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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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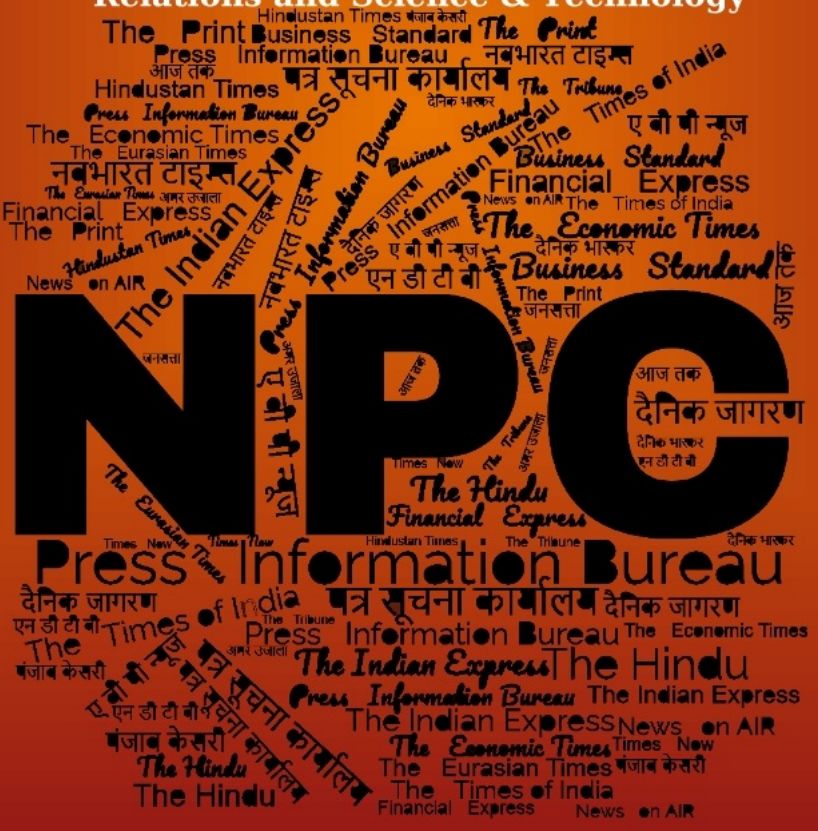

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DRDO News

DRDO Chief Samir V Kamat's first reaction amid China's 'DeepSeek' vs US' ChatGpt controversy

Source: The Economic Times, Dt. 29 Jan 2025,
URL: https://economictimes.indiatimes.com/news/india/drdo-chief-samir-v-kamats-first-reaction-amid-chinas-deepseek-vs-us-chatgpt-controversy/videoshow/117699746.cms?from=mdr

DRDO Chief Samir V Kamat shared his first reaction amid the DeepSeek vs ChatGPT debate, acknowledging China's AI advancements.

Video Link: https://www.youtube.com/watch?v=qU2p88cw1ls

Transcript - *"As you are aware the Deep seek model which China has just come out with;they have shown that you don't need billions of dollars; they claim that they have developed this model, trained this model using only about $5 million; they have not used advanced GPUs which the US has denied to China in the last few years but they have used conventional chips to to deliver these models and especially when you look at AI for military applications these large language models may not be suitable because the data which is available is fairly limited so you need to develop your own AI models with edge(?) computing which can provide instantaneous Solutions rather than the traditional backend systems which will do the all the data crunching for military applications we may have to look at a different approach. So these approaches we are trying to develop through our DiaCoes(?) we are also using a TDF or technology Development fund to promote startups for innovation. Any AI, if you have to look at how best to use AI in military*

domain we have to look at Innovation with existing technologies, we have to look at developing new Cutting Edge Technologies and then finally we have to look at that the solutions we develop are ethical trustworthy and deliver the solutions which we design it. We have also started 15 centers of excellence and among these 15 centers of excellence where DRDO, industry and academia can jointly work on different domains. In three of these centers of excellence, our focus is on AI cognitive technologies and associated technologies, so we hope that these centers of excellence will act as centers for creating a R&D ecosystem to develop the Next Generation cutting AI Solutions. So we are looking at foundation models."

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Bad news for China, Pakistan and Bangladesh as India starts to prepare 'most dangerous' Long Range…, it's lethal because…

Source: India.com, Dt. 29 Jan 2025,
URL: https://www.india.com/news/india/bad-news-for-china-pakistan-and-bangladesh-as-india-drdo-starts-to-prepare-most-dangerous-long-range-stand-off-weapon-7576281/

In a significant development for India's defence industry growth, the Defence Research and Development Organisation (DRDO) of India has reportedly commenced work on the development of the Rudram-IV. Rudram-IV is an advanced air-to-surface weapon system, with a range exceeding 300 kilometres, making it one of dangerous weapons of India. Here are all the details you should know about the missile.

Rudram-III missile features

The Rudram is a series of supersonic and hypersonic air-to-surface ground attack and anti-radiation missiles in development by the Defense Research and Development Organization of India. For background, the Rudram-III missile features an impressive range of 550 kilometers, used for deep penetration attacks aimed at larger facilities or high-value objectives. Its development is ongoing, with the aim of improving India's long-range strike capabilities.

The addition of the Rudram-IV to the series enhances the versatility of the family. Its lighter design and adaptability for various mission parameters provide commanders with more options for engagement strategies, complementing the existing variants. Also, the Rudram-IV missile could be integrated with multiple aerial platforms, enhancing the capabilities of Indian Airforce as per a report by IDRW.

Additionally, the readers must note that the missile is possibly engineered as a Long Range Stand-Off Weapon (LRSOW).

