas—silent, tireless, and invisible.

This is not science fiction. It is already happening.

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Indian Army Breaks New Ground with MUM-T Capability in Northeast: Trishakti Corps Leads the Way

Source: Times Now, Dt. 05 Apr 2025,
URL: https://www.timesnownews.com/india/indian-army-breaks-new-ground-with-mum-t-capability-in-northeast-trishakti-corps-leads-the-way-article-151354669

In a landmark step towards modernising battlefield operations, the Indian Army's Trishakti Corps has successfully demonstrated the Manned-Unmanned Teaming (MUM-T) capability during the recently concluded Exercise SARVSHAKTI in the strategically significant Northeastern sector.

The exercise marks a pivotal moment in the Army's push towards operational readiness for Multi-Domain Operations (MDO), bringing together manned platforms and unmanned systems in a live tactical setting. The seamless coordination showcased between soldiers and AI-enabled systems, including drones and autonomous platforms, underlines a bold new era of warfare defined by speed, precision, and adaptability.

"The battlefield of tomorrow demands adaptability, speed, and seamless integration of man and machine. Exercise SARVSHAKTI is a proud milestone in that journey. The successful validation of MUM-T is not just a technological achievement, but a testament to the Indian soldier's ability to evolve with the times," said Lt Gen Zubin A Minwalla, General Officer Commanding, Trishakti Corps.

The Trishakti Corps' achievement is more than just a tactical triumph. It is a clear signal of the Indian Army's intent to integrate cutting-edge technologies into its core operations. The MUM-T capability allows human operators to work in tandem with unmanned systems for tasks such as real-time reconnaissance, surveillance, and target acquisition—significantly enhancing situational awareness and shortening the decision-making loop.

Key highlights of the exercise include:

Successful field-level validation of manned-unmanned teaming for real-time intelligence gathering.Integration of autonomous systems with traditional combat assets.Boosted battlefield awareness and operational tempo for tactical commanders.

Exercise SARVSHAKTI also aligns with the larger vision of Atmanirbhar Bharat, showcasing indigenous innovation and India's commitment to self-reliance in defence. By incorporating AI-driven platforms and fostering human-machine synergy, the Indian Army continues to take confident strides toward future-ready warfare capabilities.

With the Trishakti Corps at the forefront, the Indian Army is not only adapting to new-age security challenges but is also setting the benchmark for integrated and tech-empowered operations across all domains.

As conflicts across the globe become more tech-centric, the successful demonstration of MUM-T stands as a symbol of India's evolving military prowess and its readiness to dominate the battlefields of the future.

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Science & Technology News

POEM-4 re-enters Earth's atmosphere: ISRO

Source: The Economic Times, Dt. 05 Apr 2025,
URL: https://economictimes.indiatimes.com/news/science/poem-4-re-enters-earths-atmosphere-isro/articleshow/120001137.cms

ISRO on Friday said the fourth edition of the PSLV Orbital platform Experiment Module (POEM-4), the repurposed spent upper stage of the Polar Satellite Launch Vehicle used for the space docking experiment mission, has re-entered the Earth's atmosphere. "Finally, the POEM-4 module re-entered the atmosphere and impacted at 02:33 UTC (08:03 IST), April 04, 2025, in the Indian Ocean," ISRO said in a post on 'X'.

The safe re-entry of POEM-4 is yet another accomplishment of ISRO's commitment to contain the growth of space debris, reaffirming the prominent role of the space agency in the long-term sustainability of outer space environment and Debris Free Space Mission (DFSM), it said.

On December 30, 2024, ISRO's PSLV-C60 launched twin SPADEX (Space Docking Experiment) satellites and after injecting satellites at 475 km altitude, the specially configured upper stage (PS4) of PSLV-C60 (called PSLV Orbital Experimental Module in short POEM-4) was also almost in the same orbit.

Noting that subsequently, POEM-4 was de-orbited by engine restarts to a nearly circular orbit at 350 km altitude with 55.2 inclination, ISRO said, the PS4 was then passivated by venting the leftover fuel to minimise any potential risk for accidental break-up.

"During its mission life, POEM-4 hosted altogether 24 payloads (14 payloads from ISRO and 10 from various NGEs) and all payloads worked as expected yielding valuable science data," it said.

