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Defence News

Defence Strategic: National/International

Raksha Mantri meets US Director of National Intelligence in New Delhi

Source: Press Information Bureau, Dt. 17 Mar 2025,

URL: <https://pib.gov.in/PressReleasePage.aspx?PRID=2111789>

Raksha Mantri Shri Rajnath Singh held a productive meeting with the Director of National Intelligence of the United States Ms Tulsi Gabbard in New Delhi on March 17, 2025. Drawing from the Joint Statement issued after the recent meeting of Prime Minister Shri Narendra Modi with US President Mr Donald Trump, the discussions reaffirmed the growing strength of the India-US bilateral defence partnership.

Both leaders emphasised that strategic security remains a vital pillar of the comprehensive global strategic cooperation between the two nations. Shri Rajnath Singh and Ms Tulsi Gabbard reviewed the significant strides made in the areas of military exercises, strategic cooperation, integration of defence industrial supply chains and information-sharing cooperation, especially in the maritime domain, between India and US.

The two leaders explored avenues for collaboration in cutting-edge defence innovation and niche technologies, reflecting their shared commitment to advancing mutual strategic interests. Additionally, they addressed key areas such as enhancing interoperability and fostering greater integration of defence industrial supply chains to bolster resilience and innovation.

Raksha Mantri expressed gratitude to the US Director of National Intelligence for her steadfast goodwill and admiration for Indian culture and heritage, noting that such sentiments further deepen the bonds of friendship between India and US.

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9th India-Australia Defence Policy Talks held in New Delhi

Source: Press Information Bureau, Dt. 17 Mar 2025,

URL: <https://pib.gov.in/PressReleasePage.aspx?PRID=2099664>

The ninth edition of India-Australia Defence Policy Talks was held in New Delhi on March 17, 2025. The Indian delegation was headed by Joint Secretary Shri Amitabh Prasad, while the Australian side was led by First Assistant Secretary International Policy Division, Department of Defence Australia Mr Bernard Philip.

Both sides welcomed sustained progress in bilateral defence cooperation, including the growing frequency and complexity of defence exercises & exchanges. It included several first-time milestones, finalisation of key agreements and participation in each other's major defence trade expositions.

The meeting reviewed defence outcomes of second Ministerial Foreign and Defence Ministers' 2+2 in November 2023, inter-sessional 2+2 consultations at Secretary-level in October 2024 and the second Annual Leaders' Summit in November 2024. The discussions focused on cooperation priorities including maritime domain awareness, reciprocal information sharing, industry and science and technology collaboration and exercises and exchanges including deployments from each other's territories. The two sides also exchanged views on regional and global issues of mutual interest.

India and Australia are committed to working together to promote a peaceful, stable, and prosperous Indo-Pacific region.

The two sides agreed on priorities and preparations for the next 2+2 Ministerial Dialogue to be held in Australia in 2025. They reiterated their commitment to work on formulating long-term vision of defence and security collaboration between the two countries as envisioned by both Prime Ministers to enhance collective strength, contribute to both countries' security and make an important contribution to regional peace and security.

Both countries also explored the possibilities of defence industry collaboration. They called upon the respective agencies on both sides for acceleration cooperation in field of defence science and technology collaboration. They also agreed to further deepen cooperation and interoperability across maritime, land and air domains, including working with multilateral partners.

Over the years, defence has emerged as an important pillar of India-Australia Comprehensive Strategic partnership. The eighth edition of Defence Policy Talks was held in 2023.

As part of the visit, the Australian delegation will visit Mazagon Dock Shipbuilders Ltd in Mumbai. The Australian co-chair will call on Defence Secretary Shri Rajesh Kumar Singh on March 18, 2025.

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Record defence contracts to be inked this year: MoD to parliamentary panel

Source: The Economic Times, Dt. 18 Mar 2025,

URL: <https://economictimes.indiatimes.com/news/defence/record-defence-contracts-to-be-inked-this-year-mod-to-parliamentary-panel/articleshow/119128496.cms>

India is on track to sign a record number of defence contracts this year, with the value expected to be in the ₹2-3 lakh crore range, the ministry has informed a parliamentary panel, sharing that there have been some delays in deliveries due to the conflicts in Russia and Israel.

The defence ministry said it is working to reduce procurement timelines with the infusion of technology, by streamlining lengthy trial evaluations, working on delays in finalisation and preparations of tenders and quickly concluding final contract negotiations.

"The highest number of contracts we ever awarded in this country for defence was 2023-24 when we reached ₹1 lakh crore of contract awards. In the current year we have already exceeded that, and we are on track to doubling or perhaps even tripling that contract amount," defence secretary Rajesh Kumar Singh informed the parliamentary standing committee on defence.

Defence officials sought to counter questions raised by the panel members on allocation of adequate budgets to the armed forces. "The delay actually has been in terms of absorptive capacity, in terms of our ability to spend that money quickly, both in the domestic industry and in terms of global orders because of various geopolitical factors," they said.

They added delays have taken place in deliveries of some systems due to geopolitical reasons. "S-400 was ordered from Russia... That is being held up because of the conflict there. Some equipment from Israel and other countries also got held up because of geopolitical reasons," they said.

Having declared 2025 as the year of reforms, the ministry is working to shorten procurement timelines to ensure that budgetary allocation is used, with officials assuring the panel that additional funds will also be provided if needed.

The panel took note of anomaly in the budget granted to the Air Force this year, noting that the allocation for revenue expenses is 19% lower than what had been projected by the force. The panel said the cut may hamper operational preparedness of the force, recommending the government to consider allocation of funds at the supplementary grants stage. edefense reforms 2025 Air Force budget concerns Ministry of Defence defence ministry

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‘Two-front war no longer a possibility—It’s a reality’: Army chief Upendra Dwivedi fires warning shot

Source: The Economic Times, Dt. 18 Mar 2025,

URL: <https://economictimes.indiatimes.com/news/defence/two-front-war-no-longer-a-possibilityits-a-reality-army-chief-upendra-dwivedi-fires-warning-shot/articleshow/119115383.cms>

India’s ambition to emerge as the natural leader of the Global South is being hindered by China’s growing economic and strategic clout, Army Chief General Upendra Dwivedi said on Sunday. Delivering the fourth General Bipin Rawat Memorial Lecture in Delhi, he highlighted the increasing complexity China’s rise brings to global geopolitics.