DRDO successfully tests long-range hypersonic missile

In another development, Defence Research and Development Organisation (DRDO) successfully conducted a flight trial of a long-range hypersonic missile off the Odisha coast. Union Defence

Minister Rajnath Singh, in a post on X on Sunday, announced the significant achievement and said that this has put the country in the group of select nations having capabilities of such critical and advanced military technologies.

The flight trial of the long-range hypersonic missile was conducted from the Dr APJ Abdul Kalam Island off the coast of Odisha. The trial was carried out in the presence of senior scientists of DRDO and the Armed Forces.

The Ministry of Defence said that the missile was tracked by various range systems, deployed in multiple domains. The flight data obtained from down-range ship stations confirmed the successful terminal manoeuvres and impact with a high degree of accuracy.

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Defence News

Defence Strategic: National/International

CCS approves local ammunition procurement worth ₹10k crore

Source: Hindustan Times, Dt. 30 Jan 2025,
URL: https://www.hindustantimes.com/india-news/ccs-approves-local-ammunition-procurement-worth-10k-crore-101738176154226.html

The Cabinet Committee on Security has cleared the procurement of ammunition worth almost ₹10,000 crore for the army's indigenous Pinaka multi-launcher rocket system, in the latest boost for self-reliance in the defence manufacturing sector, officials aware of the matter said on Wednesday.

The ammunition cleared for the weapon system includes enhanced range rockets and area denial munitions, and the order will be split between Pune-based Munitions India Limited and Nagpur-based private firm Economic Explosives Limited, the officials said, asking not to be named. The Pinaka rocket system was among the weapons and equipment displayed by the army at the 76th Republic Day parade, alongside T-90 tanks, BMP-II Sarath infantry combat vehicles, the BrahMos supersonic cruise missile, the BM-21 Agnibaan multiple-barrel rocket launcher, and the Akash weapon system.

Munitions India Limited is one of the seven defence companies carved out of the erstwhile Ordnance Factory Board in 2021 as part of the board's corporatisation. The aim was to boost efficiency and competitiveness in the country's defence manufacturing sector. The other companies

created were Armoured Vehicle Nigam Limited, India Optel Limited, Troop Comforts Limited, Advanced Weapons and Equipment India Limited, Gliders India Limited and Yantra India Limited.

The development comes days after the defence ministry inked a ₹1,561-crore contract with Heavy Vehicles Factory (HVF), based at Avadi in Chennai, to equip the Indian Army with 47 T-72 bridge laying tanks for the faster movement of mechanised forces in the battle zone. The HVF is a unit of Armoured Vehicle Nigam Limited.

The country is eyeing a turnover of ₹1.75 lakh crore in the defence manufacturing sector in the financial year 2024-25. Earlier in January, defence ministry signed a ₹2,960-crore contract with Bharat Dynamics Limited to equip the navy with medium-range surface-to-air missiles.

India has taken a raft of measures to boost self-reliance in the defence manufacturing sector during recent years. These include imposing phased import bans on different types of weapons, systems, ammunition, and critical sub-systems and components, creating a separate budget for buying locally made military hardware, increasing foreign direct investment (FDI) from 49% to 74% and improving ease of doing business.

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Keel laying of seventh ship (BY 529, Machilipatnam) of ASW SWC Project at CSL, Kochi

Source: Press Information Bureau, Dt. 29 Jan 2025,
URL: https://pib.gov.in/PressReleasePage.aspx?PRID=2097441

Keel Laying of the seventh ship (BY 529, Machilipatnam) of the Anti-Submarine Warfare Shallow Water Craft (ASW SWC) project was undertaken on 29 Jan 25 in the presence of RAdm Upal Kundu, Chief of Staff, Southern Naval Command. Senior officials of the Indian Navy and CSL were also present for the ceremony. With almost all major and auxiliary equipment/ systems sourced from indigenous manufacturers, these ships exemplify the GoI Initiative of “Aatmanirbhar Bharat”. This milestone, in quick succession of the Keel Laying of the sixth ship in Dec 24 and Launching of the fourth and fifth ships at CSL in Sep 24, demonstrates the steadfast efforts of the Indian Shipyards to meet Indian Navy’s growing operational requirements.

Contract for building eight ASW SWC ships was awarded to Cochin Shipyard Limited by the Ministry of Defence on 30 Apr 19. The ships known as the ‘Mahe’ class, will be equipped with indigenously developed, state-of-the-art underwater sensors, and are envisaged to undertake anti-submarine operations in coastal waters as well as Low Intensity Maritime Operations (LIMO) and Mine Laying Operations. The first ship of the project is planned to be delivered in early 2025. Besides enhancing Indian Navy’s Anti-Submarine Warfare capabilities, the high indigenous content on these ASW SWC ships is also generating large scale employment and capability enhancement of Indian Manufacturing Units.

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Garden Research Shipbuilders & Apollo Micro Systems sign deal on defence production

Source: The Economic Times, Dt. 29 Jan 2025,
URL: https://economictimes.indiatimes.com/news/defence/garden-research-shipbuilders-apollo-micro-systems-sign-deal-on-defence-production/articleshow/117697385.cms

Garden Reach Shipbuilders & Engineers and Apollo Micro Systems have entered into an MoU for a period of five years to establish a business partnership for the joint research and development (R&D), co-production, export of Underwater Weapons & Vehicles, Underwater Mines, Underwater Communication Systems and Air Defence Systems and supply of advanced weapons and electronic systems for both defence and non-defence industries.

This collaboration is aimed at the development and production of cutting-edge technologies, including Underwater Weapons and Vehicles, Underwater Mines and Communication Systems and Air Defence Systems and Vehicles, a statement from Apollo Micro Systems said.

A key aspect of this partnership is leveraging and enhancing the manufacturing infrastructure of both companies to produce critical components and sub-assemblies for these systems. Additionally, the collaboration will provide services for the modernization and upgrade of existing systems, ensuring they remain state-of-the-art and meet evolving requirements, the statement added.