While the POEM-4 was in orbit, it was continuously tracked by ISRO's Radar Facilities and United States Space Command (USSPACECOM) facilities as well.

The tracking data was in turn utilised in the re-entry prediction process, ISRO said, adding that it was observed that POEM-4's orbit had decayed to 174 kmx165 km and the platform was predicted to re-enter the Earth's atmosphere on April 04, 2025.

The atmospheric re-entry event of POEM-4 was then closely monitored by ISRO System for Safe and Sustainable Space Operations Management (IS4OM) and regular updates in predictions were made, it added.

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The first probe to encounter Saturn

Source: The Hindu, Dt. 06 Apr 2025,
URL: https://www.thehindu.com/children/the-first-probe-to-encounter-saturn/article69367726.ece

The late 1970s provided a rare alignment of Jupiter, Saturn, Uranus, and Neptune that scientists wanted to use to their advantage. Gravity assists, also known as slingshots or planetary swingby, are spaceflight manoeuvres that utilise the gravitational pull of a planet to change the spacecraft's trajectory and velocity, thereby travelling farther and faster, while using up lesser fuel. During this particular alignment, which happens once in about 175 years, NASA planned to send a pair of Voyager spacecraft to study Jupiter and Saturn, and explore Uranus and Neptune too if that was possible. Before that, they had to make sure that a spacecraft could survive passing the asteroid belt and the strong radiation belts of Jupiter. The Pioneer spacecrafts – Pioneer 10 and Pioneer 11 – were envisioned as pathfinders for the Voyagers.

The launch

Following the successful launch of Pioneer 10 on March 2, 1972, its twin Pioneer 11, which was initially conceived as a backup, was launched on April 6, 1973. It sped away from Earth at a velocity of about 51,800 km per hour, matching the speed of its twin. In the interim 13 months, Pioneer 10 – the first spacecraft to travel beyond the orbit of Mars – had already gone past the asteroid belt and was on its way to fly by Jupiter in December 1973.

This meant that mission planners could tweak Pioneer 11's course after Pioneer 10's successful observations of Jupiter. Once Pioneer 11 crossed the asteroid belt without incident in mid-March 1974, two course corrections were carried out within 15 days of each other in April and the probe was retargeted in May such that it could use Jupiter's gravity to make its way to Saturn. The new trajectory ensured a polar flyby of Jupiter, also taking Pioneer 11 much closer to the giant planet.

Jupiter's Red Spot - NASA' Ames Research Centre released this rectified Pioneer 11 photo showing Jupiter's Great Red Spot. Photo was made while the space craft was 10,71,000 km from Jupiter.Jupiter's Red Spot - NASA' Ames Research Centre released this rectified Pioneer 11 photo showing Jupiter's Great Red Spot. Photo was made while the space craft was 10,71,000 km from Jupiter.

Jupiter flyby

Pioneer 11's encounter with Jupiter began in November that year, with the closest approach taking place on December 3, 1974. It managed to get three times closer than Pioneer 10 and was about 42,500 km from Jupiter's cloud tops. Travelling at the speed of 1,71,000 km per hour by this time, Pioneer 11 was faster than any human-made object at the time. This high speed also meant that the probe's exposure to Jupiter's radiation belts was for a shorter time than Pioneer 10, even though it had gone closer than its predecessor.

Having first penetrated the Jovian bow shock (when a supersonic object moves through a medium and causes the material in the medium to pile up, compress, and heat up, then the result is a type of shock wave known as bow shock) on November 25, Pioneer 11 repeatedly crossed the planet's bow shock. This indicates that the magnetosphere of Jupiter changes its boundaries as it is pushed roughly from side to side by the solar wind.

NASA released this view of Jupiter's Great Red Spot taken by Pioneer 11. The spacecraft was 5,44,000 km from Jupiter when the picture was taken.NASA released this view of Jupiter's Great Red Spot taken by Pioneer 11. The spacecraft was 5,44,000 km from Jupiter when the picture was taken.

Pioneer 11 snapped plenty of pictures of Jupiter, including the most detailed images until then of the Great Red Spot. It also mapped Jupiter's polar regions and clicked about 200 photographs of Jupiter's satellites. Once through with Jupiter, it utilised the planet's colossal gravitational field to swing back across the solar system – set on a course towards Saturn.