“The rise of China as a dominant economic and strategic force adds complexity, creates competition, and hampers India's effort to be the natural leader for the Global South,” General Dwivedi stated.

He urged India to look towards Africa as a future power centre, recognising its potential role in the shifting global order. Despite its demographic and geographic advantages, India remains at a relatively lower global standing, he observed.

“With the democratic shift and resource control race, we need to look at possibilities of Africa as a future power centre... India’s position will remain pivotal due to its geography, demography, democracy, prosperity, soft power, and inclusive approach,” he said.

Roadblocks in Global Influence

General Dwivedi pointed to the obstacles India faces in shaping international policies. He noted that despite its credentials—the largest population, the world’s largest democracy, and a key geostrategic location—India continues to struggle for greater influence.

“We have been repeatedly blocked, leaving us with little ability to shape key international decisions directly. Even BRICS has faced setbacks. Its purported attempt to upend the mighty US dollar has invited an open pushback from the Trump administration. In light of the same, we need to closely watch SCO (Shanghai Cooperation Organisation),” he said.

The Growing China-Pakistan Threat

General Dwivedi also made a veiled reference to the growing strategic coordination between China and Pakistan, terming it “near absolute collusivity.” “What it means, as far as I am concerned, is that the two-front threat is a reality,” he warned.

Echoing the words of the late General Rawat, he cautioned against the dangers posed by India’s unsettled borders. “When you have unsettled borders to your north and west, you don’t know which side the battle will commence and where it will end. So, you should be prepared for both fronts. Today, the near absolute collusivity has further compounded the threat.”

A Shift in Global Power Dynamics

Speaking on the evolving world order, General Dwivedi highlighted how the recent conflicts in Ukraine and Gaza have reshaped global alliances. “In 2025, the world is just cooling down from two major conflicts—Ukraine and Gaza—where the majority of nations took sides, some based on realism, some on idealism, and a selective few on religion,” he noted.

He also pointed out China’s growing challenge to the existing rules-based system, particularly through its Belt and Road Initiative, which extends its influence across Asia, Africa, and Europe. “The US, reinforcing alliances like AUKUS and Quad, and promoting a free Indo-Pacific, Europe navigating a delicate path, striving to maintain its principle of human rights while engaging with China and the US concurrently, but they are not sure how to deal with Russia now,” he explained. Meanwhile, Africa is rising, and the Global South is increasingly demanding a multipolar world that better reflects diverse interests.

A New Approach to Security and Deterrence

General Dwivedi stressed the importance of rethinking security in a rapidly changing geopolitical landscape. “Doing more and doing better is no longer enough. We need to do things differently, and that means thinking differently. Enhancing security today requires reimagining,” he said.

He noted that India's traditional non-alignment policy has evolved into a strategy of "multi-alignment," making its international posture more dynamic and assertive.

"Security is about wholesome capability to wage war and deter war. Healthy military-civil fusion, Aatm Nirbhar defence industrial base, dual-use assets at the national level, well-informed and empowered decision-makers of DIME framework, and an inclusive approach for citizen warriors play a pivotal role," he elaborated. He also pointed out the growing role of technology in deterrence. "Technology prowess has become the new currency of deterrence. Data has become the new capital of trade and security."

Additionally, he expressed concerns over China's increasing militarisation of space, warning that it escalates the risk of orbital debris and further heightens tensions.

Strengthening India's Role in Global Governance

To bolster India's international standing, General Dwivedi called for reforms in global governance structures such as the United Nations Security Council.

"Reform the UN Security Council to include Global South representatives. Play an active role in conflict resolution as a negotiator or a mediator. Harness the positive strength of the Indian diaspora the world over for humanitarian causes. Share a common platform for global commerce, enable the emergence of the Global South, be the leader in sharing additional resources with the have-nots for better socioeconomic development," he urged.

He also reaffirmed India's commitment to peacekeeping operations and counterterrorism, stating that the military remains aligned with national priorities. "Lead peacekeeping operations, advocate nuclear weapons as a political asset only for deterrent purposes as long as possible, lead the Global War on Terrorism by virtue of facing it firsthand in J&K, the northeast, and against left-wing extremism," he said.

General Dwivedi's address painted a complex picture of India's geopolitical challenges. While China's rise and the growing China-Pakistan nexus present serious strategic concerns, he emphasised that India must focus on strengthening its diplomatic, technological, and military capabilities to secure its place in the emerging global order. With India's increasing assertion in global diplomacy and security, the road ahead will require a careful balance—leveraging alliances, reimagining deterrence, and championing the interests of the Global South.

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India, NZ pledge partnership in defence, sports, education

Source: The Tribune, Dt. 18 Mar 2025,

URL: <https://www.tribuneindia.com/news/india/india-nz-pledge-partnership-in-defence-sports-education/>

India and New Zealand have expanded their partnership across various sectors, including the resumption of free trade agreement (FTA) negotiations — nearly a decade after talks failed to yield results. The two sides have agreed to hold the first round of negotiations next month. The FTA talks were stalled in 2015 due to unresolved differences in sensitive areas such as dairy and

agriculture. India has traditionally protected its dairy sector, which is dominated by cooperative milk producers. The announcement came after Prime Minister Narendra Modi held bilateral talks with his New Zealand counterpart Christopher Luxon here.

“India and New Zealand have decided to begin detailed negotiations on a mutually beneficial FTA,” Modi said. Beyond trade, both nations pledged deeper engagement in sectors, including defence, security, sports, education, horticulture and environment. Describing economic ties with India as a “key priority”, Luxon said, “India holds significant potential for New Zealand in exports by value over the next 10 years.” Bilateral trade between the two countries currently stands at under \$2 billion (around Rs 17,000 crore) annually.