The partnership will address the growing demands of the Defence, Aerospace, and Commercial markets, both domestically and internationally, it said.

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China quietly boosting military infrastructure at LAC despite ongoing diplomatic talks with India

Source: The Economic Times, Dt. 29 Jan 2025,
URL: https://economictimes.indiatimes.com/news/defence/china-quietly-boosting-military-infrastructure-at-lac-despite-ongoing-diplomatic-talks-with-india/articleshow/117676208.cms

Following the troop disengagement at Depsang and Demchok in eastern Ladakh in October 2024, China has continued to strengthen its military presence along the LAC. Defence sources have confirmed that the People's Liberation Army (PLA) is actively engaged in infrastructure development at multiple locations along the border, extending from eastern Ladakh to Arunachal Pradesh.

A defence source told The Times of India (TOI), "The infrastructure development activities of the People's Liberation Army (PLA) are continuing at multiple locations along the LAC. In the east, for instance, it is happening in Rongto Chu and other valleys."

Strategic Importance of Yangtse and PLA's AdvancementsThe Yangtse region, a strategically crucial area in Arunachal Pradesh's Tawang sector, has seen increased PLA activity. India holds the

tactical advantage by controlling the high ground or ridgeline in the plateau, allowing visibility over Chinese positions. To counterbalance this, China has undertaken several infrastructural projects.

As per defence sources, China has constructed a concrete road from Tangwu's dual-use Xiaokang border village towards the LAC and upgraded dirt tracks to allow faster mobilisation of troops. "Apart from new military camps and the concrete road constructed from its Tangwu dual-use Xiaokang border village towards the LAC in the area, the PLA has also upgraded a couple of dirt tracks there to ensure it can 'surge' troops in larger numbers if required," a defence source stated.

A satellite imagery analyst, known as @NatureDesai on X, reported that China has been constructing two new roads in Yangtse during the winter months, including one from Lampug towards Tangwu, aimed at providing alternate connectivity and higher ground access to its troops. "It will provide the PLA an unobstructed view of Indian ground lines of communication in the area," the analyst noted.

Official Indian Response

An official Indian Army source, when asked by TOI about China's infrastructure expansion in Yangtse, confirmed that both countries continue to develop infrastructure along the border in accordance with existing agreements.

"Both China and India are undertaking infrastructure development all along the northern borders as per the guidelines enunciated in various agreements and protocols between the two countries," the Army source stated.

He further added, "Any deviation from the agreements and protocols by the Chinese side, once observed, is being raised at appropriate levels during engagements through various existing mechanisms."

Expansion Beyond Arunachal Pradesh

China's infrastructure push is not limited to Arunachal Pradesh. Similar developments are being observed across the 3,488-kilometre-long LAC, covering the western (Ladakh), central (Uttarakhand, Himachal Pradesh), and eastern (Sikkim, Arunachal Pradesh) sectors. Reports indicate the construction of new roads, bridges, helipads, and gun positions, with PLA troops remaining heavily deployed with extensive weaponry.

According to defence sources, the PLA is focusing on last-mile connectivity across Tawang, Naku La in north Sikkim, and other regions in the eastern sector. Areas such as Yangtse, Asaphila, and the Subansiri river valley in Arunachal Pradesh, which have long been under Indian control, continue to be friction points between the two armies.

Diplomatic Discussions and Unresolved Tensions

The latest diplomatic talks between Indian Foreign Secretary Vikram Misri and Chinese Vice-Foreign Minister Sun Weidong in Beijing focused on stabilising relations that have been strained since the military standoff in eastern Ladakh over four years ago. China reiterated the need to properly manage differences and ensure stability in bilateral ties.

During the discussions, both sides agreed to resume the Kailash Mansarovar Yatra and reinstate direct flights. However, despite these diplomatic efforts, China has not yet agreed to broader troop de-escalation along the LAC.

The India-China border standoff has persisted since the violent clashes in Galwan Valley in 2020. While the disengagement process at friction points such as Pangong Tso and Gogra-Hot Springs has taken place, tensions remain in areas like Depsang and Demchok. The December 2022 Yangtse clashes further underscored the fragility of the situation.

China's reluctance to de-induct troops post-disengagement has kept military tensions high, with both sides continuing to maintain heavy deployments along the LAC. While the October 2024 disengagement at Depsang and Demchok allowed the resumption of patrolling and grazing activities, broader de-escalation remains unresolved.

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India procures long-range cameras, thermal sights for army

Source: Janes, Dt. 29 Jan 2025,
URL: https://www.janes.com/osint-insights/defence-news/defence/india-procures-long-range-cameras-thermal-sights-for-army

Mumbai-based RRP S4E is supplying its Viraj 28-B camera (pictured) and PR82 thermal sight to the Indian Army. (RRP S4E)

India's Ministry of Defence (MoD) has awarded contracts to Mumbai-based RRP S4E to procure long-range cameras and thermal sights for the Indian Army.

Shikhar Gupta, vice-president of business development at RRP S4E, told Janes that the contracts have a combined worth of about INR1 billion (USD11.6 million).

RRP S4E will deliver its Viraj 28-B camera and PR82 thermal sight to the MoD, Gupta said.

According to company specifications, Viraj 28-B weighs less than 9 kg and consists of a day camera and a thermal sensor. The day camera has a full high-definition (HD) 1080p resolution, 30x optical zoom, and 16x digital zoom. The thermal sensor has a resolution of 640×480p and 6x optical zoom. Viraj 28-B can detect, recognise, and identify a human at a range of 4 km, 1.3 km, and 678 m, respectively.

PR82 is a thermal night-vision scope that has a 12-micron 640×480p thermal sensor with an organic light-emitting diode (OLED) resolution of 800×600p. It has 3x optical magnification and 4x digital zoom capability. PR82 weighs about 875 g. It can detect, recognise, and identify a human at a range of 2 km, 900 m, and 500 m, respectively.