First to SaturnFollowing course corrections in May 1976 and July 1978 to sharpen its trajectory towards Saturn, Pioneer first detected the ringed planet's bow shock on August 31, 1979 at a distance of about 1.5 million km from the planet. This was the first conclusive evidence of the existence of a magnetic field around the sixth planet of the solar system.

Pioneer 11 made its closest encounter of Saturn on September 1, coming within 20,900 km of the planet. At the point of closest approach, the relative velocity of the probe was 1,14,000 km per hour. Pioneer 11 took 440 images of Saturn and its system during this encounter, including nearly 20 of them at a resolution of about 90 km.

This view of Saturn's rings was made by Pioneer 11 at 4 p.m. on September 1, 1979 as it neared the rings some 9,43,000 km from the planet's surface.This view of Saturn's rings was made by Pioneer 11 at 4 p.m. on September 1, 1979 as it neared the rings some 9,43,000 km from the planet's surface.

Pioneer 11's tryst with Saturn led to a number of discoveries. Among these was the narrow ring outside the A ring named the F ring, and two new moons to add to the many more the planet had.

The pictures that Pioneer 11 managed indicated a more featureless atmosphere than that of neighbouring Jupiter, while the spacecraft was also able to discern the planet's overall temperature to be in the range of minus 180 degrees Celsius.

What after Saturn?

When the Pioneer probes were designed, Pioneer 11 was built for 21 months of operation – enough to reach Jupiter and study it. The probe, however, outlived all expectations and worked for 22

years! During that time, it not only provided the first remote observations of Saturn, but also plenty of other vital information that has been handy in our exploration and understanding of the outer planets.

After completing its observations of Saturn, it sailed on a trajectory that took it out of the solar system in a direction opposite to that of Pioneer 10 in the general direction of Sagittarius. It crossed the orbit of Neptune, the outermost planet in our system, on February 23, 1990, becoming just the fourth spacecraft after Pioneer 10, Voyager 1 and 2 to achieve the feat.

Two of its more than 10 instruments were still working in 1995, 22 years after launch. Last contact with the probe was made on September 30, 1995, when it was 44.1 AU from Earth. Scientists received final signals from the spacecraft and data on November 24, 1995. Right now, Pioneer 11 is in the constellation of Aquila, at a distance of over 17 billion km from Earth.

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Lack of an indigenous GPU is a stumbling block to India's AI 'Atmanirbhar' ambition. Here's why

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URL: https://theprint.in/tech/lack-of-an-indigenous-gpu-is-a-stumbling-block-to-indias-ai-atmanirbhar-ambition-heres-why/2579601/

India's dream of Atmanirbharta in defence has long been slowed down by its inability to master aircraft engine technology. A new sector where the country may not be able to compete fiercely is the artificial intelligence space. The AI race cannot be won without high-performance chips, and India remains dependent on foreign graphics processing units (GPUs), indicating strategic and technological vulnerability.

Sunil Gupta, co-founder, MD and CEO of Yotta Data Services—empanelled under IndiaAI Mission to provide compute facilities—told ThePrint that "India has a strong foundation in software and AI talent, but scaling AI models to a global level requires advanced computational power, semiconductor access, and sustained investments in high-end GPUs".

As companies sourcing GPUs under the government's AI Compute Portal initiative are set to receive their AI workloads—tasks performed by AI systems, including data processing, model training and other AI-based applications—this month, ThePrint mapped the GPU chokepoints in India's AI landscape, exploring how the country is navigating infrastructure challenges across industries and academia.

Launched by Union IT Minister Ashwini Vaishnaw on 6 March, 2025, as part of the IndiaAI Mission, the AI Compute Portal aims to enhance accessibility and affordability of GPUs for AI researchers, academic institutions and businesses.

GPUs, which were initially designed for gaming purposes, have now evolved into indispensable components of AI. Their ability to break down complex tasks into smaller simultaneous computations makes them vital for training AI models, running simulations and handling vast datasets. But as nations race to secure their own chip supply, GPUs have transformed from mere technology to a strategic asset.

Countries like the US, China and Taiwan, with their control over advanced semiconductor manufacturing, hold a significant geopolitical advantage. For India, heavy reliance on imported GPUs poses risks associated with national security, data privacy, supply chain disruptions and sanctions, which in future could stall the country's AI ambitions.