The move to restart trade talks with New Zealand follows Delhi’s relaunch of FTA negotiations with the European Union and the UK. Last year, India signed a \$100 billion FTA with the European Free Trade Association — a bloc of four non-EU European nations — after nearly 16 years of discussions. For Delhi, these trade talks have gained renewed significance amid US President Donald Trump’s decision to impose tit-for-tat tariffs on imported goods, including those from India, effective April 2.

Modi and Luxon also signed a defence cooperation pact to enhance maritime security and explored potential collaboration in digital payments. “We have decided to strengthen and institutionalise our defence and security partnership,” Modi said at a joint press briefing. “Along with joint exercises, training and port visits, a roadmap will be developed for cooperation in the defence industry,” he added.

Both leaders reaffirmed their commitment to a free, open, secure and prosperous Indo-Pacific, emphasising a policy of “development, not expansionism”. Modi’s remarks come amid growing concerns over China’s assertive actions in the region, particularly in the South China Sea. India and New Zealand also launched negotiations to facilitate the mobility of professionals and skilled workers, with New Zealand joining the Indo-Pacific Oceans Initiative. Additionally, both nations signed a Memorandum of Cooperation covering horticulture, sports and education.

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President Murmu meets officer trainees of the Indian Naval Material Management Service and Indian Naval Armament Service

Source: ANI News, Dt. 17 Mar 2025,

URL: <https://www.aninews.in/news/national/general-news/president-murmu-meets-officer-trainees-of-the-indian-naval-material-management-service-and-indian-naval-armament-service20250317143643/>

The officer trainees of the Indian Naval Material Management Service and Indian Naval Material Management Service called on the President of India, Droupadi Murmu at Rashtrapati Bhavan on Monday, a release from the President's secretariat said.

Speaking on the occasion, the President said that at a time when global geopolitical tensions are rising, the countries are enhancing maritime cooperation and undertaking joint exercises.

She stated that with India acquiring a bigger role on the global stage, officers of the Naval Material Management Service and Naval Armament Service would play an important role in supporting the Indian Navy through efficient logistics management by leveraging advanced technologies.

The President advised officers to continuously update their knowledge about the latest technological developments happening around the globe.

She told them to adopt an innovative approach to make inventory management and service delivery systems seamless and effective. She urged officers to dedicate themselves to the service of the nation and the Indian Navy. She expressed confidence that they would contribute towards nation-building by providing the best services to the Indian Navy.

Earlier on March 4, The officer trainees of the Indian Revenue Service (78th batch) called on President Droupadi Murmu at Rashtrapati Bhavan on Tuesday.

Addressing the officers, the President said that the job of Indian Revenue Service officers is one of the most important functions for governance and welfare. She highlighted the importance of taxes for a vibrant economy. She added that as Indian Revenue Service officers, they would play a pivotal role in ensuring that this essential resource is collected in a fair, effective, and transparent manner.

The President said that our infrastructure is growing, digital connectivity is bridging gaps, and economic opportunities are more accessible than ever before. She underlined that for development to be sustainable and inclusive, resources must be managed with efficiency and fairness, and the citizens should trust the system.

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चीनी नौसेना की खैर नहीं! भारत बना रहा 2 एंटी शिप मिसाइलें, जो ड्रैगन के जहाजों का नहीं छोड़ेंगी नामोनिशान

Source: Zee Bharat, Dt. 17 Mar 2025,

URL: <https://zeenews.india.com/hindi/zee-hindustan/national/indian-navy-increasing-naval-capabilities-to-counter-china-by-adding-two-anti-ship-weapon-system/2683310>

तीनों सेनाओं यानी आर्मी, नेवी और एयरफोर्स के बीच समन्वय बनाने और संयुक्त सैन्य योजना बनाने का जिम्मा देख रहा IDS यानी इंटीग्रेटेड डिफेंस स्टाफ के तहत अब एक फ्यूचर एनालिसिस ग्रुप बनाने पर विचार हो रहा है। IDS के हेड चीफ ऑफ डिफेंस स्टाफ (सीडीएस) जनरल अनिल चौहान हैं।

जनरल चौहान ने संसद की रक्षा मामलों की स्टैंडिंग कमिटी को बताया कि आर्म्ड फोर्स के अंदर IDS हेडक्वार्टर के तहत एक फ्यूचर वॉरफेयर फंड बनाया गया है। अब एक फ्यूचर एनालिसिस ग्रुप बनाने पर विचार किया जा रहा है। जनरल चौहान ने बताया कि यह ग्रुप स्टडी करेगा कि भविष्य में आने वाली टेक्नॉलजी क्या हैं और उनका क्या

प्रभाव हो सकता है, जिसमें अमेरिका का सहयोग भी मिल सकता है। ऐसे में चीन के लिए आने वाले दिन मुश्किल हो सकते हैं।

टेक्नोलॉजी को अडाप्ट करने की जरूरत

सीडीएस जनरल चौहान ने कहा कि भविष्य में आने वाली टेक्नॉलजी तेजी से चेंज होंगी और उन्हें अडाप्ट करने की जरूरत है। संसद की स्टैंडिंग कमिटी को जनरल चौहान ने बताया कि मॉडर्नाइजेशन के बजट को हम प्रिडिक्ट नहीं कर सकते लेकिन टेक्नॉलजी में किस तरह के ट्रेंड चल रहे हैं, जो युद्ध और युद्ध कला में प्रभाव डालेंगे, ये काफी हद तक हमें पता चल जाता है।

उन्होंने कहा कि जैसे अभी तीन तरह की टेक्नॉलजी भविष्य के युद्ध में प्रभाव डाल सकती हैं। पहला, रोबॉटिक्स ओटोमेशन। दूसरा, वेलांसिटी के बारे में जिसमें हाइपरसोनिक ड्रोन आदि का इस्तेमाल है और तीसरा, इंटेलिजेंस वॉरफेयर। इसमें आर्टिफिशियल इंटेलिजेंस, डेटा एनालिटिक्स और मशीन लर्निंग आते हैं। उन्होंने कहा कि तीसरे का प्रभाव पहले दोनों पर भी पड़ता है, इसलिए इस पर डिटेल स्टडी हो रही है।