Gupta said PR82 can be integrated onto different rifles in service with the Indian Army including AK-47, Indian Small Arms System (INSAS), SIG716, and Tavor TAR-21.

RRP S4E has started delivering Viraj 28-B and PR82 to the Indian Army, and expects to complete all deliveries by April, Gupta added.

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Cabinet Approves 'National Critical Mineral Mission' to build a resilient value chain with an outlay of Rs.34,300 cr over seven years

Source: ANI News, Dt. 29 Jan 2025,
URL: https://www.aninews.in/news/business/cabinet-approves-national-critical-mineral-mission-to-build-a-resilient-value-chain-with-an-outlay-of-rs34300-cr-over-seven-years20250129154903/

The Union Cabinet, chaired by Prime Minister Narendra Modi, has approved the launch of the National Critical Mineral Mission (NCMM) with an expenditure of Rs.16,300 crore and expected investment of Rs.18,000 crore by PSUs, etc.

According to the Cabinet, as part of the Atmanirbhar Bharat initiative, and recognizing the indispensable role of critical minerals in high-tech industries, clean energy, and defence, the Government of India has undertaken several initiatives over the past two years to address challenges in the critical minerals sector.

There is a need to establish an effective framework for India's self-reliance in the critical mineral sector. In line with this vision, the Finance Minister announced the setting up of the Critical Mineral Mission in the Union Budget for 2024-25 on 23rd July 2024.

The National Critical Mineral Mission, approved by the Union Cabinet, will encompass all stages of the value chain, including mineral exploration, mining, beneficiation, processing, and recovery from end-of-life products.

The mission will intensify the exploration of critical minerals within the country and in its offshore areas. It aims to create a fast track regulatory approval process for critical mineral mining projects.

Additionally, the mission will offer financial incentives for critical mineral exploration and promote the recovery of these minerals from overburden and tailings.

The mission aims to encourage Indian PSUs and private sector companies to acquire critical mineral assets abroad and enhance trade with resource-rich countries. It also proposes development of stockpile of critical minerals within the country.

The mission includes provisions for setting up of mineral processing parks and supporting the recycling of critical minerals. It will also promote research in critical mineral technologies and proposes setting up Centre of Excellence on Critical Minerals.

Adopting a whole-of-government approach, the Mission will work closely with relevant ministries, PSUs, private companies, and research institutions to achieve its objectives.Mines and Minerals (Development and Regulation) Act, 1957, has been amended in 2023 to increase exploration and mining of critical minerals.

Consequently, the Ministry of Mines has auctioned 24 blocks of strategic minerals. Further, Geological Survey of India (GSI) has undertaken 368 exploration projects for critical minerals over the past three years, with 195 projects currently underway in FS 2024-25.

Further, for FY 2025-26, GSI is going to take up 227 projects for various critical minerals. To foster innovation, the Ministry launched the Science and Technology - Promotion of Research and Innovation in Start-ups and MSMEs (S&T PRISM) program in 2023, funding start-ups and MSMEs to bridge the gap between R&D and commercialization.

Moreover, KABIL, a JV of Ministry of Mines, has acquired an area of about 15703 Ha in the Catamarca province of Argentina, for exploration and mining of Lithium.Government of India has already eliminated customs duties on the majority of critical minerals in Union budget 2024-25.

This will increase the availability of critical mineral in the country and will encourage the industry to set up processing facilities in India. These initiatives highlight India's commitment to securing critical mineral supplies.

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Trump admin set to push India to ink more defence deals

Source: The Times of India, Dt. 30 Jan 2025,
URL: https://timesofindia.indiatimes.com/india/trump-admin-set-to-push-india-to-ink-more-defence-deals/articleshow/117703867.cms

From fighter jets and armoured combat vehicles to aero-engines and missiles, Trump administration is set to push India to further crank up military purchase from US, which already stands at well over $25 billion just since 2007.

President Donald Trump’s transactional approach was clearly evident in his phone conversation with PM Narendra Modi on Monday, where he called upon India to increase its procurement of US-origin weapon systems and platforms.

"India will have to negotiate carefully with the new Trump administration. US military technology is certainly top-notch, but it will have to dovetail into our policy of 'Make in India' with foreign collaboration at a reasonable cost. India wants codevelopment and co-production instead of just outright purchases," an official said.

Trump's push comes barely four months after India inked a mega $3.3 billion contract with US govt for 31 weaponized MQ-9B 'Predator' remotely piloted aircraft, along with another $520 million contract with drone-manufacturer General Atomics to set up an MRO facility here.

But that was during the last days of the Biden administration. Trump will want his own pound of flesh in terms of big deals, apart of course from strategic convergence on several fronts. There are, of course, the ongoing techno-commercial negotiations, which began last month, for co-production of the American General Electric F414-INS6 aeroengines with Hindustan Aeronautics Limited (HAL) in India for Tejas Mark-II fighters. The deal, which involves 80% transfer of technology of engine parts of the total value, will cost around $1.5 billion.

US has also been hard-selling joint manufacture of the latest generation of Stryker armoured infantry combat vehicles (ICVs) as part of the bilateral defence-industrial cooperation roadmap, which was finalised in June 2023.

With the Army projecting a requirement for 527 wheeled ICVs as part of its much bigger plan for mechanized infantry units, US quietly demonstrated the mobility and firepower of the eight-wheeled Stryker, with the Javelin anti-tank guided missiles, in high-altitude Ladakh in Sept, amid some criticism of indigenous options being ignored in the process.

