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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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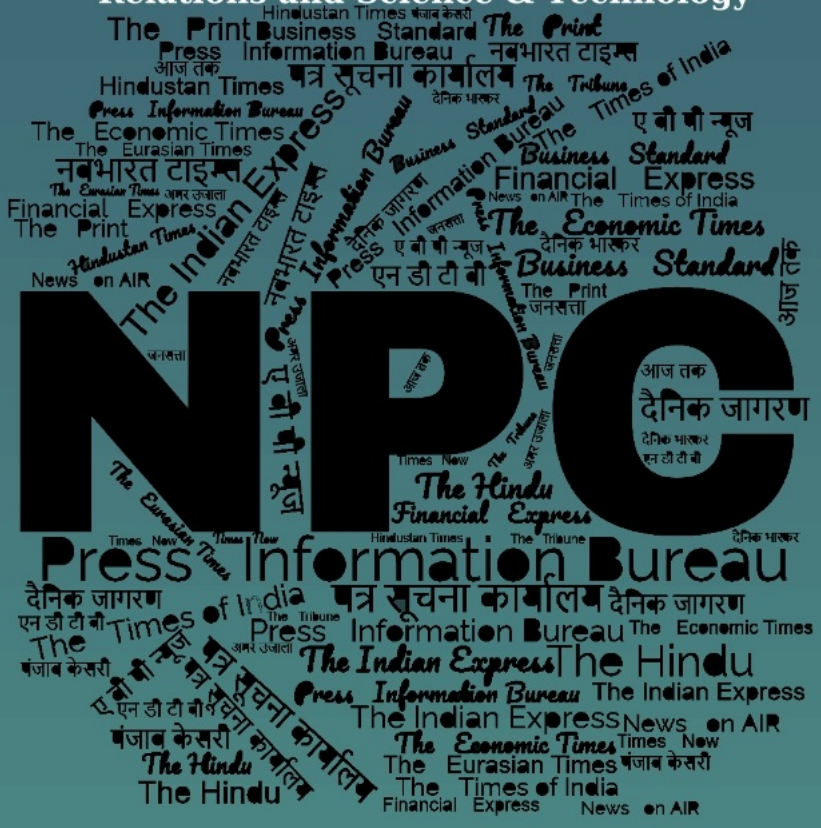


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**DRDO News**

हिन्दुस्तान

***Sun, 01 Dec 2024***

# रक्षा प्लेटफॉर्म को एआई से लैस करेगा डीआरडीओ

नई रक्षा तकनीकों मेंकृत्रिम बुद्धिमता एवं मशीन लर्निंग का इस्तेमाल बढ़ रहा है। इसी के मद्देनजर रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) इसके कई नए पहलुओं पर भी काम कर रहा है। इसके तहत मौजूदा रक्षा प्लेटफॉर्ममेंएआई के इस्तेमाल की योजना तैयार की जा रही है। इनके भीतर इस्तेमाल होनेवाली डिवाइसों को एआई व मशीन लर्निंग सेलैस बनाया जाएगा। इससेप्लेटफॉर्मकी क्षमताओं को कई गुना गु तक बढ़ा पाना संभव होगा। डीआरडीओ नेकई रक्षा प्लेटफॉर्मविकसित किए हैं, जिनमेंचिप का इस्तेमाल होता है। काफी हद तक येस्वचालित होतेहैं। ऐसेप्लेटफॉर्ममेंएआई और मशीन लर्निंग का भी इस्तेमाल किया जा सकता है। कोशिश यह की जा रही हैकि चिप आधारित डिवाइसों, जो मूलत: सॉफ्टवेयर आधारित होती हैं, उन्हेंएआई और मशीन लर्निंग सेलैस किया जाए। हाल मेंडीआरडीओ ने इस पर एक उच्च कार्यशाला का भी आयोजन किया। इस दौरान शीर्षविशेषज्ञों के विचारों को सुना।

डीआरडीओ सूत्रों के अनुसार डिफेंस इलेक्ट्रॉनिक रिसर्चलेबोरेटरी (डीएलआरएल), हैदराबाद इस विषय पर काम कर रहा है। सूत्रों नेकहा कि इस योजना के दो फायदे हैं। एक मौजूदा रक्षा प्लेटफॉर्मको एआई तकनीकों सेलैस कराना और दूसरेभविष्य मेंएआई सेलैस प्लेटफॉर्मका निर्माण करना। हालांकि, यह प्रयोग किन–किन मौजूदा फ्लेटफॉर्मपर सफल होगा, इसका अभी आकलन नहीं किया गया हैलेकिन डीआरडीओ का मानना हैकि इससेटैंकों, मिसाइलों, राडारों आदि को कहीं ज्यादा सक्षम बनाया जा सकता है।

https://www.livehindustan.com/ncr/new-delhi/story-drdo-enhances-defense-platforms-with-ai-and-machine-learning-technologies-201733056406186.html

THE NEW INDIAN EXPRESS

***Sun, 01 Dec 2024***

# India first to develop long-range hypersonic missile: Defence experts

India is the first country to develop a long-range hypersonic missile that can travel more than eight times the speed of sound and is a game-changer in global defence technology which no other countries have, claimed defence scientists.

The Defence Research and Development Organisation (DRDO) recently test-fired the country's first long-range hypersonic missile that can carry both conventional and nuclear warheads to a distance exceeding 1,500 km at a speed of nearly 3 km per second.

Although in terms of technology, India is the fourth country to possess a hypersonic missile, it is the first country to have successfully tested a hypersonic missile that can travel twice the range of the missile that Russia has in its arsenal.

"The hypersonic missile that India now possesses is unique in terms of speed, range, precision and detectability. It is a game-changer and going to play an important role providing an edge to our Armed Forces," former DRDO chairman G Satheesh Reddy told The New Indian Express.

The superfast hypersonic missile is of two types - hypersonic glide vehicle (ballistic) and hypersonic cruise missile. The hypersonic ballistic missiles are usually launched with a rocket booster. After the booster gets separated at a certain altitude, it travels towards the target much faster. The hypersonic cruise missiles, on the other hand, use scramjet engines to maintain speed throughout their flight path and possess high manoeuvrability.

"What India has developed is not exactly a hypersonic cruise missile, but is like a hypersonic cruise missile. It can manoeuvre in-flight to avoid getting detected by enemy radar and shot down. This missile is a technological marvel and a great achievement in India's missile technology," said a defence scientist.

The DRDO has also successfully demonstrated the hypersonic air-breathing scramjet technology with the flight test of Hypersonic Technology Demonstration Vehicle (HSTDV).

The second-generation BrahMos missile is also under development in a joint venture with Russia. It will be a hypersonic cruise missile with a range of over 1,500 km. The former DRDO chief said another technology which India has been working on is solid fuel ducted ramjet (SFDR), which will help develop long range air-to-air missiles.

"SFDR will help the country master cutting-edge technology. Once fully developed, India will be the first country to possess such capability," Reddy added.

https://www.newindianexpress.com/states/odisha/2024/Dec/01/india-first-to-develop-long-range-hypersonic-missile-defence-experts

THE HINDU

***Sat, 30 Nov 2024***

# DRDO chief encourages NITW graduates to pursue lifelong learning

Chairman of the Defence Research and Development Organisation (DRDO) Samir V. Kamat emphasised the importance of embracing boldness in the face of challenges and highlighted the

significance of lifelong learning. He was speaking at the 22nd convocation of National Institute of Technology (NIT-Warangal) on Saturday.

Addressing graduates, he also shared insights into India's advancements in defence technology, particularly in missile systems, and mentioned DRDO's initiatives such as establishing 15 academic centres of excellence across the country. Reflecting on his journey, Mr. Kamat expressed gratitude to his first manager at DRDO, Malakondiah, an alumnus of NITW, for mentoring him during his early career.

NITW director Bidyadhar Subudhi said the institute secured projects worth ₹54.72 crore and consulting grants of ₹4.19 crore. Over 300 reputable companies visited the campus for placements. The highest annual pay package offered last year was ₹88 lakh. "An endowment fund of ₹2.3 crores, established with contributions from alumni, was another notable achievement," he added.

As many as 1,875 students, including 147 Ph.D. scholars, were conferred their degrees at the event. Eleven students received gold medals for their academic achievements. Manjima Karmakar from electrical engineering was awarded gold medal for overall excellence. Manisha Varshney from the MCA received the topper's gold medal among all postgraduate programmes. Arun Kumar from the Chemistry was awarded the best Ph.D. thesis gold medal.