फंड का पूरा इस्तेमाल हो सुनिश्चित

कमिटी ने बजट संबंधी दस्तावेजों का विश्लेषण करने के बाद कहा कि संशोधित अनुमान 2024-25 कुल रक्षा बजट के लिए 6,41,060 करोड़ की राशि आवंटित की गई थी। दिसंबर 2024 तक वास्तविक व्यय 4,53,010 करोड़ हुआ है, जो करीब 71 पर्सेंट है। कमिटी ने कहा कि रक्षा मंत्रालय ठोस और संगठित प्रयास करे ताकि वित्तीय वर्ष 2024-25 के लिए आवंटित फंड का पूरा इस्तेमाल सुनिश्चित किया जा सके और वित्त वर्ष की समाप्ति के बाद धनराशि वापस न करनी पड़े।

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सेना में IDS के तहत 'फ्यूचर एनालिसिस ग्रुप' बनाने पर विचार, जानें कैसे साबित होगा कारगर

Source: NavBhart Times,

Dt. 18 Mar 2025,

URL: <https://navbharattimes.indiatimes.com/india/cds-general-anil-chauhan-future-analysis-group-will-be-formed-under-integrated-defence-staff/articleshow/119140650.cms>

भारत इस साल के अंत तक रूसी निर्मित एस-400 वायु रक्षा प्रणाली के चौथे स्क्वॉड्रन को प्राप्त करने वाला है। सूत्रों ने पुष्टि की है कि पांचवां स्क्वॉड्रन 2026 में आने की उम्मीद है। भारत ने पहले ही एस-400 प्रणाली के तीन स्क्वॉड्रन प्राप्त कर लिए हैं। उन्हें विभिन्न स्थानों पर तैनात किया है। भारत ने 2018 में रूस के साथ एस-400 प्रणाली के पांच स्क्वॉड्रन के लिए लगभग ₹35,000 करोड़ के सौदे पर हस्ताक्षर किए थे। यह उन्नत वायु रक्षा प्रणाली भारत के रणनीतिक स्थानों की सुरक्षा में महत्वपूर्ण भूमिका निभाती है।

एस-400 की तैनाती के प्रमुख क्षेत्रों में होगी

सिलीगुड़ी कॉरिडोर की सुरक्षा के लिए एक स्क्वॉड्रन को तैनात किया गया है। पठानकोट क्षेत्र में एक अन्य स्क्वॉड्रन को तैनात किया गया है ताकि जम्मू-कश्मीर और पंजाब की रक्षा को मजबूत किया जा सके। भारत की पश्चिमी सीमा

पर एक स्कवॉड्रन को तैनात किया गया है ताकि राजस्थान और गुजरात में महत्वपूर्ण स्थानों की सुरक्षा सुनिश्चित की जा सके. भारत के पास S-400 एयर डिफेंस मिसाइल सिस्टम मौजूद होने की वजह से चीन या पाकिस्तान सीमा पार से नापाक हरकत नहीं कर पाएंगे. इस एयर डिफेंस मिसाइल सिस्टम के बचे हुए यूनिट्स आने के बाद देश की सुरक्षा अभेद्य हो जाएगी. एस-400 मिसाइल सिस्टम के ऑपरेटर्स की ट्रेनिंग पूरी हो चुकी है.

हथियार नहीं महाबली है यह अभेद्य रक्षा कवच

एस-400 एयर डिफेंस मिसाइल सिस्टम हथियार नहीं महाबली है. इसके सामने किसी की भी साजिश नहीं चलती. यह आसमान से घात लगाकर आते हमलावर को पलभर में राख में बदल देता है. एस-400 मिसाइल सिस्टम को दुनिया की सबसे सक्षम मिसाइल प्रणाली माना जाता है. पाकिस्तान और चीन भारत के लिए हमेशा से चुनौती रहे हैं. भारत का इन देशों से युद्ध भी हो चुका है. शक्ति का संतुलन बनाए रखने के लिए ऐसी मिसाइल प्रणाली की देश को जरूरत थी. भारत को एस-400 सिस्टम मिलने से भारतीय वायुसेना की ताकत में इजाफा होगा.

35 हजार करोड़ रुपए में हुई थी पांच यूनिट की डील

भारत ने अक्टूबर 2018 में रूस के साथ ऐसे पांच सिस्टम खरीदने का करार किया था जिसकी लागत 5 अरब डॉलर यानी 35,000 करोड़ रुपये है. चीन हो या पाकिस्तान S-400 मिसाइल एयर डिफेंस सिस्टम के बल पर भारत न्यूक्लियर मिसाइलों को अपनी जमीन तक पहुंचने से पहले ही हवा में ही ध्वस्त कर देगा. S-400 से भारत चीन-पाकिस्तान की सीमा के अंदर भी नजर रख सकेगा. जंग में भारत S-400 सिस्टम से दुश्मन के लड़ाकू विमानों को उड़ने से पहले निशाना बना लेगा. चाहे चीन के जे-20 फाइटर प्लेन हो या फिर पाकिस्तान के अमेरिकी F-16 लड़ाकू विमान. यह मिसाइल सिस्टम इन सभी विमानों को नष्ट करने की ताकत रखता है. रूस ने साल 2020-2024 तक भारत को एक-एक कर ये मिसाइल सिस्टम देने की बात कही थी.

एक बार में 72 मिसाइल दाग सकता है ये सिस्टम

S-400 एक बार में एक साथ 72 मिसाइल छोड़ सकती है. इसके सबसे खास बात ये है कि इस एयर डिफेंस सिस्टम को कहीं मूव करना बहुत आसान है क्योंकि इसे 8X8 के ट्रक पर माउंट किया जा सकता है. S-400 को नाटो द्वारा SA-21 Growler लॉन्ग रेंज डिफेंस मिसाइल सिस्टम भी कहा जाता है. माइनस 50 डिग्री से लेकर माइनस 70 डिग्री तक तापमान में काम करने में सक्षम इस मिसाइल को नष्ट कर पाना दुश्मन के लिए बहुत मुश्किल है. क्योंकि इसकी कोई फिक्स पोजिशन नहीं होती. इसलिए इसे आसानी से डिटेक्ट नहीं कर सकते.