The US is also eyeing IAF's long-standing quest for 114 new multi-role fighter aircraft to be manufactured in India, at an initial estimate of Rs 1.25 lakh crore, with foreign collaboration. With the defence ministry now working to break the logjam over the project, US will be showcasing its F-16 and fifth-generation F-35 fighters at Aero-India in Bengaluru from Feb 10 to 14. US would like India to also buy another six P-8I longrange maritime patrol aircraft to add to the 12 similar planes packed with weapons and sensors it has acquired for $3.2 billion earlier.

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Indian Navy: Without A Minesweeper For 6+ Years, Russia's New MCM Drone Is Just What IN Needs! OPED

Source: The EurAsian Times, Dt. 29 Jan 2025,
URL: https://www.eurasiantimes.com/no-minesweeper-for-over-6-years-new/

Russia has developed a mine countermeasures drone that holds promise for the Indian Navy's quest for drone-based mine countermeasures capability. The drone is intended to equip mine defense ships, such as the ones that Goa Shipyard Limited (GSL) has been contracted to build for the Indian Navy (IN).

Yawning Operational Gap

The Indian Navy (IN), which once operated 12 Mine Countermeasures Vessels (MCMVs), has been without a single MCMV or minesweeper for over six years. All Pondicherry-class and Karwar-class minesweepers were retired nearly six years ago. The last to serve, INS Kozhikode, a Pondicherry-class minesweeper built by the Soviet Union, was decommissioned on April 13, 2019. Originally procured from the Soviet Union and later upgraded indigenously, these minesweepers were critical to the IN's mine countermeasure capabilities. However, they were phased out due to aging, with no replacements in sight—victims of bureaucratic delays, failed negotiations, shifting procurement policies, and evolving technology.

Procurement Woes

The Indian Ministry of Defence (MoD) initiated procurement of replacement minesweepers in 2008 when it invited bids for the supply of 8 Mine CounterMeasures Vessels (MCMVs) from Kangnam Corp., South Korea; Intermarine, Italy; Northrop Grumman, USA; Izhar, Spain and DCN International, France. As part of the procurement process, MOD shortlisted South Korea's Kangnam Corporation and Italy's Intermarine as they met all the technical requirements. Kangam Corporation emerged winner with a more competitive price offer and concluded price negotiations with MoD by October 2011. Under the terms of the contract, Kangnam Corporation was to build two MCMVs in South Korea and the remaining six, under license in India by Goa Shipyard Limited. Kangnam Corporation was to deliver the first two MCMVs by 2016 for user trials and acceptance. GSL was to complete delivery of the remaining six license-produced ships by 2018.

In 2014, the MoD scrapped the procurement after Attorney General Mukul Rohatgi held that South Korean firm Kangnam Shipyard had hired agents to facilitate the deal. The procurement was rebooted in March 2015 when the MoD nominated Goa Shipyard Ltd. (GSL) to build 12 MCMVs indigenously. The MoD also released an RFI initiating procurement of approximately 12 sets of Mine Counter Measure (MCM) Suites to be fitted onboard 12 MCM Vessels to be built by GSL.

Kangam Again

After bagging the deal, GSL decided to tie up with the foreign yards for the technology transfer required to create these high-tech ships. It floated a global expression of interest (EOI). South Korea's Kangnam Corporation was the sole bidder. In 2017, during the contract negotiations that followed, Kangnam played truant on ToT. The company refused to provide a performance guarantee for the supervision of the construction of the vessels by GSL. By the end of the years, the negotiations collapsed, and the MoD was forced to begin a fresh global hunt for minesweepers. On March 21, 2018, the MoD issued a fresh EoI to South Korea's Kangnam Corporation, Italy's Intermarine, Spain's Navantia, Germany's ThyssenKrupp, and Russian Shipyards. The MoD reportedly received responses from Korea's Kangnam Corporation, Italy's Intermarine, and a Russian shipyard.

Revised Qualitative Requirements

With the procurement process dragging on for over a decade, the IN recognized the need to integrate advancements in mine countermeasures—such as drones and clip-on mine countermeasure suites for individual vessels—into updated Qualitative Requirements (Qrs).

Russian Offer

During the 19th IRIGC-M&MTC at Moscow on November 6, 2019, Russia reportedly offered ToT for local manufacture at GSL of its Project 12701 Alexandrit-E ships. The offer was aligned with the IN's interest in the use of drones. The Project 12701 Minesweepers are designed to deal with modern sea mines, which can be planted both in the water of seawater areas and in sea soil. In this case, the ship may not enter the danger zone – the search, identification, and destruction of dangerous objects is carried out remotely using remote-controlled underwater vehicles and a crewless boat. The ships have a unique, largest-in-the-world hull of monolithic fiberglass formed by vacuum infusion. The mass of such a case is less than metal, while its strength is significantly increased. Such a case is not susceptible to corrosion, and the service life, subject to operating standards, is practically unlimited.

Fresh RFI

In August 2023, the Indian Navy released a fresh RFI for the procurement of 12 vessels with both anti-submarine warfare (ASW) and mine countermeasures (MCM) capabilities. The Mines Counter-Measure (MCM) suite should include state-of-the-art technologies like underwater drones and remotely operated vehicles (ROVs). For ASW, the vessels will feature advanced hull-mounted and towed array sonars to detect and track underwater threats, such as submarines and mines. The 12 MCMVs are to be constructed over an eight-year period. The order will be split between the lowest and second-lowest bidding shipyards. The proposed delivery timeline for the MCMVs ranges from 2030 to 2037.

Russia's Underwater Drone For Demining

Izvestia recently reported that Russia has developed an underwater drone capable of detecting mines and explosives at depths of several hundred meters, including under a layer of silt. The drone, which is capable of moving at high speeds, can protect ships, clear ports and shipping routes of mines, and guard gas pipelines or underwater communication cables. The drone can operate in Sea States up to 3 and at great distance from the carrier ship. It is equipped with several video cameras with a wide viewing angle and high resolution, powerful lights, and a control unit. The drone's software eliminates motion blur in the real time video feed even when the drone is moving at high speeds, facilitating quick survey of large areas. The drone can clear a much larger area of mines, as compared to MCM ships or helicopters. One of the installed cameras assists in the capture or on-the-spot destruction of a mine. Operating covertly at a distance from its mother ship, the drone can support landing operations near enemy-mined shores.