Earlier, Mr. Kamat inaugurated the Institute Health Centre. The new facility features a 10-bed emergency ward, a laboratory, physiotherapy services and a pharmacy, which will cater to the health needs of students and staff.

https://www.thehindu.com/news/national/telangana/drdo-chief-encourages-nitw-graduates-to-pursue-lifelong-learning/article68931119.ece

# Defence News

## Defence Strategic: National/International

Press Information Bureau
Government of India

**Ministry of Defence**

***Fri, 29 Nov 2024***

# Launch Of 8th Ammunition Cum Torpedo Cum Missile (ACTCM) Barge, LSAM 22 (Yard 132)

Launching ceremony of 8th ACTCM Barge, LSAM 22 (Yard 132) was held on 28 Nov 24 at M/s Suryadipta Projects Pvt Ltd, Thane. The Launching Ceremony was presided over by Cmde VA Giriprasad, AWPS WOT(Mbi).

The contract for construction of eleven (11) Ammunition Cum Torpedo Cum Missile Barge was concluded with M/s Suryadipta Projects Pvt Ltd, Thane on 05 Mar 21, a MSME Shipyard.

The Shipyard has indigenously designed these Barges in collaboration with an Indian Ship Designing firm and subsequently successfully model tested at Naval Science and Technological Laboratory, Visakhapatnam to ensure seaworthiness. These barges have been built in accordance with relevant Naval Rules and Regulation of Indian Register of Shipping (IRS).

The Shipyard has successfully delivered seven of these Barges till date and are being utilised by IN for its operational evolutions by facilitating Transportation, Embarkation and Disembarkation of articles/ ammunition to IN platforms both alongside jetties and at outer harbours.

These Barges are proud flag bearers of “Make in India” and “ Aatmanirbhar Bharat ” initiatives of Government of India.

https://pib.gov.in/PressReleasePage.aspx?PRID=2079210

Press Information Bureau
Government of India

**Ministry of Defence**

***Fri, 29 Nov 2024***

# Induction Of 25t Bollard Pull Tugs Bhishm (Yard 335) And Bahubali (Yard 336)

Induction ceremony for 25T Bollard Pull (BP) Tug Bhishm and Bahubali was held on 28 Nov 24 at NSRY (SVP). The ceremony was presided over by Air Marshal Saju Balakrishnan, Commander-in-Chief, Andaman & Nicobar Command.

The contract for construction and delivery of six 25T BP Tugs was concluded with M/s Titagarh Rail Systems Limited (TRSL), Kolkata, on 12 Nov 21. The shipyard has indigenously designed these Tugs in collaboration with an Indian ship designing firm. These tugs have been built in accordance with the relevant Naval Rules and Regulations of Indian Register of Shipping (IRS) and are proud flag bearers of 'Make in India' and 'Aatmanirbhar Bharat' initiatives of Government of India.

These Tugs will aid IN ships and submarines during berthing, un-berthing, turning and manoeuvring in confined waters thereby aiding the operations of ships directly. The Tugs will also provide afloat fire-fighting support to ships alongside and at anchorage, and will also have the capability to conduct limited Search and Rescue (SAR) operations.

https://pib.gov.in/PressReleasePage.aspx?PRID=2079133

Press Information Bureau
Government of India

**Ministry of Defence**

***Fri, 29 Nov 2024***

# ICG conducts 11th National Maritime Search & Rescue Exercise off Kochi coast

The Indian Coast Guard (ICG) conducted the 11th edition of National Maritime Search and Rescue Exercise (SAREX-2024) off the Kochi coast on November 29, 2024. The two-day exercise was inaugurated by Defence Secretary Shri Rajesh Kumar Singh on November 28, 2024, and reviewed by Director General ICG Paramesh Sivamani.

SAREX-2024, with the theme ‘Enhancing Search and Rescue Capabilities Through Regional Collaboration’, highlighted the importance of international cooperation in strengthening maritime safety.

The first day of the event featured various programmes, including table-top exercise, workshop & seminars involving participation of senior officials from government agencies, Ministries & Armed Forces, various stakeholders and foreign delegates. The second day comprised the sea exercise involving large scale contingencies off the Kochi coast with participation of ships & aircraft of various agencies.

The simulated contingency involved a passenger aircraft crash, wherein an aircraft carrying 250 passengers encountered severe technical failure, losing communication with Air Traffic Control and vanishing from radar approximately 150 nautical miles northwest of Kochi.

A coordinated Mass Rescue Operation (MRO) was swiftly initiated, demonstrating the seamless deployment of resources, including ships and aircraft from the ICG, Indian Air Force (IAF), tugs from Cochin Port Authority, three water metros, one Garuda rescue & emergency craft from Kochi Water Metro and a water ambulance provided by the Kerala State Administration.

**Key operations included:**

• Life raft drops by IAF aircraft and ICG ships

•Passenger evacuation using Advanced Light Helicopters

•Crew rescue operations utilising Jason Cradle technology

•The innovative deployment of drones to deliver lifebuoys

The successful execution of these operations underscored the high level of coordination and preparedness among participating agencies.

The exercise aimed to validate standard operating procedures and best practices for conducting MROs. It served as a vital platform to enhance mutual understanding, foster collaboration, and exchange effective strategies for managing large-scale maritime contingencies.

The event also saw participation from members of the National Maritime Search and Rescue Board and 38 distinguished foreign observers.

Over the years, ICG has emerged as a leading maritime agency, driving India's efforts to build a robust maritime search and rescue framework. By consistently collaborating with various stakeholders, ICG plays a pivotal role in enhancing maritime safety and security. These initiatives align with the Hon’ble Prime Minister of India Shri Narendra Modi’s vision of Security and Growth for All in the Region (SAGAR), reinforcing India’s reputation as a reliable and proactive maritime partner on the global stage.

https://pib.gov.in/PressReleasePage.aspx?PRID=2079013

Press Information Bureau
Government of India

**Ministry of Defence**

***Fri, 29 Nov 2024***

# Statement of Intent on Cooperation on Design & Development of Electric Propulsion Systems for Indian Navy signed with UK

A Statement of Intent (SoI) on Cooperation on Design & Development of Electric Propulsion Systems for the Indian Navy was signed between Ministries of Defence of India and UK in Portsmouth on November 28, 2024. The signing was part of the third Joint Working Group Meeting of Electric Propulsion Capability Partnership, symbolising the commitment to promote indigenous development of niche technologies.

The SoI would serve as a broader framework intended for cooperation in the co-design, co-creation and co-production of Electric Propulsion capability for future Naval Ships. The Landing Platform Docks, planned to be built at an Indian Shipyard, are envisaged to have a Full Electric Propulsion System.

The SoI was signed and exchanged between Joint Secretary (Naval Systems), Shri Rajeev Prakash and Director, Ships Operations & Capability Integration, UK MoD Rear Admiral Steve McCarthy.

https://pib.gov.in/PressReleasePage.aspx?PRID=2078853

Press Information Bureau
Government of India

**Ministry of Defence**

***Fri, 29 Nov 2024***

# Indian Navy And Sri Lankan Navy Conduct Successful Anti-Narcotics Operation

Based on information received from the Sri Lankan Navy regarding probable narcotics smuggling by Sri Lankan flagged fishing vessels in the Arabian Sea, the Indian Navy responded swiftly through a coordinated operation to localise and intercept the boats.

Extensive surveillance was undertaken by Indian Naval Long Range Maritime Patrol Aircraft and Remotely Piloted Aircraft, based on inputs from the Information Fusion Centre (Indian Ocean Region), Gurugram, and an Indian Naval ship was deployed to augment efforts.

Two boats were identified based on continuous inputs from the Sri Lankan Navy and aerial surveillance by IN aircraft. Subsequently, in a closely coordinated operation between the ship and the aerial assets, both boats were boarded by the ship's boarding team on 24 and 25 Nov 24, leading to the seizure of approximately 500 kg of narcotics (Crystal Meth). One additional IN ship was also tasked to augment the force level for conduct of anti-narcotics operations.

The two boats, along with crew and seized narcotics, are being handed over to Sri Lankan authorities for further legal action.

The operation reaffirms the close partnership and bonds developed between the two countries and navies. It also symbolizes the combined resolve of both navies to address regional maritime challenges, and ensure safety and security in the Indian Ocean Region.

https://pib.gov.in/PressReleasePage.aspx?PRID=2078843

Press Information Bureau
Government of India

**Ministry of Defence**

***Sat, 30 Nov 2024***

# MoD inks contract worth ₹1207 Cr with Cochin Shipyard Limited for Short Refit and Dry Docking of INS Vikramaditya

The Ministry of Defence signed a contract with M/s Cochin Shipyard Limited on 30th Nov 2024 for Short Refit and Dry Docking (SRDD) of INS Vikramaditya at an overall cost of Rs. 1207.5 Cr.

INS Vikramaditya is an Indian Aircraft Carrier commissioned in the Indian Navy in November 2013. After completion of the Refit, INS Vikramaditya will join the active fleet of the Indian Navy with upgraded combat capability.

This project is an important step towards development of Cochin Shipyard Limited as Maintenance, Repair & Overhaul (MRO) Hub for supporting the industrial ecosystem of India. The project envisages the involvement of nearly 50 MSMEs and would lead to employment generation for more than 3500 personnel.