S-400 मिसाइल सिस्टम में चार तरह की मिसाइलें होती हैं जिनकी रेंज 40, 100, 200, और 400 किलोमीटर तक होती है. यह सिस्टम 100 से लेकर 40 हजार फीट तक उड़ने वाले हर टारगेट को पहचान कर नष्ट कर सकता है. एस-400 मिसाइल सिस्टम (S-400 Air Defence Missile System) का रडार बहुत अत्याधुनिक और ताकतवर है. 600 km की रेंज में 300 टारगेट ट्रैक करने की ताकत इसका रडार 600 किलोमीटर तक की रेंज में करीब 300 टारगेट ट्रैक कर सकता है. यह सिस्टम मिसाइल, एयरक्राफ्ट या फिर ड्रोन से हुए किसी भी तरह के हवाई हमले से निपटने में सक्षम है. शीतयुद्ध के दौरान रूस और अमेरिका में हथियार बनाने की होड़ मची हुई थी. जब रूस अमेरिका जैसी मिसाइल नहीं बना सका तो उसने ऐसे सिस्टम पर काम करना शुरू किया जो इन मिसाइलों को टारगेट पर पहुंचने पर पहले ही खत्म कर दे.

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IIIT-B, Indian Air Force Collaborate on Waveform Development for Defence Technology

Source: The Hans India, Dt. 17 Mar 2025,

URL: <https://www.thehansindia.com/hans/education-careers/iiit-b-indian-air-force-collaborate-on-waveform-development-for-defence-technology-954506>

The International Institute of Information Technology Bangalore (IIIT-B) has signed a Statement of Work (SoW) with the Software Development Institute, Indian Air Force (SDI, IAF) for joint research, design, and development of waveform technology. This collaboration marks a crucial step in advancing India's self-reliance in critical defence technologies.

Under this agreement, IIIT-B will serve as the technical partner, undertaking cutting-edge research and development (R&D) in collaboration with SDI-IAF, which is sponsoring the project. The institute will also provide resources and support for certification to ensure the project meets the highest standards of reliability and effectiveness.

Dr. Prem Singh, Lead Principal Investigator of the R&D team, highlighted the significance of the initiative: "This partnership with the Indian Air Force is a testament to IIIT-B's research and development excellence. We are not only advancing defence technology but also contributing to India's strategic self-reliance in secure communication systems."

Echoing this sentiment, Dr. Debabrata Das, Director of IIIT-B, said: "We are honored by the trust placed in us by the Indian Air Force. This collaboration not only strengthens our engagement with the defence sector but also reaffirms our commitment to pioneering research and innovation in national security."

Air Vice Marshal Raman Guruhari, Commandant, SDI, emphasised the broader impact of the partnership: "The Armed Forces, with the Air Force at the forefront, are moving decisively toward self-reliance, reducing dependence on foreign equipment. Collaborating with academia is a crucial part of this journey, laying the groundwork for future indigenisation efforts. We aim to translate these initiatives into operational reality, strengthening India's technological sovereignty."

This partnership reinforces IIIT-B's role in defence technology research and sets the stage for future collaborations, further bolstering India's capabilities in indigenous technological advancements.

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Astra & Aster Missiles: Amid China & Russia Threats, India, EU Allies Boost Firepower With "Namesake" Weapons

Source: The EurAsian Times, Dt. 17 Mar 2025,

URL: <https://www.eurasiantimes.com/astra-aster-missiles-amid-china-russia-threats/>

With roughly similar nomenclature, the two missiles are expected to play similar roles—bolstering firepower amid emerging threats from China and Russia. Even though delays have marred the delivery of India's indigenous LCA Tejas Mk-1A, the Aeronautical Development Agency (ADA) conducted a test launch of the Astra missile from one of its prototypes.

In the other part of the world, European countries, including the UK, France, and Italy, confirmed a new order for the European Aster missile.

India's Tejas Mk-1 Fires Homegrown Astra Missile

The Indian Ministry of Defence (MoD) announced that the indigenous Tejas Light Combat Aircraft Mk-1 effectively destroyed an aerial target on March 12 by firing the Astra beyond visual range air-to-air missile (BVRAAM).

Conducted at Chandipur in Odisha, the test showed that when fired from the prototype of the indigenous combat fighter, the Astra missile is capable of engaging targets over a distance of 100 kilometres, beyond the range that is visible to the pilot, said the MoD.

Designed and developed by the Defence Research and Development Organisation (DRDO), the enhanced guidance and navigation capabilities of the beyond visual range missile enable it to destroy targets more precisely. The MoD stated that all the subsystems performed accurately, validating all mission parameters and objectives.

The successful test-firing is believed to be a significant milestone towards the induction of the LCA Mk1A variant. However, Squadron Leader Vijainder K. Thakur (retired), an IAF veteran and a popular military commentator highlighted: "The use of a LCA Mk1 to qualify the missile for use on Mk1A caused some confusion. The recent test was likely done from a LCA LSP aircraft equipped with the Israeli Elta EL/M-2052 Active Electronically Scanned Array (AESA) radar, to qualify the missile for use on LCA Mk1A."

Intriguingly, the delivery of the Tejas MK-1A aircraft has been grossly delayed amid a rapidly depleted squadron strength in the Indian Air Force (IAF), which has led to widespread bickering across the service. The IAF Chief, A.P. Singh, has been particularly critical of the laxity in the production and delay in the delivery of the aircraft.

However, the state-owned Hindustan Aeronautics Limited announced that the delivery of the 180 Mk-1A variant, which has been delayed due to the delays in the delivery of GE-404 engines, will be completed by 2031-32.

The Astra, India's first indigenously developed beyond-visual-range air-to-air missile (BVRAAM), has been positioned as a superior alternative to the widely used Russian-origin R-77 missile. Vinod Kumar, General Manager of New Projects at BDL, stated last year: "Astra is currently in production, and we anticipate receiving additional orders. We are also exploring the possibility of exporting the Astra missile."