Conclusion

The gap in the Indian Navy's mine countermeasures capability must be addressed urgently. Even if the MoD finalized its options today, it would likely take another five years to bridge. The longer this gap remains, the greater the risk of adversaries exploiting it.

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Science & Technology News

ISRO's 100th launch: why this is significant, the road ahead

Source: The Indian Express, Dt. 29 Jan 2025,
URL: https://indianexpress.com/article/explained/explained-sci-tech/isro-100th-launch-significance-9805666/

ISRO 100th Rockets Launch: With the first launch of 2025, the Indian Space Research Organisation achieved the significant milestone of having carried out 100 launches. The GSLV-F15 put in orbit the navigation satellite NVS-02 on Wednesday early morning. After the launch, the new Isro chairperson Dr V Narayanan, recalled the greats like Vikram Sarabhai, Satish Dhawan, and APJ Abdul Kalam. "On behalf of the present generation of Isro leaders, I salute all the previous generation of leaders, the past and present employees, and our family members," he said.

Why is this significant?

The space agency has its roots in the Indian National Committee for Space Research set up under the Department of Atomic Energy in 1962. The Indian Space Research Organisation that we know today was set up in 1969 — the same year that the United States sent men to the moon. A separate department of space was created only in 1972.

The space agency has since developed several rockets, becoming a reliable launch partner even for satellites from other countries. It has also carried out scientific missions such as the three Chandrayaan missions, which provide useful data not only to researchers from within the country but across the world.

Rockets: Isro has so far developed at least six generations of launch vehicles, of which four remain in operation. The first two generations of launchers are no longer in use. There were three developmental flights and one operational flight of the four-stage, solid fuel vehicle SLV-3 that could carry 40 kg to low earth orbit. And, there were only four development flights of its augmented version that could carry 150 kg to low earth orbit.

It was the third generation PSLV that continues to be Isro's workhorse launcher. The four-stage rocket with solid and liquid fuel-based engines is capable of carrying just under 2,000 kg to low earth orbit. There have been 62 flights of PSLV, including three development flights. Only two of the launches using PSLV have been unsuccessful.

Then came the GSLV, whose initial flights used cryogenic engines supplied by Russia. When the technology could not be transferred from Russia because of geopolitical reasons, India developed its own cryogenic engine. GSLV-F15 utilised for the 100th launch is a variation of this vehicle — and the eleventh flight using an indigenously developed cryogenic engine. The GSLV MkIII, now called LVM3, capable of carrying nearly 8,500 kg to low earth orbit, is the heaviest vehicle India has. The vehicle has been used for seven launches so far, none of which have been unsuccessful.

The vehicle was used for Chandrayaan-2 and 3 missions. And, a modified, human-rated version will be used for the Gaganyaan mission.

Isro has also developed the Small Satellite Launch Vehicle to transfer to private industry for commercial launch of small satellites. There have been three developmental flights of the launcher.

Launches: In the 100 launches so far, the space agency has placed in orbit 548 satellites weighing 120 tonnes in total. This includes 433 satellites weighing 23 tonnes that came from foreign nations. Isro has launched communication satellites, earth observation satellites, navigation satellites, and experimental satellites.

The space agency has also launched several scientific missions such as space-based observatory AstroSat, Mars Orbiter Mission, Chandrayaan 1, 2 and 3, another space observatory XpoSat, and solar mission Aditya L1.

What are the upcoming developments?

With the space agency targeting big-ticket missions such as the sample return mission from the moon, the mission to Venus, setting up an Indian space station, and sending a man to the moon, Isro is working towards developing a heavier rocket called Next Generation Launch Vehicle.

NGLV will be capable of carrying up to 30,000 kg to low earth orbit. It will be 91 metres tall as compared to the 43 metres of LVM3. It will also have a re-usable first stage, which would be utilised 15 to 20 times, to make the launches more affordable.

The cabinet has also green-lit the setting up of the third launch pad needed for NGLV launches. Built at an estimated cost of R 3984.86 crores over four years, the third launch pad would also be capable of launching human missions along with the modified second launch pad. It will also help in increasing the number of LVM3 launches, thereby increasing the space agency's capability of carrying out heavy commercial missions.

What is NVS-02?

NVS-02 is one of the five replacement satellites for the Indian Regional Navigation Satellite System, also referred to as NavIC (Navigation with Indian Constellation). The new generation satellites are heavier with longer mission life. They carry the indigenously developed atomic clock onboard. And, importantly, they have been enabled with a third frequency L1, which is mostly utilised by the US Global Positioning System (GPS). This will help in the utilisation of the NavIC signals more, with almost all devices including smaller ones such as personal trackers also carrying receivers for L1 band signals.

What is NavIC?

NavIC is a seven-satellite regional positioning system that can provide location data on the Indian mainland and up to 1,500 kilometres around. The NavIC satellites can provide position accuracy of up to 20 m under standard positioning service that is available to all and a restricted service for better accuracy available to customers.

A fully functional NavIC system with all seven satellites and ground stations outside of India is likely to be more accurate than the GPS in the region currently. The satellites for NavIC are placed

directly over India, which ensures better availability of signals even in difficult geographical locations than GPS whose signals are received in India at an angle making it difficult to access in certain areas like valleys and forests.

Are there other countries that have similar systems?