The Project will provide a major boost to Government of India's vision of Atmanirbhar Bharat and Make in India initiative.

https://pib.gov.in/PressReleasePage.aspx?PRID=2079380

Press Information Bureau
Government of India

**Ministry of Defence**

***Fri, 29 Nov 2024***

# Indian Army And Singapore Armed Forces Conclude Joint Military Exercise “AGNI WARRIOR - 2024”

The 13th edition of Joint Military Exercise AGNI WARRIOR (XAW-2024), a bilateral exercise between the Indian Army and Singapore Armed Forces, concluded at Field Firing Ranges, Devlali (Maharashtra) on 30th November 2024. The three-day exercise conducted from 28th to 30th November 2024, witnessed participation by the Singapore Armed Forces contingent comprising 182 personnel from the Singapore Artillery and the Indian Army contingent comprising 114 personnel from the Regiment of Artillery.

The aim of XAW-2024 was to maximise mutual understanding of drills and procedures to achieve jointness as a multinational force under the United Nations Charter. The exercise showcased joint firepower planning, execution and use of New Generation Equipment by the Artillery of both Armies. The event was witnessed by Lieutenant General Adosh Kumar, Director General of Artillery, Lieutenant General NS Sarna, Commandant, School of Artillery, and Colonel Ong Chiou Perng, Chief Artillery Officer, Singapore Armed Forces. The dignitaries appreciated the participating troops for displaying high levels of professional acumen and expertise.

The Exercise involved extensive joint preparation, coordination, understanding of each other’s capabilities, procedures and evolution of common interface between Indian and Singapore Artillery procedures. It marked the culmination of successful training by Singapore Armed Forces troops exposing them to intricacies of Fire Power planning. Both sides utilised niche technologies during the exercise and exchanged best practices as part of the joint training.

https://pib.gov.in/PressReleasePage.aspx?PRID=2079355

Press Information Bureau
Government of India

**Ministry of Defence**

***Sat, 30 Nov 2024***

# Technical Seminar And Exhibition

The Directorate General of Naval Armament (DGONA) conducted a Technical Seminar and Exhibition on "Modern Storage Solutions for Explosives and Ammunition" at Varunika, Chanakya Bagh, New Delhi. Shri P Upadhyay, INAS DG Naval Armament, delivered the welcome address

and brought out the need and significance of the seminar in the dynamic field of explosive storage and handling.

VAdm Atul Anand, Addl Secretary DMA, was the Chief Guest and in his inaugural address he stressed upon the requirement of new technologies to resolve the critical issues of Mixing of different compatibility groups of explosives in ever increasing pressure on limited land resources. He recommended use of automation, robotics, IOT, AI driven technologies, fire resistant, energy efficient and shock absorbent material for ensuring controlled environment conditions, while handling and storage of explosives. It was emphasized that new infrastructure technologies such as Underground magazines, Unit Risk Principle (URO) magazines, High Performance Magazines (HPM) as approved by DRDO/ CFEES must be used across the services to reduce Quantity Distance (QD) requirements.

The event has seen active participation from the Three Services, Coast Guard, DRDO, Defence PSUs and Industries with indigenous solutions towards 'Aatmanirbharta'. Panel discussions were held and total 8 speakers (4 from the Services and 4 from Industries) presented technical papers on diverse topics such as Climatic Risk in Siting of Explosive Facilities, Smart Storage Solution for Weapons and Small Arms, Modular Ballistics Protection System, Palletization and New Design Magazines with emphasis on Indigenization, Innovation and Excellence which are also key principles of iDEX.

https://pib.gov.in/PressReleasePage.aspx?PRID=2079421

Press Information Bureau
Government of India

**Ministry of Defence**

***Sun, 01 Dec 2024***

# India And Cambodia Commences Inaugural Joint Table Top Exercise CINBAX In Pune

The 1st edition of Joint Table Top Exercise, CINBAX, between the Indian Army and the Cambodian Army commenced at Foreign Training Node, Pune today. The exercise will be conducted from 1st to 8th December 2024. The Cambodian Army contingent will comprise 20 personnel and the Indian Army contingent is also comprising 20 personnel from an Infantry Brigade.

Exercise CINBAX is a planning exercise aimed to wargame conduct of joint Counter Terrorism (CT) operations under Chapter VII of the United Nations Charter. The exercise will focus on discussions pertaining to establishment of Joint Training Task Force for Intelligence, Surveillance and Reconnaissance besides planning of operations in CT environment. Various contingencies will be war gamed and employment of force multipliers in the sub conventional operations will also be

discussed. The exercise will also involve discussion on information operations, cyber warfare, hybrid warfare, logistics and casualty management, HADR operations etc.

The exercise will be conducted in three phases. Phase-I will focus on preparations and orientation of participants for CT operations during UN peace keeping missions. Phase-II will involve conduct of the Table Top exercises and Phase-III will involve finalisation of plans and summing up. This will bring out practical aspects of the theme-based training and aims to enable the participants to comprehend the procedures through situation-based discussions and tactical exercises.

The exercise will also showcase weapons and equipment of the Indian origin promoting 'Atmanirbharta' and indigenous capabilities in defence production.

The inaugural edition of Exercise CINBAX will focus on enhancing trust, camaraderie and achieving desired level of interoperability between troops of both the sides. It will also enhance the joint operational efficiency of both the Armies while undertaking peace keeping operations.

https://pib.gov.in/PressReleasePage.aspx?PRID=2079505

THE ECONOMIC TIMES

***Mon, 02 Dec 2024***

# Loitering munitions delivered, forces to aim for indigenous long-range drones

Having received deliveries of domestically developed and produced loitering munitions, the armed forces are now looking for indigenous longrange drones required for a variety of tasks from intelligence gathering to offensive operations. There is a substantial requirement for Medium Altitude Long Endurance (MALE) drones by the three armed forces that are seeking to replace imports by indigenously developed systems.

In the past, these systems were directly imported from Israel and efforts by stateowned research organisations have not yet resulted in a viable option. Sources said that plans are underway to acquire MALE drones under the Indigenously Designed Developed and Manufactured (IDDM) route that requires new weapons to be fully made in India, with at least one company submitting a detailed proposal for the development.

The overall requirement of the armed forces is in the hundreds but in the initial phase a smaller number is likely to be ordered. The acquisition is likely to be a tri-services process in which the drones will be acquired to meet the requirements of the army, air force and navy.

The forces have received a proposal from an Indian manufacturer to develop the drones to specific requirements. Sources said that Nagpur-based Economic Explosives Limited (EEL) has sent a proposal under IDDM to design MALE drones, with research work for the project already initiated.

The company has also created a first-of-its-kind runway and testing facility for long-range drones. With a length of 1.4 km, the runway and associated infrastructure is the biggest such dedicated facility in the private sector.

The plan to acquire MALE drones under the ‘top priority’ IDDM route has been triggered by confidence in the abilities of the private industry that has successfully managed to deliver loitering munitions in record time under the Emergency Procurement (EP) category that was initiated to quickly acquire capabilities to counter China on the eastern front.

https://economictimes.indiatimes.com/news/defence/loitering-munitions-delivered-forces-to-aim-for-indigenous-long-range-drones/articleshow/115874299.cms

THE ECONOMIC TIMES

***Mon, 02 Dec 2024***

# India poised to finalise deal for 26 Rafale Marine jets from France: Navy Chief Admiral Dinesh K Tripathi

The Indian Navy is on the verge of closing a pivotal deal for 26 Rafale Marine fighter aircraft. Navy Chief Admiral Dinesh K Tripathi, speaking at the annual Navy Day press conference, revealed that the negotiation is at an advanced stage.

“Rafale Marine is at an advanced stage of negotiations and is only one level short of taking it to the Cabinet Committee on Security. Since it is a government-to-government deal, it should not take much time,” he said.

At a media briefing ahead of Navy Day, Admiral Tripathi also said that the government's approval for two SSNs (nuclear-powered submarines) indicated its faith in the country's indigenous capabilities to build such boats. The Navy chief also said that 62 ships and a submarine are currently under construction within the country as part of efforts to boost its naval power.

In July last year, the defence ministry approved the purchase of the Rafale-M jets from France, primarily for deployment on board the indigenously built aircraft carrier INS Vikrant.

**Heightened Regional Vigilance**

Admiral Tripathi addressed growing concerns over Pakistan's naval ambitions, which have been significantly strengthened by Chinese assistance.

“Many Pakistan Navy warships and submarines are being built with Chinese support, showing that China is interested in making Pakistan's Navy stronger,” he stated. He highlighted the delivery of eight new submarines to Pakistan, noting their significant combat potential.

“We are fully aware of their capabilities. That is why we are tweaking our concepts to be able to tackle all threats from our neighbours,” Tripathi explained. He also pointed out the imbalance in Pakistan's priorities, stating, “They have chosen weapons over the welfare of their people.”