"India must develop sovereign AI infrastructure, expand its data centre capacity, and foster deeper public-private partnerships to ensure self-reliance, as strategic investments in AI compute infrastructure and indigenous semiconductor capabilities will be critical in positioning India as a global AI hub," Gupta said.

According to government data, GPUs worth over $29 million were imported over the last five years from the US, China and Taiwan.

The global GPU landscape is dominated by a handful of players. While American companies, like NVIDIA and AMD (Advanced Micro Devices) lead in design, Taiwan's TSMC (Taiwan Semiconductor Manufacturing Company) and South Korea's Samsung are top manufacturers.

The government's new initiative, IndiaAI Compute Portal, will offer AI compute, network, storage, platform and cloud services at discounted rates to startups, MSMEs, researchers and government agencies.

"Indian computing ecosystem is poised for a significant and transformative shift. By lowering the cost barrier, this approach accelerates AI R&D efforts and plays a crucial role in stimulating local innovation," Ranjit Metrani, president of managed services at CtrlS Datacenters, one of the first few companies to be assigned AI workload, told ThePrint.

These government-procured GPUs will be available at a highly subsidised rate of less than Rs 100 per hour, significantly cheaper than the global average of $2.5-3 per hour.

Additionally, there are plans to develop GPUs indigenously within the next three to five years.

Import dependency

India's lack of indigenous capabilities in GPU production has led to overwhelming import dependency. Data service providers, like Yotta and Neysa.AI, therefore import GPUs, and make them accessible to startups and research institutions for training models, running data centres and building AI-based services.

"At Yotta, GPUs are at the core of our AI and High-Performance Computing offerings. With Shakti Cloud, powered by NVIDIA H100 GPUs, we provide businesses and researchers with scalable AI computing resources. Our GPU-as-a-Service model ensures cost-effective, on-demand access to high-performance compute power," Yotta CEO Gupta said.

GPUs are high-cost resources, especially those designed for data centre applications, which handle large amounts of data to train AI models and run AI-based applications. In India, the price of data centre-grade GPUs can start at around Rs 4.3 lakh, and go up to Rs 1.46 crore or more, depending on performance and specification requirements.

NVIDIA follows a rigorous selection process, assessing buyers on factors like intended applications, data center readiness and scalability. “NVIDIA evaluated our capabilities before approaching us a few years ago. Our advanced data center capacity, power infrastructure, fiber connectivity, and expertise in managing GPU services played a key role in securing access to Nvidia GPUs,” Gupta told ThePrint.

The US-based chipmaker dominates this space of GPU research and design. Its dominance stems not just from its hardware design capabilities, but also from its software platform—CUDA (Compute Unified Device Architecture). NVIDIA’s CUDA programming language has become the industry standard for training of foundational AI models. The model’s weights are distributed across nodes, where different nodes handle different parts of the training process simultaneously, optimising efficiency and speed.

While other companies are catching up with NVIDIA, most of these are US-based. Amazon and Google are researching building their own GPUs to undercut NVIDIA.

Another major challenge in GPU procurement is the restricted global supply. Under the AI Diffusion Framework regulations, the US categorises countries into three tiers, each with specific restrictions on the export of AI chips and GPUs.

Countries in the top tier have the least trade restrictions, whereas India, placed in the middle tier, faces stricter limits. These regulations cap exports at fewer than 1,700 GPUs per company annually to middle-tier countries.

Making AI computing accessible

While tech giants, such as Microsoft, scale their AI models by procuring nearly half a million GPUs from NVIDIA, Indian GPU providers, such as Yotta, operate on a much smaller scale, with an installed base of just 4,000 GPUs. Companies with larger GPU clusters can support more users and handle extensive workloads, benefitting from economies of scale that drive down computation costs through efficient workload distribution.

“Currently, we offer GPU access at sub $3 per hour, significantly undercutting global prices of $25 per GPU per hour. Our model prioritises high-volume adoption over high-margin sales. Instead of serving a limited customer base at premium prices, we aim to make AI computing accessible to a larger market with lower margins,” said Gupta.