India is the only country with a regional navigation system. Japan's four-satellite Quasi-Zenith Satellite System (QZSS) augments the GPS signals in the region. Other than there are four global navigation systems in the world — the American GPS, the Russian GLONASS (GLObalnaya NAvigatsionnaya Sputnikovaya Sistema), the European Galileo, and the Chinese Beidou. There have been discussions in the past about increasing the coverage area of India's IRNSS as well.

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DeepSeek Effect: We can do a Mangalyaan in AI, say India's top AI experts

Source: The Indian Express, Dt. 30 Jan 2025,
URL: https://indianexpress.com/article/technology/deepseek-r1-india-mangalyaan-ai-9805659/

Chinese Artificial Intelligence (AI) start-up DeepSeek's R1 model, which has disrupted the tech sector, holds lessons for India to develop the critical technology in cost-effective ways and without massive computational resources, the nation's top researchers told The Indian Express.

"With the launch of the R1 model, India could do a Mangalyaan in AI," said Gautam Shroff, Professor at IIIT-Delhi and former senior vice-president of Tata Consultancy Services and its head of research.

Researchers are of the view that although the US and China lead the AI race, India can certainly catch up. "With the right focus, India can position itself as a strong contender in the global AI ecosystem. The open-sourcing of DeepSeek models is creating a ripple effect, triggering global competition and collaboration. India should embrace this momentum," said Mayank Vatsa, professor of Computer Science at IIT-Jodhpur.

Like Shroff of IIIT-Delhi, Vatsa, who works on biometrics and computer vision, said India needs to follow the template set by Indian Space Research Organisation (ISRO) to usher in major AI advancements. "In the early days of India's space program, we were considered outsiders — so much so that cartoons ridiculed our perceived deficiencies in space technology. Yet ISRO's journey has proven otherwise, transforming India into a global leader in this domain through cost-effective, innovative methods that encouraged self-reliance and delivered wide-ranging social impact," he said.

These same principles, Vatsa felt, could be applied to AI amidst the race to develop the technology. "We managed to reach Mars at a fraction of the cost of the developed nations. This is what is needed in AI as well, and with the latest developments we have a demonstration and even a starting point," Shroff said.

The R1 model released last week has sent shock waves across the world — the global tech market has seen a shift, DeepSeek's model overtook rival ChatGPT to become the top-rated free application on Apple's App Store, and Silicon Valley giants are spooked. The little-known company based in Hangzhou has built an AI model which can match the performance of its cutting-edge American rivals at a much lower cost and with limited resources.

"DeepSeek's models show that necessity breeds innovation. When you are denied some technology, you figure out a way around it and do something smarter. Some of the engineering is quite ingenious," Shroff said.

The R1 model is said to have been built with only around $6 million — OpenAI spent more than $100 million to train its GPT-4. DeepSeek's model uses a "mixture of experts" approach, where multiple specialised sub-models work together to answer a question, instead of a single big model managing everything.

Vatsa said, "This allows for better performance and efficiency compared to a single large model. This approach has the potential to democratise access to advanced AI by reducing the computational resources required, enabling researchers in resource-constrained environments to participate more actively."

However, researchers also said it was important to wait and watch how the model performs in the coming days as it has just been rolled out.

Shroff said, "The R1 model has beat the benchmark tests. But you have to see how they scale this for hundreds of people and commercialise. It is not just about creating AI but also about serving half-a-billion people every day."

The R1 model is not only cost-effective but also consumes less energy, according to DeepSeek. Thousands of GPUs used for training AI models are housed in data centres, which devour large amounts of energy and water for cooling. In the US, data centers consumed roughly 4.4% of electricity in 2023 but are anticipated to use 6.7% to 12% of all power by 2028, according to a report produced by the Lawrence Berkeley National Laboratory.

The Chinese start-up is said to have trained the R1 model using around 2,000 Graphics Processing Units (GPUs) — companies like OpenAI use as many as 16,000 or more GPUs to train their models. The R1 model used Nvidia H800 chips, which are the less-advanced GPU chips available to DeepSeek, amidst a ban imposed by the US on more sophisticated chips such as H100.Pushpak Bhattacharya, Professor at the Computer Science Department at IIT Bombay who works on machine translation, said the R1 model's launch is "heartening" as "the AI community is worried about the environmental impact of the technology".

Why the rise of DeepSeek's new model tanked power stocks

Researchers hope that DeepSeek's breakthrough would lead to development of more models in India that compete with the systems of the industry's leading players such as Google, OpenAI, and Meta.

They also called for scaling up work on indigenous models built for Indian languages so that they can address the country's regional diversities and complexities. For instance, Bhattacharya explained, these models should ultimately be able to help farmers in rural areas.

"They should be able to access AI applications on their phones and, let's say, upload a photo of a diseased crop. The application should then be able to lay out next steps for tackling the diseased crop to ensure that it does not contaminate the whole field. This communication to the farmer should be in their language," he said.

To propel AI growth in India, researchers highlight that there is a need to focus on developing indigenous foundational models through sustained funding, and industry-government collaboration.

Shroff said that currently, our private companies "do not have the capacity or even the desire to build foundational models". "We have seen many senior leaders go and say we should not be building models and we should just be using them. We do not have to just consume, we have to contribute," he said.

He also pointed out that people building models in India should learn from DeepSeek and think of "better spending of the 10,000 crores allocated in the AI mission along all verticals". In March 2024, the Centre launched the IndiaAI Mission, which allocated Rs 10,372 crore for the next five years towards several initiatives to boost the country's AI capabilities.

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DeepSeek impact: India keeps vigil as privacy fears run deep

Source: The Economic Times, Dt. 30 Jan 2025,
URL: https://economictimes.indiatimes.com/tech/artificial-intelligence/ai-spy-india-keeps-vigil-as-privacy-fears-run-deep/articleshow/117701735.cms?from=mdr

The Indian government has been closely monitoring the surge of DeepSeek's artificial intelligence model to the top of the app store charts amid concerns regarding data safety and sovereignty of citizens, particularly since the company is based in China, said people with knowledge of the matter. On Wednesday, Chinese giant Alibaba announced the latest release of its own AI model Qwen and said it exceeds the powers of the DeepSeek app.