In August 2023, the Tejas LSP-7 successfully tested the Astra missile off the coast of Goa, proving that it could engage targets farther than 100 kilometers away. Building on this achievement, the IAF has permitted BDL to manufacture 200 more Astra-Mark 1 missiles. Already integrated with the Su-30, they will now be equipped with the Tejas Mk-1A.

Astra is a powerful tool in aerial combat because of its sophisticated characteristics. With the missile, a pilot can target enemies that are far out of their line of sight. The missile's 20-kilometer operational ceiling guarantees that it could successfully attack adversaries in a variety of combat

situations. The Astra missile, which can reach Mach 4.5, offers the quick reaction and interception essential in modern air combat. Its 100–120-second flight time allows it to eliminate threats quickly, a capability fully verified by DRDO's rigorous testing on several platforms, including Tejas.

The sophistication of Astra extends to its guidance system. Using a combination of inertial guidance, mid-course updates, and terminal active radar homing (effective at 13 kilometers), the missile ensures high precision in target engagement. This advanced guidance, coupled with its resistance to electronic countermeasures (ECM), significantly enhances the Indian Air Force's combat effectiveness.

European Allies Bank On Aster Missiles

France, Italy, and the UK confirmed earlier this week the order for 218 more Aster missiles and the acceleration of the delivery of already ordered missiles as part of a joint acquisition plan. The Organisation Conjoint de Coopération en matière d'Armement (OCCAr) signed the agreement on behalf of the Segretariato Generale della Difesa for Italy, Defence Equipment & Support for the UK, and DGA for France for the benefit of their respective armed services.

OCCAr is bolstering the European missile sector with this new contract, backed by MBDA and leading European companies like Thales, Avio, and KNDS Ammo. The deal includes the manufacturing of new Aster 15s (for the French Navy) and Aster 30 B1s (for the SAMP/T NG for France and Italy, as well as the naval defense systems of the three countries).

“It aims to accelerate production of the Aster missiles ordered in December 2022, with 134 additional missiles delivered between 2025 and 2026. Initiated in 2024, this increase in production rates is the result of adaptations made by MBDA and its subcontractors to meet the challenges of the defence effort,” states the DGA press release. The Aster missile family forms a key component of various European air defence systems, equipping the navies, air forces, and armies of France, Italy, and the UK. The latest additional order also demonstrates how important this cooperation is to the member governments. Both the Aster 15 and Aster 30 are two-stage missiles that share accelerators and a terminal delivery mechanism.

Aster 15 is vertically launched and autonomously guided to withstand saturating strikes from fighter planes, maneuvering missiles, and slower aircraft like reconnaissance and marine patrol planes. Due to its very short missile preparation time and very high speed, the Aster weapon system has a rapid engagement capability.

The Aster 30 missile can engage conventional and ballistic targets. It can travel at a speed of 1.4 kilometers per second and intercept targets at altitudes from 50 meters to 20 kilometers. Aster 30 is used on the SAMP/T NG system, which consists of a command-and-control module, a radar with 360-degree coverage and a range of over 350 kilometers, and up to six launchers. Each launcher is equipped with eight Aster 30 missiles and a battery that normally requires 20 crew members. Each launcher can fire eight missiles in ten seconds.

OCCAR stressed the agreement's importance and the need for “upgraded Air-Defence systems to face increasingly more challenging threats” in light of the “present geopolitical environment.”

Moreover, the development comes as cracks have appeared in the Transatlantic relationship since Donald Trump became the American president. Trump has trained his guns on his NATO allies, exhorting them to increase defense spending and threatening that Washington would not be responsible for their defense. The new missiles will equip European countries as security threats continue to rise.

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Science & Technology News

National Quantum Mission: India's Quantum Leap

Source: Press Information Bureau, Dt. 17 Mar 2025,

URL: <https://pib.gov.in/PressReleasePage.aspx?PRID=2111953>

Introduction

With technology taking over the world, India is stepping into the future with the National Quantum Mission (NQM), a major initiative by the Government of India to propel the nation to the forefront of quantum technology research and development. Approved on 19th April 2023 by the Union Cabinet, the mission is set to span from 2023–24 to 2030–31, with a budget allocation of ₹6,003.65 crore.

National Quantum mission, is not just a mission, but it is a bold step through which India aims to harness the power of quantum technology to drive innovation, strengthen security, and boost various industries, positioning itself as a global leader in this cutting-edge field.

What is Quantum Computing

Quantum computers use special units called qubits to store and process information. Unlike regular computers, where bits can only be 0 or 1, qubits can be both 0 and 1 at the same time. This ability to be in multiple states at once makes quantum computers different and potentially much more powerful than traditional ones.

Many countries are actively working on quantum computing and other quantum technologies, and India has a great opportunity to make significant contributions. The national quantum mission offers India a chance to play a key role, especially with favourable conditions right now. The outcomes of this mission could impact healthcare, clean energy, climate change, job creation, and much more, affecting every citizen's life.

Objectives of the National Quantum Mission

With the broader aim to harness quantum technologies in India to bolster sectors like communication, cryptography, and computing, National Quantum Mission has outlined specific objectives to advance India's capabilities in the quantum realm:

- **Quantum Computing Evolution:** Develop intermediate-scale quantum computers with 20-50 physical qubits (3 years), 50-100 physical qubits (5 years), and 50-1000 physical qubits

(8 years) across platforms like superconducting and photonic technologies to advance computational capabilities.