**Nuclear Submarine and Missile Developments**

India's nuclear deterrence capabilities received a boost with the successful missile test conducted from the INS Arighaat, part of the nuclear-powered submarine fleet.

Admiral Tripathi confirmed the achievement, stating, “India carried out a test of the missile, and the launch was successful. The agencies concerned are examining the trajectory that the missile took and soon we will know the results.”

He added that India’s nuclear-powered ballistic missile submarine, INS Arihant, has conducted multiple deterrence patrols, solidifying its strategic position. The second nuclear submarine, INS Arighaat, was commissioned by Defence Minister Rajnath Singh in August.

“In August, Defence Minister Rajnath Singh commissioned the second nuclear submarine INS Arighaat, which is an important leg of our nuclear triad,” Tripathi remarked. The Navy Chief assured that India’s nuclear-powered attack submarines (SSNs) are on track to meet the timelines communicated to the government.

**Fleet Expansion and Indigenous Construction**

The Indian Navy is simultaneously focusing on expanding its fleet.

“Sixty-two warships and one submarine are under construction in the country, and there is acceptance of necessity for 31 more powerful warships and submarines, including six submarines of Project-75 India. This includes 60 Utility Helicopters Marine for the Navy,” Admiral Tripathi detailed.

This massive shipbuilding effort is part of India’s long-term strategy to modernise its naval forces and enhance its self-reliance in defence production.

**Monitoring Extra-Regional Forces**

Admiral Tripathi emphasised the Navy's vigilance regarding activities in the region, particularly those involving the Chinese People's Liberation Army (PLA) Navy.

“We are keeping a watch on extra-regional forces, including the PLA Navy, their warships and their research vessels, and know what they are doing and where they are,” he said.

**Navy Day Preparations in Puri**

This year’s Navy Day celebrations on December 4 will be hosted in Puri, Odisha. Navy ships have already arrived in the coastal town, with practice sessions and rehearsals underway. Addressing rumours of ship deployment for anti-infiltration measures, the Navy clarified that the focus is purely on event preparations.

Admiral Tripathi visited Puri to inspect the arrangements and held discussions with the district administration to ensure the event’s success. Navy Day will feature live operational demonstrations, attended by President Droupadi Murmu. The demonstration will showcase the Navy’s operational capabilities and is open to the public, with live broadcasts on national media and the Indian Navy’s YouTube channel.

In recent years, the Navy Day celebrations have drawn significant public interest. Last year, President Murmu attended the event in Visakhapatnam, marking her first Navy Day as the President of India.

This year's celebrations in Puri aim to further highlight the Navy's operational readiness and its role in safeguarding India's maritime interests. The arrival of Navy ships in Puri has attracted large crowds, with residents gathering to catch a glimpse of the five ships docked along the coast. The Navy's operational demonstration promises to be a highlight, underlining India's commitment to maritime security amid evolving challenges.

https://economictimes.indiatimes.com/news/defence/india-poised-to-finalise-deal-for-26-rafale-marine-jets-from-france-navy-chief-admiral-dinesh-k-tripathi/articleshow/115888357.cms

THE ECONOMIC TIMES

***Mon, 02 Dec 2024***

# China wants to make Pakistan's Navy stronger, India ready to counter any threat: Navy Chief Admiral Tripathi

At the annual Navy Day press conference, Indian Navy Chief Admiral Dinesh K Tripathi on Monday discussed the growing partnership between Pakistan and China, particularly in the context of naval development. He pointed out that many Pakistan Navy warships and submarines are being built with Chinese support.

"Many Pakistan Navy warships and submarines are being built with Chinese support showing that China is interested in making Pakistan's Navy stronger," said Admiral Tripathi.

The Navy Chief talked about Pakistan's acquisition of eight new submarines, which are expected to have substantial combat potential, represents a significant shift in the regional naval dynamics. Despite this, he assured that India is fully aware of the capabilities of these vessels and has adapted its defense strategies accordingly.

"That is why we are tweaking our concepts to be able to tackle all threats from our neighbors," the Admiral explained.

**'Surprising growth'**

Admiral Tripathi also acknowledged the rapid expansion of Pakistan's navy, which is aiming to increase its fleet to 50 ships. He expressed concern over this aggressive build-up, especially given the country's allocation of resources to military projects over the welfare of its population.

"We are aware of the surprising growth of the Pakistan navy which aims to become a 50-ship Navy. They have chosen weapons over the welfare of their people," the Navy Chief said.

**India's strengthening Navy**

During the press conference, Admiral Tripathi also provided updates on India's nuclear submarine capabilities, a crucial element of the nation's defense strategy. He confirmed the successful test of a missile from INS Arighaat, the second nuclear-powered submarine in India's fleet.

"India carried out a test of the missile and the launch was successful. The agencies concerned are examining the trajectory that the missile took and soon we will know the results," said Admiral Tripathi.

He also discussed the readiness of India's first nuclear-powered ballistic missile submarine, INS Arihant, which has completed several deterrence patrols. "The unclear submarines INS Arihant has carried out many deterrence patrols and the second one just carried out a missile test and will do what it is supposed to do after that," he added.

**South China Sea tensions**

As part of ongoing defense modernization, Admiral Tripathi revealed that India is in the advanced stages of negotiations for the acquisition of Rafale Marine combat aircraft from France. Further, he said that the deal, which is a government-to-government transaction, is one step away from being presented to India's Cabinet Committee on Security.

"Rafale Marine is at an advanced stage of negotiations and is only one level short of taking it to the Cabinet Committee on Security. Since it is a government-to-government deal, it should not take much time," said the Admiral.

On regional security, Admiral Tripathi raised India's concerns regarding the escalating tensions in the South China Sea. "India concerned about South China Sea tensions," he said.

https://economictimes.indiatimes.com/news/defence/china-wants-to-make-pakistans-navy-stronger-india-ready-to-counter-any-threat-navy-chief-admiral-tripathi/articleshow/115888157.cms

THE ECONOMIC TIMES

***Sat, 30 Nov 2024***

# Italy's top Navy official meets Indian Western Naval Command chief; discusses maritime cooperation

Vice Admiral Antonio Natale of the Italian Navy met Vice Admiral Sanjay J Singh, Flag Officer Commanding-inChief of the Western Naval Command here, and discussed issues pertaining to enhancing interoperability and cooperation in the maritime domain, the Navy said on Saturday. The meeting between Natale and Singh took place on Friday. Vice Admiral Natale is on a visit to Mumbai from November 28 to December 3.

"Issues pertaining to enhancing interoperability and cooperation in the maritime domain were deliberated," the Navy said.

Natale also laid a wreath at the Gaurav Stambh, a memorial at the Naval Dockyard Mumbai, honouring the supreme sacrifices of Indian naval personnel.

The Italian Admiral's visit coincides with the visit of the Italian Navy Sail Training Ship ITS Amerigo Vespucci to Mumbai from November 26 to December 2.

The ship is on a world tour and departed Italy in July 2023. During its almost two-year voyage, the ship will visit more than 30 ports before returning to Italy in February 2025. The 101-meter, 3410-ton tall ship is commanded by Capt Giuseppe Lai. On arrival at Mumbai, the Commanding Officer called on Rear Admiral Rahul Vilas Gokhale, the Flag Officer Commanding Western Fleet, and discussed issues related to the importance of sail training in both navies and the experience gained during their present voyage.

As part of the visit, Villaggio Italia (Italian Village) has been set up near the ships' berth in Indira Dock, Mumbai Port Trust (MbPT), to showcase Italian art and culture.

India and Italy are ancient civilizations with rich cultural heritages that enjoy a robust people-to-people connection. Additionally, the two nations also enjoy significant bilateral trade and commerce, the Navy said.

The two maritime nations have common interests, resulting in the burgeoning defence cooperation. The ship's visit and high-level delegation would further the extensive diplomatic relations and mutually benefit both countries in multi-domain collaboration, it added.

https://economictimes.indiatimes.com/news/defence/italys-top-navy-official-meets-indian-western-naval-command-chief-discusses-maritime-cooperation/articleshow/115840230.cms

THE ECONOMIC TIMES

***Sat, 30 Nov 2024***

# Stealth destroyer to be home for 1st hypersonic weapon on US warship

The US Navy is transforming a costly flub into a potent weapon with the first shipborne hypersonic weapon, which is being retrofitted aboard the first of its three stealthy destroyers. The USS Zumwalt is at a Mississippi shipyard where workers have installed missile tubes that replace twin turrets from a gun system that was never activated because it was too expensive.

Once the system is complete, the Zumwalt will provide a platform for conducting fast, precision strikes from greater distances, adding to the usefulness of the warship.

"It was a costly blunder but the Navy could take victory from the jaws of defeat here, and get some utility out of them by making them into a hypersonic platform," said Bryan Clark, a defense analyst at the Hudson Institute.

The US has had several types of hypersonic weapons in development for the past two decades, but recent tests by both Russia and China have added pressure to the US military to hasten their production.