Indian officials said these are open-source models that can run locally on devices but their privacy policies state that data can be stored in servers in China, sparking concern.

"We are monitoring. There is nothing alarming as of now but if there is an issue around data transfer, we will take action as we did in the past," a senior government official told ET.

India had banned several Chinese apps, including TikTok and WeChat, in 2020 amid border tensions, citing espionage concerns.

Officials said a clearer picture will emerge in about a week on the movement of Indian citizens' data out of India and into China. In case such information is being misused or transferred, action will be taken under the IT rules, they said.

Experts said the data of users who download the apps is likely to be stored in China, citing the DeepSeek privacy policy.

“We store the information we collect in secure servers located in the People’s Republic of China,” states the DeepSeek policy, adding, “Where we transfer any personal information out of the country where you live, including for one or more of the purposes as set out in this policy, we will do so in accordance with the requirements of applicable data protection laws”.

Ever since DeepSeek emerged as the next big thing on the AI stage, becoming the top free downloaded app in the US on Apple’s App Store, governments across the world have taken a guarded stance. In India, DeepSeek is among the top free productivity apps on the Google Play Store along with OpenAI’s ChatGPT, Perplexity and Google's Gemini.

US officials said on Tuesday that they were investigating the national security implications of the DeepSeek model while Australia has urged its citizens to be cautious when using the app. Italy’s data protection authority has also raised questions over personal data.

Some privacy experts noted that even without storing data, such apps can profile a user based on the questions asked (prompts) that can then be misused.

“The rules empower the government to prevent such data flows—it is an enabling provision. The government would take a decision when the need arises,” a second official said.

The ministry of home affairs, the ministry of electronics and IT (MeitY) and law enforcement agencies are among those keeping a close watch at the highest levels, said the officials cited. The department of telecommunications (DoT) will also be involved if any suspicious data flows are detected.

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Explained: How quantum cryptography is leveraging principles of quantum mechanics to secure data to prevent financial frauds

Source: The Week, Dt. 29 Jan 2025,
URL: https://www.theweek.in/news/sci-tech/2025/01/29/explained-how-quantum-cryptography-is-leveraging-principles-of-quantum-mechanics-to-secure-data-to-prevent-financial-frauds.html

In recent years, India has been witnessing a major surge in digital payment frauds. According to data from the Reserve Bank of India (RBI), the total value of digital payment frauds escalated to Rs 14.57 billion in the fiscal year ending March 2024, marking a more than five-fold increase from the previous year. Besides, a survey by US-based data analytics company FICO revealed that over 34 per cent of respondents in India reported losing money to scams via real-time payments. Notably, while fewer consumers reported losses in 2024 compared to 2023, the percentage of high-value losses (those exceeding Rs 8,00,000) doubled.

In addition to this, a report by BioCatch indicated a 101 per cent increase in reported fraud volumes in the first five months of 2024 compared to the same period in the previous year. Up to 40 per cent of these reported frauds were categorised as voice scams, underscoring the evolving tactics of fraudsters.

Such statistics underscore the pressing need for enhanced security measures and increased user awareness to combat the rising tide of digital payment frauds in India. Newer technologies such as quantum cryptography leverages principles of quantum mechanics to secure data.

“Unlike classical cryptography, which relies on mathematical complexity, quantum cryptography uses the fundamental laws of physics. A primary example is Quantum Key Distribution (QKD), which enables two parties to generate a shared, secret key. Any attempt by an eavesdropper to intercept the key alters the quantum states, revealing the intrusion and ensuring the integrity of the communication,” explained Dharshan Shanthamurthy, CEO of Bengaluru-headquartered firm SISA, which offers forensic-driven cybersecurity solutions for the digital payments industry.

Shanthamurthy noted that the integration of quantum cryptography into digital payment systems can address several security challenges.

“Quantum cryptography provides security based on physical laws rather than computational assumptions, making it resistant to current and future computational attacks, including those from quantum computers. As quantum computing advances, traditional cryptographic methods become vulnerable. Quantum cryptography, particularly QKD, ensures that any interception attempt is detectable, safeguarding data against both classical and quantum attacks. QKD facilitates the secure distribution of cryptographic keys, a critical component in digital payment security. This ensures that encryption keys remain confidential and integral, preventing unauthorised access and fraudulent transactions,” he said.

Implementing quantum cryptography in digital payments involves integrating QKD systems with existing payment infrastructures. This requires the development of quantum networks capable of transmitting quantum keys over distances relevant to financial transactions.

Additionally, payment protocols must be adapted to incorporate quantum-generated keys, ensuring compatibility and seamless operation. Broadly quantum mechanics provides a level of security that is fundamentally resistant to both current and emerging threats, ensuring the integrity and trustworthiness of digital financial transactions.

Recently SISA launched Post-Quantum Cryptography services to secure digital payments. The aim has been to give industry support to the government's quantum mission. “The UNGA (United Nations General Assembly) has announced the year 2025 as the year of International Quantum Science, this initiative by SISA is also in line with the the government of India’s national quantum mission to increase the skill resources in quantum technology."

“Quantum supremacy, the point where quantum computers surpass classical ones, is expected within the next five to ten years, with the quantum computing market forecast to reach $50 billion by 2030. These advancements pose a critical threat to the digital payments ecosystem, as quantum technology risks rendering traditional encryption methods like RSA, ECC, and DSA obsolete, leaving sensitive data and financial transactions exposed. Despite the growing urgency, many

organisations remain uncertain about whether to invest and how to prepare for a quantum-secure future," remarked Shanthamurthy.

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