- **Satellite-Based Quantum Communication:** Establish satellite-enabled quantum-secured communication between two ground stations over 2000 km within India and extend this technology for long-distance secure quantum communication with other countries.
- **Inter-City Quantum Key Distribution (QKD):** Implement quantum-secured communication spanning 2000 km using trusted nodes and wavelength division multiplexing (WDM) on existing optical fiber infrastructure, enhancing secure data transmission.
- **Multi-Node Quantum Networks:** Develop a multi-node quantum network incorporating quantum memories, entanglement swapping, and synchronized quantum repeaters at each node, enabling scalable and robust quantum communication (2-3 nodes).
- **Advanced Quantum Sensing & Clocks:** Design highly sensitive quantum devices including magnetometers with 1 femto-Tesla/sqrt(Hz) sensitivity in atomic systems and better than 1 pico-Tesla/sqrt(Hz) in Nitrogen Vacancy centers, gravity sensors with better than 100 nano-meter/second² sensitivity, and atomic clocks with 10^{-19} fractional instability for precision timing, navigation, and secure communication.
- **Quantum Materials & Devices:** Develop and synthesize next-generation quantum materials such as superconductors, novel semiconductor structures, and topological materials for the fabrication of qubits, single-photon sources/detectors, entangled photon sources, and quantum sensing/metrological devices for applications in computing and communication.

The National Quantum Mission (NQM) is one of the nine initiatives under the Prime Minister's Science Technology Innovation Advisory Council (PMSTIAC), aimed at positioning India as a global leader in quantum technology. By fostering advancements in secure quantum communication, quantum computing, and precision sensing, the mission is poised to transform sectors such as telecommunications, defense, finance, and healthcare, delivering a profound societal impact.

Implementation Strategy: Thematic Hubs (T-Hubs)

The National Quantum Mission is a nationwide initiative driving cutting-edge advancements in quantum technology. As part of this mission, four Thematic Hubs (T-Hubs) have been set up, bringing together 14 Technical Groups across 17 states and 2 Union Territories. These hubs focus on technology innovation, skill development, entrepreneurship, industry partnerships, and global collaborations, ensuring a truly national impact. Women scientists from every corner of the country are actively encouraged to participate and benefit from the mission's exciting programs.

The four T-Hubs have been established across leading institutions in India:

1. Indian Institute of Science (IISc) Bengaluru
2. Indian Institute of Technology (IIT), Madras along with the Centre for Development of Telematics, New Delhi
3. Indian Institute of Technology (IIT), Bombay

4. Indian Institute of Technology (IIT), Delhi.

These hubs were selected through a rigorous competitive process and each hub focuses on a specific quantum domain, driving advancements in Quantum Computing, Quantum Communication, Quantum Sensing & Metrology, and Quantum Materials & Devices.

Hub-Spoke-Spike Model

Each T-Hub will follow the Hub-Spoke-Spike model, fostering a cluster-based network where research projects (Spokes) and individual research groups (Spikes) operate alongside central hubs. This structure enhances collaboration among research institutions, allowing them to share resources and expertise more effectively.

State-wise Funds Allocation

The four T-Hubs selected under NQM collectively involve 152 researchers from 43 institutions nationwide, fostering a collaborative ecosystem to drive research and innovation in quantum technologies. The activities carried out by these hubs include Technology Development, Human Resource Development, Entrepreneurship Development, Industry Collaborations, and International Collaborations.

Initiatives under National Quantum Mission

Under NQM, dedicated efforts are underway to develop quantum-resilient encryption techniques and post-quantum cryptographic (PQC) frameworks, ensuring India's critical database systems remain secure in the quantum era. Key initiatives include:

- **Quantum-Safe Ecosystem Framework:** A concept paper has been developed to outline a strategic roadmap for securing and strengthening India's digital infrastructure against quantum threats.
- **DRDO Initiatives:** The Defence Research and Development Organization (DRDO) is leading projects focused on designing and testing quantum-resilient security schemes, along with quantum-safe symmetric and asymmetric key cryptographic algorithms.
- **Advancements by SETS:** The Society for Electronic Transactions and Security (SETS), under the Office of the Principal Scientific Adviser (PSA), is accelerating Post-Quantum Cryptography (PQC) research. It has implemented PQC algorithms for applications such as Fast IDentity Online (FIDO) authentication tokens and Internet of Things (IoT) security.
- **C-DoT Innovations:** The Centre for Development of Telematics (C-DoT), under the Department of Telecommunications (DoT), has developed cutting-edge solutions, including Quantum Key Distribution (QKD), Post-Quantum Cryptography (PQC), and Quantum Secure Video IP Phones.

These initiatives are crucial for safeguarding India's digital infrastructure against emerging quantum-era cybersecurity threats.

Global Competitiveness and Strategic Impact

The NQM has the potential to transform the country's technology development ecosystem, making it globally competitive. It will drive advancements across key sectors such as communication, healthcare, finance, and energy, with applications in drug discovery, space exploration, banking, and security. Moreover, the mission will play a crucial role in advancing national initiatives like Digital India, Make in India, Skill India, Stand-up India, Start-up India, Self-Reliant India, and the Sustainable Development Goals (SDGs).

Conclusion

The National Quantum Mission (NQM) is more than just a technological initiative—it is a strategic step towards securing India's future in the quantum era. With significant investments, world-class research collaborations, and dedicated innovation hubs, the mission is set to propel India to the forefront of the global quantum revolution.

This initiative underscores India's commitment to scientific excellence, economic resilience, and national security in a world where quantum technologies are poised to reshape industries and societies.

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भारत के अंतरिक्ष स्टार्टअप अगले स्तर तक पहुंचने के लिए ले रहे हैं इसरो के दिग्गजों की मदद

Source: Bharat Express, Dt. 17 Mar 2025,

URL: <https://bharatexpress.com/business/startups-isro-indian-space-startups-tap-isro-veterans-to-reach-next-level-484367>

भारत के अंतरिक्ष प्रौद्योगिकी स्टार्टअप अब केवल कॉलेज से सीधे स्नातक करने वाले नए लोगों की भर्ती नहीं कर रहे हैं, बल्कि वे अब अनुभवी पेशेवरों को भी ला रहे हैं जो उन्हें अगले स्तर पर ले जा सकते हैं. भारतीय अंतरिक्ष अनुसंधान संगठन (इसरो) के पूर्व वैज्ञानिकों से लेकर व्यवसाय विकास और वित्त विशेषज्ञों तक, स्टार्टअप व्यावसायीकरण को आगे बढ़ाने, जटिल नियमों को तोड़ने और वैश्विक स्तर पर विस्तार करने के लिए शीर्ष प्रतिभाओं को इकट्ठा कर रहे हैं. उद्योग के अधिकारियों के अनुसार, वाणिज्यिक अवसरों, बढ़ी हुई फंडिंग और तकनीकी प्रगति के साथ, उन्हें नेतृत्व में निवेश करने की आवश्यकता महसूस होती है.