Hypersonic weapons travel beyond Mach 5, five times the speed of sound, with added maneuverability making them harder to shoot down. Last year, The Washington Post reported that among the documents leaked by former Massachusetts Air National Guard member Jack Teixeira was a defense department briefing that confirmed China had recently tested an intermediate-range hypersonic weapon called the DF-27.

While the Pentagon had previously acknowledged the weapon's development, it had not recognized its testing.

One of the US programmes in development and planned for the Zumwalt is "Conventional Prompt Strike." It would launch like a ballistic missile and then release a hypersonic glide vehicle that would travel at speeds seven to eight times faster than the speed of sound before hitting the target. The weapon system is being developed jointly by the Navy and Army.

Each of the Zumwalt-class destroyers would be equipped with four missile tubes, each with three of the missiles for a total of 12 hypersonic weapons per ship. In choosing the Zumwalt, the Navy is attempting to add to the usefulness of a USD 7.5 billion warship that is considered by critics to be an expensive mistake despite serving as a test platform for multiple innovations. The Zumwalt was envisioned as providing land-attack capability with an Advanced Gun System with rocket-assisted projectiles to open the way for Marines to charge ashore.

But the system featuring 155 mm guns hidden in stealthy turrets was cancelled because each of the rocket-assisted projectiles cost between USD 800,000 and USD 1 million. Despite the stain on its reputation, the three Zumwalt-class destroyers remain the Navy's most advanced surface warship in terms of new technologies. Those innovations include electric propulsion, an angular shape to minimize radar signature, an unconventional wave-piercing hull, automated fire and damage control and a composite deckhouse that hides radar and other sensors.

The Zumwalt arrived at the Huntington Ingalls Industries shipyard in Pascagoula, Mississippi, in August 2023 and was removed from the water for the complex work of integrating the new weapon system. It is due to be undocked this week in preparation for the next round of tests and its return to the fleet, shipyard spokeswoman Kimberly Aguillard said. A US hypersonic weapon was successfully tested over the summer and development of the missiles is continuing.

The Navy wants to begin testing the system aboard the Zumwalt in 2027 or 2028, according to the Navy. The U.S. weapon system will come at a steep price. It would cost nearly $18 billion to buy 300 of the weapons and maintain them over 20 years, according to the Congressional Budget Office. Critics say there is too little bang for the buck.

"This particular missile costs more than a dozen tanks. All it gets you is a precise non-nuclear explosion, some place far far away. Is it really worth the money? The answer is most of the time the missile costs much more than any target you can destroy with it," said Loren Thompson, a longtime military analyst in Washington, D.C.

But they provide the capability for Navy vessels to strike an enemy from a distance of thousands of kilometers - outside the range of most enemy weapons - and there is no effective defense against them, said retired Navy Rear Adm. Ray Spicer, CEO of the U.S. Naval Institute, a think tank, and former commander of an aircraft carrier strike force.

Conventional missiles that cost less aren't much of a bargain if they are unable to reach their targets, Spicer said, adding the U.S. military really has no choice but to pursue them. "The adversary has them. We never want to be outdone," he said.

The U.S. is accelerating development because hypersonics have been identified as vital to U.S. national security with "survivable and lethal capabilities," said James Weber, principal director for hypersonics in the Office of the Assistant Secretary of Defense for Critical Technologies.

"Fielding new capabilities that are based on hypersonic technologies is a priority for the defense department to sustain and strengthen our integrated deterrence, and to build enduring advantages," he said.

https://economictimes.indiatimes.com/news/defence/stealth-destroyer-to-be-home-for-1st-hypersonic-weapon-on-us-warship/articleshow/115834329.cms

FINANCIAL EXPRESS
Read to Lead

***Mon, 02 Dec 2024***

# Indian Navy to Boost Underwater Capabilities with Indigenous AUVs by Sagar Defence Engineering

As the Indian Navy celebrates Navy Day later this week, the spotlight falls on a game-changing innovation developed by Sagar Defence Engineering — Indigenous Autonomous Underwater Vehicles (AUVs). These advanced underwater drones, created under the Innovations for Defence Excellence (iDEX) initiative, are set to revolutionize the way the Navy conducts critical missions such as mine clearance, surveillance, and reconnaissance.

In an exclusive conversation with FinancialExpress.com, Captain Nikunj Parashar, Managing Director and Founder of Sagar Defence Engineering, outlined how these AUVs are transforming the Navy’s operational capabilities. Designed to operate autonomously, these AUVs are equipped with cutting-edge sensors, AI, and advanced navigation systems, allowing them to perform complex tasks with minimal human intervention. From gathering real-time data to improving underwater situational awareness, the AUVs offer the Navy a strategic advantage in securing India’s maritime borders.

“The key benefit of these AUVs is their ability to carry out underwater missions without endangering human lives, while also lowering operational costs,” Captain Parashar said. “They can autonomously navigate pre-programmed routes, perform reconnaissance, and transmit essential data back to command centers in real-time, enabling faster and more accurate decision-making.”

These AUVs are designed to handle a wide range of missions, including mine countermeasures, environmental monitoring, and surveillance, making them invaluable for both military and commercial use. A standout feature is their ability to operate in swarms, where multiple AUVs collaborate and share information, improving the overall efficiency of large-scale tasks such as seafloor mapping and coastal surveillance.

With autonomous decision-making capabilities, the AUVs reduce the need for constant human oversight. Operators can focus on higher-priority tasks while the AUVs conduct missions with little to no manual intervention. This capability greatly enhances the Navy's ability to monitor vast ocean areas, which is essential for national security.

These AUVs also have broad applications in the commercial sector, particularly in hydrographic surveys, underwater exploration, and environmental monitoring. They are ideal for inspecting undersea pipelines and conducting hull inspections, offering a cost-effective and safe alternative to manned operations.

"The versatility of these systems is a key factor in their adoption," Captain Parashar explained. "Their lightweight design and advanced capabilities make them suitable for both military and commercial applications, ranging from asset inspection to complex research in deep-sea environments."

The integration of AI-driven technology in these AUVs allows them to operate independently while still being able to adapt to changing environmental conditions. This autonomous behavior ensures that the AUVs are able to carry out detailed, long-duration missions, gathering crucial data without the constant need for human oversight. Furthermore, the system's AI-powered sensors allow for better real-time data analysis, giving operators actionable insights and improving decision-making speed.

As part of their ongoing development, the AUVs are also being fine-tuned for swarm operations, where multiple units can operate together, coordinating their actions for more effective mission execution. This collective intelligence boosts the efficiency and coverage of reconnaissance missions, making the Navy's underwater surveillance capabilities more robust than ever.

Looking ahead, the technology has the potential to expand into various industries beyond defense. Hydrographic companies, research institutions, and environmental agencies can leverage AUVs for tasks such as seabed mapping, monitoring marine life, and detecting pollution, making these systems highly adaptable.

Captain Parashar also noted that the development of these AUVs aligns with India's vision of Atmanirbhar Bharat, underscoring the growing importance of indigenous technology in defense and national security. "This is not just about advancing naval capabilities; it's about positioning India as a leader in autonomous defense technologies on the global stage," he added. "By reducing dependence on foreign imports, these developments provide a clear path toward greater strategic autonomy."

The creation of these AUVs highlights India's growing technological expertise in the defense sector. By developing cutting-edge autonomous systems locally, India is not only meeting its defense needs but also fostering innovation, job creation, and high-tech manufacturing in the

defense startup ecosystem. This will have lasting implications for national security and the global maritime landscape.

The integration of autonomous underwater technology into the Indian Navy's arsenal is poised to enhance India's maritime security significantly. With their ability to operate in diverse conditions, deliver real-time intelligence, and function with minimal human intervention, these AUVs will play a pivotal role in future naval operations. As the technology continues to evolve, the Navy's reliance on these autonomous vehicles will only grow, providing new capabilities and opportunities for the nation's defense.

https://www.financialexpress.com/business/defence-indian-navy-to-boost-underwater-capabilities-with-indigenous-auvs-by-sagar-defence-engineering-3681765/

THE WEEK

***Fri, 29 Nov 2024***

# Global interest in India's BrahMos missile soars; 3 countries could be queuing up to buy the Indo-Russia supersonic weapon

Three countries could be potential buyers of the cutting-edge, supersonic cruise missile, BrahMos, developed through a joint venture between Defence Research and Development Organisation (DRDO) of India and Russia's NPO Mashinostroyeniya.

Alexander B. Maksichev, joint managing director, Brahmos Aerospace, confirmed to the Russian news agency TASS that the Indo-Russian venture is in discussions for supplies of the supersonic cruise missiles with Vietnam, Indonesia, and the UAE.

"These are the countries showing interest in the first instance," Maksichev said.

He said Vietnam, Indonesia, and the UAE are three countries with whom BrahMos missile supply contracts can be signed, but did not get into the details on the status of talks on the procurement.