Mumbai-based data centre Neysa.AI has taken a different route to bridge the domestic demand gap. It provides on-demand GPU infrastructure to create and deploy AI-based services to researchers and startups in the AI-based applications sector. They focus on efficient deployment of GPUs, ensuring maximum output with minimum number of units.

“We will always be a supply-constraint market. This is where players like us, deploy and make that GPU infrastructure available to the customers in the most efficient way possible,” said Sujit Janardanan, chief marketing officer at Neysa.

While these GPU providers optimise resources and offer competitive pricing, their relatively small GPU clusters limit their ability to support large-scale AI workloads.

Microsoft procures over a million GPUs, while India’s Yotta has installed a base of just 4,000, though it plans to expand to 32,000. There still exists a vast gap. As demand for AI services surges, the gap in the domestic capacity of GPUs availability points toward the long-term challenge of achieving scalability in India’s AI ecosystem.

Where India stands in GPU research

India focuses on domain-specific hardware rather than general purpose GPUs.

While these hardware devices are tailored for specific workloads, the general-purpose GPUs are designed to handle heavy computational tasks efficiently, train a wide range of foundational models and ensure scalability in AI-based operations.

“No full-fledged GPU has yet been designed indigenously. India is still in the research and development and prototyping phase. Research is largely in AI accelerators and application-specific Integrated Circuits,” said Bibhudatta Sahoo, professor and head of computer science and engineering department at National Institute of Technology, Rourkela.

Some of the IITs and research institutions in India have ventured into chip design, but it’s still at a nascent stage. “The research in India remains limited to chip size of around 28nm to 65nm, whereas, at cutting-edge, global players, like Intel and TSMC, are now producing ultra-small chips of 10nm, 5nm, and even 2nm, to power the latest AI processors and provide high-performance computing devices,” said Sahoo.

These chips form the backbone of GPUs and other advanced computing hardware.

The term “nm” (nanometer) in the chip industry refers to the size of transistors in those chips. As the transistor size decreases, more transistors can be accommodated into a given chip. This increases the computational power of the chip, thereby enhancing the performance and the efficiency of the GPU.

The software used for designing and testing semiconductor chips is primarily developed and owned by US companies, such as Synopsys, Cadence and Mentor Graphics (owned by Siemens). However, these tools come with high licensing costs, can be restricted under US export regulations, and might pose national security risks due to potential backdoor surveillance. This dependence not only limits access, but also threatens India’s long-term strategic autonomy in semiconductor innovation.

“Some open-source softwares like OpenROAD, Magic, KLayout are being experimented with for chip designing. However, they are not yet production-grade for advanced nodes. India needs to invest in indigenous Electronic Design and Automation toolchains as a strategic tech stack,” said Sahoo.

The way forward

The IndiaAI Mission is complemented by the Semicon India Programme launched in 2024, through which the government provides incentives to attract chip manufacturers and semiconductor firms, building foundations for GPU manufacturing in India.

“We have moved from being a complete absentee in the semiconductor landscape to now, today, slowly and systematically planting our flags and building our presence. I have absolutely no doubt that by the year 2026-27, we will have our first 28 nm fab in Gujarat,” former Union minister of state Rajeev Chandrashekhar had said last month at the 2nd Digital India RISC-V (DIR-V) Symposium at IIT Madras.

The DIR-V initiative, launched in 2022, aims to develop homegrown semiconductor capabilities, which includes chip designing and reducing dependence on foreign technology. One notable effort under this initiative is the Shakti processor project by IIT Madras. The premier technology institute has developed open-source RISC-V-based CPUs and is now exploring AI accelerators—specialised processors designed to enhance AI computations. This project will serve as a “step towards a GPU-like co-processor,” Sahoo said.

India will need 2.3 million AI professionals by 2027, but the country faces a projected shortfall of 1.2 million, according to a Bain & Company report released last month. The required skillset includes managing large GPU infrastructure, AI workload optimisation, security and fault tolerance in multi-GPU environments.

“A specialised talent pool is essential to manage this complex infrastructure effectively. Without it, inefficient deployment and potential damage to infrastructure could arise. This specialised skillset is very difficult to find in the Indian market,” said Neysa.AI’s Janardanan. “India’s most powerful resource is its human capital. Currently, this kind of training is limited to elite institutions. Scaling it up is critical.”

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