उन्होंने कहा कि यह बदलाव तकनीकी नियुक्तियों से आगे बढ़कर व्यापक कौशल सेट के साथ है, जिसमें निवेशक संबंध और बाजार में समय कम करने के लिए उत्पाद विकसित करना शामिल है. दिगंतरा के सीईओ अनिरुद्ध शर्मा ने कहा, “हमने विभिन्न क्षेत्रों में नेतृत्व लाया है. हमारे इंजीनियरिंग के उपाध्यक्ष और अंतरिक्ष प्रणालियों के एवीपी दोनों के पास इसरो का 15 साल से अधिक का अनुभव है, जो गहन तकनीकी विशेषज्ञता सुनिश्चित करता है.”

इसके अलावा, स्टार्टअप ने वित्तीय रणनीति, मापनीयता और परिचालन दक्षता पर एक नया दृष्टिकोण लाने के लिए एक व्यवसाय-से-उपभोक्ता कंपनी से एक मुख्य वित्तीय अधिकारी को शामिल किया है. पारिस्थितिकी तंत्र के परिपक्व होने का संकेत देते हुए, स्टार्टअप प्रमुख एयरोस्पेस फर्मों से भी काम पर रख रहे हैं और अंतरिक्ष प्रौद्योगिकी अनुप्रयोगों की बढ़ती मांग को पूरा करने के लिए यूरोप और अमेरिका जैसे विदेशी बाजारों में टीमें स्थापित कर रहे हैं.

ISRO, IISc और IIT बॉम्बे जैसे संस्थानों से हो रही भर्ती

कुछ फर्मों ने टाटा एडवांस्ड सिस्टम्स, लार्सन एंड टुब्रो, टाटा बोइंग एयरोस्पेस लिमिटेड, हिंदुस्तान एयरोनॉटिक्स लिमिटेड, रक्षा अनुसंधान और विकास संगठन (DRDO), ISRO और IISc और IIT बॉम्बे जैसे शैक्षणिक संस्थानों से मध्यम स्तर और वरिष्ठ कर्मचारियों की भर्ती की है और अपनी तकनीकी और परिचालन क्षमताओं को बढ़ाया है।

एक अन्य स्टार्टअप, गैलेक्सआई, जो अपने दृष्टि मिशन के लिए तैयार हो रहा है, रणनीतिक भूमिकाओं के लिए काम पर रखने पर ध्यान केंद्रित कर रहा है। संस्थापक सुयश सिंह ने कहा, “इस डोमेन में वरिष्ठ विशेषज्ञता हमें पारिस्थितिकी तंत्र में खुद को स्थापित करने में मदद करेगी। वैश्विक अंतरिक्ष और एयरोस्पेस फर्मों के व्यवसाय विकास पेशेवर हमारी वृद्धि और राजस्व को बढ़ा सकते हैं।”

इसी तरह एन स्पेस टेक ने हाल ही में अपने अनुसंधान और विकास विभाग के लिए DRDO से मधुमिता चक्रवर्ती को काम पर रखा है, जिनके नवाचारों को पहले भारतीय वायु सेना और भारतीय सेना द्वारा तैनात किया गया है। संस्थापक दिव्या कोथामासु ने कहा, “अनुभवी नेता उद्योग का बहुमूल्य ज्ञान, सिद्ध ट्रैक रिकॉर्ड और मजबूत नेटवर्क लेकर आते हैं, जो निवेशकों और सरकारी अनुबंधों में विश्वास पैदा करते हैं।”

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IIT-M sets up facility for fluid and thermal science research

Source: The Hindu, Dt. 18 Mar 2025,

URL: <https://www.thehindu.com/sci-tech/science/iit-m-sets-up-facility-for-fluid-and-thermal-science-research/article69340344.ece>

A state-of-the-art research facility for fluid and thermal science was commissioned at the Indian Institute of Technology-Madras (IIT-M) here on Monday.

The S. Ramakrishnan Centre of Excellence in Fluid and Thermal Science Research will focus on critical advancements in spacecraft and launch vehicle thermal management. Research on heat transfer, cooling systems, and fluid dynamics, essential for the next generation of spacecraft and satellite technologies will be undertaken at the centre. The centre is housed at the Department of Mechanical Engineering.

S. Ramakrishnan, a distinguished alumnus of IIT-M, was the project director for PSLV and GSLV MK3. He also served as the Director of LPSC and VSSC and was honoured with the Padma Shri in 2003 for his contributions in the areas of science and engineering.

On the occasion, V. Kamakoti, Director, IIT-M, commissioned the Arcot Ramachandran Seminar Hall. Ramachandran was the Director of the institute from 1967 to 1973, and was instrumental in establishing the heat transfer and thermal power lab.

V. Narayanan, Chairman, Indian Space Research Organisation (ISRO), recalled that when India was denied the cryogenic engine technology, it faced a challenge. Now, the country had three different engines, one of them human-rated.

“Only six countries have this technology. We have made three world records in this technology — we got it right on our third attempt. Second, from engine test to flight, we got it done in 28 months. Other countries took between 42 months and 18 years. Finally, we conducted the test in 34 days, whereas other countries took around five to six months.”

Urging the institute to aim for Nobel Prizes, Mr. Narayanan said: “The Department of Space will support IIT-M completely in its (research) efforts.”

The Centre will work on addressing heat dissipation challenges in satellites and launch vehicles; conducting experimental and numerical studies on cooling systems; and performing cutting-edge computational fluid dynamics simulations and experimental set up for real-world validation. ISRO scientists will be encouraged to pursue advanced degrees at the institute, while fostering industry-academia collaborations.

Arvind Pattamatta, professor, Department of Mechanical Engineering, is the centre’s coordinator. P. Chandramouli, head, Department of Mechanical Engineering, and P.V. Venkitakrishnan, professor of practice, spoke.

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