The Philippines was the first customer of BrahMos Aerospace. Named after the Brahmaputra River in India and the Moskva River in Russia, the missile, which is in service in the Indian Army, Navy, and Air Force, is known for its remarkable speed, precision, and versatility.

BrahMos missile, equipped with stealth technology, has a range of between 300-500 km depending on which variant and the platform on which it is mounted.

The two countries are also working on a hypersonic variant of the missile, called Brahmos-II, which according to the joint venture company "will fly at screaming velocities over six times the speed of sound on hypersonic scramjet technology."

https://www.theweek.in/news/defence/2024/11/29/global-interest-in-indias-brahmos-missile-soars-3-countries-could-be-queuing-up-to-buy-the-indo-russia-supersonic-weapon.html

*Fri, 29 Nov 2024*

# रूस जाएंगे राजनाथ... नौसेना के लिए लाएंगे नया जंगी जहाज INS Tushil

रक्षामंत्री राजनाथ सिंह 8 से 10 दिसंबर 2024 तक रूस की यात्रा पर जा रहे हैं. मकसद है भारत और रूस के रक्षा क्षेत्र में आपसी संबंध को और मजबूत करना. साथ ही वो कालिनिनग्राद जाएंगे, जहां पर INS Tushil की फ्लैग रेजिंग सेरेमनी में शामिल होंगे. यह जंगी जहाज प्रोजेक्ट 11356 के तहत भारतीय नौसेना के लिए बनाया जा रहा है.

इसे काफी पहले ही भारतीय नौसेना में शामिल होना था लेकिन कोविड, ग्लोबल सप्लाई चेन में रुकावट और रूस–यूक्रेन युद्ध की वजह से टलता रहा. यह जंगी जहाज एक स्टेल्थ फ्रिगेट है. जिसमें कई एडवांस सिस्टम और मल्टी–रोल वेपन सिस्टम लगे हुए हैं. इससे भारतीय नौसेना की ताकत में काफी इजाफा होगा.

### क्या है प्रोजेक्ट 11356?

इस प्रोजेक्ट के तहत भारत और रूस में अक्टूबर 2016 में समझौता हुआ था. दो फ्रिगेट जंगी जहा रूस का यांतर शिपयार्ड में बनाए जा रहे हैं. जबकि दो गोवा शिपयार्ड लिमिटेड में. इसके तहत टेक्नोलॉजी ट्रांसफर भी हुआ है. इस प्रोजेक्ट में मेक इन इंडिया मिशन के तहत स्वदेशी जहाज बनाने की काबिलियत को भी शामिल किया गया है.

### रूस में और क्या करेंगे राजनाथ?

राजनाथ सिंह मॉस्को में रूसी रक्षामंत्री आंद्रेय बेलोउसोव ने मिलेंगे. दुनिया में चल रही स्थितियों पर चर्चा होगी. मिलिट्री इक्विपमेंट्स के संयुक्त प्रोडक्शन, टेक्नोलॉजी ट्रांसफर और मैरीटाइम सिक्योरिटी को लेकर बातचीत करेंगे. ताकि भारत और रूस के रक्षा सहयोग आगे भी चलते रहें.

### अब जानिए INS Tushil की ताक

INS Tushil तलवार क्लास स्टेल्थ गाइडेड मिसाइल फ्रिगेट (Talwar Class Stealth Guided Missile Frigate) का हिस्सा हैं. तुशील का संस्कृत में मतलब होता है रक्षक. इस जंगी जहाज डिस्प्लेसमेंट 3850 टन होता है. इनकी लंबाई 409.5 फीट, बीम 49.10 फीट और ड्रॉट 13.9 फीट है.

ये जंगी जहाज समंदर में अधिकतम 59 km/hr की रफ्तार से चलते हैं. अगर इनकी गति को 26 km/hr किया जाएगा तो ये 4850 km की रेंज कवर कर सकते हैं. अगर 56 km/hr रफ्तार से चलाया जाए तो ये 2600 km की रेंज कवर करते हैं.

यह जंगी जहाज 18 अधिकारियों समेत 180 सैनिकों को लेकर 30 दिन तक समंदर में तैनात रह सकता है. उसके बाद इसमें रसद और ईंधन डलवाना पड़ता है. ये जंगी जहाज इलेक्ट्रॉनिक वॉरफेयर सिस्टम से लैस हैं. साथ ही 4 केटी–216 डिकॉय लॉन्चर्स लगे हैं. इसके अलावा इसमें 24 Shtil–1 मीडियम रेंज की मिसाइलें तैनात हैं. ब्रह्मोस मिसाइलों से लैस वर्टिकल लॉन्च सिस्टम भी इसमें लगाया गया है.

8 इगला–1 ई, 8 वर्टिकल लॉन्च एंटी–शिप मिसाइल क्लब, 8 वर्टिकल लॉन्च एंटी–शिप और लैंड अटैक ब्रह्मोस मिसाइल भी तैनात है. इसमें एक 100 मिलिमीटर की A–190E नेवल गन लगी है. इसके अलावा एक 76 mm की

ओटो मेलारा नेवल गन लगी है. 2 AK-630 सीआईडब्लूएस और 2 काश्तान सीआईडब्लूएस गन लगी हैं.इन खतरनाक बंदूकों के अलावा दो 533 मिलिमीटर की टॉरपीडो ट्यूब्स हैं. और एक रॉकेट लॉन्चर भी तैनात की गई है. इस जंगी जहाज पर एक कामोव-28 या एक कामोव-31 या ध्रुव हेलिकॉप्टर लैस हो सकता है.

https://www.aajtak.in/defence-news/story/rajnath-singh-visit-to-russia-for-ins-tushil-induction-rptc-2109610-2024-11-29

THE ECONOMIC TIMES

***Mon, 02 Dec 2024***

# World's top 100 defence groups boost arms sales by 4% in 2023, think tank SIPRI says

The world's 100 biggest defence equipment makers increased their arms sales by 4.2% in 2023 to $632 billion, fuelled by wars and regional tensions, a leading think-tank said on Monday. The Stockholm International Peace Research Institute (SIPRI) said in a report U.S. groups on the list grew sales by 2.5% in total compared to the year before to $317 billion.

Market leaders Lockheed Martin and RTX however saw slightly lower arms sales. The rise followed a 3.5% dip in arms sales in 2022, which SIPRI has blamed on labour shortages, supply-chain disruptions and rising costs, which made it hard for many companies to meet increased demand driven by Russia's invasion of Ukraine.

European companies on the list - excluding Russian - had roughly unchanged combined sales in 2023 at $133 billion, but order intake surged, and some groups saw a surge in demand linked to the war in Ukraine. Earlier this year, SIPRI reported a 7% increase in global military spending in 2023, the steepest annual increase since 2009.

"Overall, smaller producers were more efficient at responding to new demand linked to the wars in Gaza and Ukraine, growing tensions in East Asia and rearmament programmes elsewhere," SIPRI said.

The Russian groups on the list, including state-owned Rostec, accounted for the biggest combined rise - 40% to $26 billion.

"The arms revenues of the Top 100 arms producers still did not fully reflect the scale of demand, and many companies have launched recruitment drives, suggesting they are optimistic about future sales," SIPRI researcher Lorenzo Scarazzato said.

https://economictimes.indiatimes.com/news/defence/worlds-top-100-defence-groups-boost-arms-sales-by-4-in-2023-think-tank-sipri-says/articleshow/115879701.cms

THE ECONOMIC TIMES

*Mon, 02 Dec 2024*

# "World War 3 is already here": No mushroom clouds, but here's when it really began

The global political and military landscape is shifting, with some experts claiming that World War III has already begun. Unlike the traditional notions of global warfare, there are no large-scale battles or mushroom clouds, yet the evidence suggests that the world is already embroiled in a form of warfare that is subtle, pervasive, and evolving across multiple domains. World War III, as described by national security expert Mark Toth and former US intelligence officer Colonel Jonathan Sweet, is not like the global wars of the 20th century.

“This third global conflagration doesn't look or feel like what Hollywood envisioned. No mushroom clouds or apocalyptic wastelands. Rather, it is war by a thousand cuts, conducted across multi-regional and multi-domain battlefields,” they explained in an interview with the Daily Mail.

The early stages of the conflict, they argue, were set in motion with Russia's invasion of Ukraine in 2022.

**The Hybrid Warfare of Today: A New Form of Conflict**

The concept of hybrid warfare lies at the heart of the assertion that World War III is already underway. In today’s conflicts, battles are fought not just with physical weapons, but with a mix of cyberattacks, disinformation, and economic manipulation.

Toth and Sweet particularly point to Russia’s involvement in Ukraine and beyond as an example of hybrid warfare, highlighting Moscow’s use of paramilitary groups like the Wagner Group to destabilise regions across Africa, as well as its growing influence in space and cyberspace.

Russia's efforts to use disinformation, including troll farms and AI-generated deepfakes, spread across social media to manipulate public opinion and sow discord in Western democracies, further complicating the landscape of this new war.

In addition to the cyber front, Russia has increasingly relied on unconventional tactics such as espionage, sabotage, and covert operations, including arson attacks on logistics hubs in the West and assassinations of political opponents. As told to the Daily Mail, Toth and Sweet assert that “Putin’s ability to conduct hybrid warfare is arguably his greatest strength,” as he spreads misinformation and aims to weaken the unity of Western nations.

**Kinetic Warfare: The Physical Battlefronts**

While hybrid tactics dominate the global stage, certain regions are still experiencing intense physical warfare. Nowhere is this more apparent than in Ukraine, where the war continues to escalate, and the toll on both civilians and soldiers has been catastrophic. Recent strikes using Western-supplied missiles have prompted Russia to retaliate with new weapons, including the Oreshnik hypersonic missile, a weapon capable of flying at Mach 10.

Russia’s strategy is not limited to the battlefield; it includes the weaponisation of energy, as millions of Ukrainians continue to suffer from power outages as a result of Russian missile and drone strikes. Putin’s military campaign also represents a larger geopolitical shift. The invasion of Ukraine, Sweet and Toth argue, signalled the end of the post-World War II order.

"Putin’s invasion of Ukraine was the opening stage (of World War Three). It was his marker to the global community that the world order as it had existed since the end of the Second World War was no longer," Sweet and Toth assert. Elsewhere in the Middle East, tensions are rising in the wake of Hamas’ October 2023 attacks on Israel, with escalating violence in Gaza and Lebanon.

Meanwhile, China’s growing aggression in the Indo-Pacific, particularly its increasing threats against Taiwan, has caused widespread concern. US defence officials have warned that Beijing may seek to invade Taiwan well before the decade's end, making the region another hotspot for potential conflict.

**Great Power Competition and Ideological Divides**

The global conflict is not only being fought on the physical and digital fronts but also in the realm of ideology.

Former French President François Hollande has stated, “We are in a world war between democracy and authoritarianism.”

This ideological divide is becoming increasingly evident, as Russia, China, and North Korea align against Western democracies.

Hollande emphasised that Europe must come together to defend its democratic values, warning, “Do we want to keep defending democracy? Are we ready to give part of our lives to uphold it?”

This ideological battle is compounded by the growing competition between great powers. Sir Richard Knighton, Chief Air Marshal of the RAF, noted that the West’s strategic advantage is eroding as countries like China modernise their military forces at an unprecedented rate.

"We are witnessing a return to great power competition," Knighton said, underscoring the urgency of shoring up defences to counter these emerging threats. In this environment, the West’s military and technological supremacy, particularly in air and space domains, is increasingly under challenge. Knighton pointed out that “with the rapid advancement of technology and the economic, technical, and warfighting capabilities of other major powers, we no longer have total air supremacy.” This realisation calls for significant investments in military resilience and deterrence.

**Can the Global Crisis Be Averted?**

Despite the rising tensions, some analysts remain cautious. Adeline Van Houtte, Senior Europe Analyst at the EconomistIntelligence Unit, cautions that while the risk of escalation is high, World War III is not yet a certainty. “The revised nuclear use threshold and the Oreshnik [missile] are most likely intended to send a message to the West, but a nuclear escalation remains highly unlikely,” she suggests.

She believes Russia’s hybrid tactics, including cyberattacks and disinformation, are primarily tools of intimidation rather than indicators of an imminent large-scale war. However, Toth and Sweet

remain resolute in their view that the world is already experiencing the early stages of World War III, even if it is largely confined to Ukraine for now.

"It's already a World War, only largely contained to the borders of Ukraine – until August when Ukraine invaded Kursk," they assert. As the geopolitical situation continues to evolve, the question is not whether the Third World War has begun but how it will unfold. Knighton's warning about the need for adaptation and strategic resilience is more relevant than ever.

"The ability of a nation and its armed forces to adapt during a conflict is a key determinant of success," he said, urging investment in defence systems and proactive measures to counter emerging threats.

https://economictimes.indiatimes.com/news/defence/world-war-3-is-already-here-no-mushroom-clouds-but-heres-when-it-really-began/articleshow/115882624.cms

The EurAsian Times

***Mon, 02 Dec 2024***

# India's Bid For AIP-Armed Submarine Enters Tricky Waters As Navantia Fits 3rd-Gen AIP Onboard S-80-Class Sub

The competition for supplying Air Independent Propulsion-equipped submarines to the Indian Navy has intensified as Spanish Navantia has installed the Hydrogen-based AIP into an S-80 class submarine. So far, the German Thyssenkrupp, the other shipbuilder in the fray, claimed to have the only proven AIP system in competition.

The Indian Navy has completed a field trial for supplying six submarines under its Project-75 I (I Stands for India). These submarines will have AIP technology combined with Lithium-ion batteries, allowing them to lurk in the ocean depths for a longer duration and, when required, race to their target at high speeds without giving up their position.

While the TKMS system was evaluated on board a German Navy submarine, the Navantia's AIP was tested using land and onboard systems. While the Navantia system has undergone 50,000 hours of testing and has been selected by the Spanish Navy, it is considered unproven compared to the TKMS fuel cell-based AIP combined with a Lithium-Ion battery.

Hence, installing the hydrogen-based Air Independent Propulsion System (AIP) into an S80 class submarine is considered a major milestone that can make the competition for P-75I even trickier. This is the first third-generation AIP fitted into a submarine. Calling it an important milestone in Spanish shipbuilding history, Navantia underscored that it can offer unique capabilities in international submarine construction tenders.

The Spanish AIP System is christened BEST (Bio-Ethanol Stealth Technology) by Navantia. It is an innovative energy production plant based on a bioethanol reforming process – a renewable fuel

obtained from organic feedstock – to produce a Hydrogen-rich stream that is fed, together with pure Oxygen, to a fuel cell to generate electrical power stealthily.

Alluding to the German AIP system, Navantia has claimed that its AIP is a third-generation system that does not require stored hydrogen on board; instead, the system generates it on demand, providing a tactical and safety advantage, increasing the strategic autonomy and deterrence capability. “Along with the extensive sensorization of the vessel, it further enhances the safety of the crew and the submarine itself, minimizing the personnel required to operate it,” the company has claimed in a statement.

This evolution allows Spanish submarines to have more onboard energy. It enables them to sail underwater for up to three weeks with signatures comparable to pure electric navigation with batteries. The Isaac Peral (S80 series) is one of the largest non-nuclear submarines in the world, and the AIP BEST technology will make it even more deadly.

The company has allowed Indian media to visit Section 3 of the S-83 Cosme García submarine, which houses the installed AIP equipment, liquid oxygen, and bioethanol tanks, and the auxiliary systems necessary for its operation, observing the demanding work and safety procedures being carried out in the construction of the submarine.

Navantia has been struggling with its submarines running 10 years behind schedule. It has zero export experience, zero ToT (Transfer of Technology) experience, and it has partnered with an Indian shipyard with zero submarine-building experience. A veteran told the EurAsian Times: “I hope the Indian MoD (Ministry of Defense) and the Indian Navy does not shoot itself in the foot.”

In comparison, TkMS has built over 170 submarines in the last 75 years and has proven models of Transfer of Technology (ToT) cooperation with numerous customers like South Korea, Turkey, Italy, Israel, and Singapore and two decades of AIP operations on board submarines presently being operated by Germany, Greece, Turkey, Israel, Singapore, South Korea, Portugal, Italy, etc. Its submarines are in the Indian Navy (Shishumar class) as well. Three of them were constructed indigenously with Mazagon Dock Shipbuilders Ltd (MDL) (Shalki class).

**Indian Navy Needs AIP Submarines As Of Yesterday**

The Indian Navy does not have a single submarine with Air-Independent Propulsion (AIP), a technology that helps conventional submarines to lurk under the surface of water for a longer duration. Project-75I was outlined in 1998 under the 30-year modernization plan, which ends in 2030.

An AIP-based submarine is cheaper than a nuclear-powered submarine. Non-nuclear submarines are also less expensive to maintain and manage. Fuel cell systems are modular and can be replaced quickly and easily, and these submarines have crews of 25–35 people. The Indian Navy needs to modernize its submarine fleet urgently. Its primary adversary, China, is taking giant strides to modernize its fleet, and a cash-strapped Pakistan, despite its flailing economy, has been modernizing its submarine arm.

As the Chinese naval presence increases in the Indian Ocean, submarines with AIP can monitor them much better without getting detected. This technology will be particularly relevant in the

eastern Indian Ocean and the Bay of Bengal. In the Arabian Sea and the western Indian Ocean, it will enhance our undersea warfare capability against Pakistan.

The Indian Navy's adoption of AIP technology will put its fleet in a better position than Pakistan's. All three of its French Agosta-90B (PNS Khalid, Saad, and Hamza) are powered by AIPs. Pakistan is also expected to receive eight 39 A Yuan-class AIP-powered submarines under a US$5 billion deal with China. It received the first of the eight submarines of this class in April this year.

The Indian Navy is outmatched by the Chinese Navy 4:1 when it comes to submarines. On March 25, the Indian Navy released stunning photographs of a pod of its submarines on the western seaboard. The eight submarines operated together in a recently concluded exercise in the Arabian Sea. The Indian Navy is still woefully short of the 76 platforms of China's submarine force comprising 8 SSBNs (ballistic missile submarines), 13 SSNs (nuclear-powered attack submarines), and 55 SSKs (diesel-electric submarines).

Before this, former Indian Navy Chief Admiral Hari Kumar revealed that the Indian Navy had simultaneously deployed 11 conventional submarines for operations in different parts of the IOR. This is the highest number of operational submarines for the Indian Navy in the last two decades. The submarine arm has been facing dwindling strength, accidents, and write-offs. As against the required 24 conventional submarines, the Indian submarine fleet has only 16 submarines. Apart from the six recently built submarines, the rest are over 30 years old and approaching their decommissioning date.

By next year, the Indian Navy will have 17 conventional submarines in its fleet. However, the older Kilo-class submarine's availability ratio is low.

https://www.eurasiantimes.com/competition-for-supplying-aip-equipped/

The EurAsian Times

***Sun, 01 Dec 2024***

# Mountain Warfare: India Could Train Argentine Soldiers For High-Altitude Ops? Defense Attaché Visits HAWS

The Argentina Defense Attache visited the prestigious High Altitude Warfare School (HAWS) in Gulmarg, India, on November 27 to discuss nuances of mountain warfare and tactical operations in high-altitude terrain and explore opportunities for future collaboration between the Indian and Argentinian Army. During the visit, the Argentina Defense Attache, an expert in high-altitude warfare, discussed modern warfare in high mountains with the HAWS instructors. They discussed the nuances of training and tactical operations conducted in high-altitude environments.

The visit underscores the need to exchange best practices and align strategies for mountain warfare between India and Argentina, two countries sharing mountainous borders with their neighbors. The two sides also discussed areas of future collaboration in defense. Incidentally, India and Argentina

have just celebrated the 75th anniversary of their diplomatic relations, established on February 3, 1949.

**The Need For Mountain Warfare**

India and Argentina share hundreds of miles-long high-altitude mountainous borders with their neighbors. The Himalayas have some of the world's tallest peaks, and the Siachen Glacier is the world's highest militarized zone. The glacier is located in the Karakoram mountain range in Ladakh, at an elevation of over 20,000 ft. India also shares a 3,488-kilometer (2,167-mile) long mountain border with China and has seen frequent clashes with the People's Liberation Army (PLA) in recent years.

On the other hand, Argentina is home to some of the tallest mountains in the world outside the Himalayas. The Andes Mountain range runs along Argentina's western border with Chile and boasts many peaks higher than 6,500 meters. For instance, at 6,961 meters, the Aconcagua Peak in the Andes is the tallest mountain in Argentina and the tallest mountain in South America. It's also the highest mountain in the world outside the Himalayas and is in the famed "Seven Summits," the seven tallest mountains on each continent. Just like India and China, Argentina also has some disputed areas along the mountainous border with Chile.

To safeguard these mountain ranges, the armies of both countries have established specialized mountain units, such as the 8th Mountain Infantry Brigade in Argentina, the Indian Army's XVII Mountain Strike Corps, and Ladakh Scouts. This shared topography means that both countries can learn from each other's experience in mountain warfare training and exchange best practices.

Argentina's 8th Mountain Infantry Brigade has historically trained at California's U.S. Marine Corps Mountain Warfare Training Center. However, the recent visit to HAWS by the Argentinian Defense Attache has raised the possibility of Argentinian soldiers training with Indian Army soldiers at the HAWS training institute in the near future.

**HAWS – Globally Reputed Mountain Warfare Training Institute**

The Argentinian Defense Attache's visit underscored HAWS's global reputation as a center of excellence in mountain warfare training and its commitment to building international partnerships. Established in 1948, HAWS is the Indian Army's top training establishment for special operations in high-altitude, glaciated, and snow-bound areas. It trains army personnel in Mountain warfare and Ice/Snow Crafting.

The school operates from three different locations in Kashmir. HAWS conducts winter warfare courses at Gulmarg, mountain warfare courses at Sonamarg, and ice craft courses at Machoi across Zojila. Over the years, HAWS has trained soldiers not just from India but also from countries like the US, UK, Germany, Tajikistan, Kyrgyzstan, Nepal, Botswana, and Bhutan, who come here regularly for specialized training in High-Altitude mountain warfare.

The Indian Army soldiers posted in Siachen Glacier, the world's highest militarized zone, and other high-altitude areas along the northern borders with Pakistan and China are trained in HAWS. HAWS offers two training programs: the mountain warfare course and the Winter Warfare course. The school trains soldiers and officers in high-altitude warfare, Snow Cliff Climbing, Mountain Survival Skills, and Ice Crafting. It also trains Indian Army personnel in winter sports and trains

them for rescue operations in the mountains. HAWS also played an important role during the 1999 Kargil conflict by conducting crash courses for troops prior to their induction in the actual operations to dislodge Pakistani intruders from the icy heights.

“Its facilities, with mountain warfare courses in Sonamarg area and snow-craft and winter warfare in Gulmarg area, are among the best in the world…we can teach most armies a thing or two about this kind of warfare,” an Indian Army instructor at HAWS was quoted as saying by the Times of India. U.S. Army artillery officer Capt. Matthew Hickey, who attended the HAWS training course in 2013, has described it as an advanced mountain warfare school.

“It’s akin to our Airborne school a little bit, like how we pioneered this idea of putting Paratroopers behind enemy lines … HAWS is kind of like that. It has evolved into this very important and advanced mountain warfare school that has a training side and an operation side, and it has a lot of strategic value,” Hickey was quoted as saying by the US Army.

“It’s just as much of a warfare course as it is a mountaineering course … Everything is taught with military operations in mind. It’s not just, ‘How do I climb a mountain?’ It’s, ‘How do I get a lot of Soldiers to a particular place on the mountain to achieve a particular objective?’” Hickey added.

**India-Argentina Relations**

The year 2024 also marked the 75th anniversary of the establishment of diplomatic relations between the two countries. To mark the occasion, both New Delhi and Buenos Aires have decided to strengthen relations in various areas, from defense to trade. India-Argentina bilateral trade more than doubled in three years from 2019 to 2022, peaking at USD 6.4 billion in 2022. In 2021 and 2022, India was Argentina’s fourth-largest trading partner. Argentina is one of the prime suppliers of edible oils, especially soyabean oil, to India.

The two countries are also expanding defense relations. In February 2023, Hindustan Aeronautics Limited (HAL) and the Argentine Air Force signed the first-ever commercial agreement in the defense sector for the supply of helicopter spares and engine maintenance. The two PSUs, HAL and FAdeA, signed a cooperation agreement in June 2023.

https://www.eurasiantimes.com/mountain-warfare-india-could-train-argentine/

The EurAsian Times

***Fri, 29 Nov 2024***

# China “Dares” BrahMos’ Ramjet Tech With Its Boron-Powered Propulsion System; Who Wins Hypersonic Race?

In the last month, both India and China have displayed their hypersonic weaponry. While New Delhi tested its first long-range hypersonic missile, Beijing unraveled the design of an advanced weapon in the category.

But, the most spectacular has been the successful test of a powerful boron ramjet engine that can power hypersonic weapons to fly through the air and glide through water. The powerful engine can carry weapons at high speeds through air and water. The engine has demonstrated 90 percent efficiency in laboratory tests conducted in submarine mode and is ready for practical use.

Considering its air-breathing ramjet engine, it will give tough competition to India-made BrahMos in the region. The EurAsian Times decided to compare whether the technology helps China get a step ahead of India, whose indigenous missile program has been one of the country's successful projects, or if the Boron-powered missile will come with its own limitations. The two countries have been locked in an arms race that has heated up following the Galwan clashes in 2020.

The successful test of the boron-powered propulsion system came two years after its blueprint was unveiled. Chinese scientists now claim to have successfully developed the "dream engine" that could revolutionize modern warfare. Initially conceived for hypersonic weapons, the engine has now undergone modifications to operate across multiple environments—flying through the air and diving into the sea to reach targets at incredibly high speeds and over extended distances.

The breakthrough engine works by inhaling air and water as oxidizing agents, a design that enables its dual functionality. The technology is hailed for its transformative potential of powering cross-medium vehicles. Advanced weapons powered by the system could fly at supersonic speeds for hundreds of kilometers in the air before diving into the water to strike high-value targets such as aircraft carriers, all at speeds exceeding 200 knots.

"For high-speed weapons, boron powered missile is a conducive option. They have high gravimetric and volumetric heat of combustion. Enabling them to travel faster and for longer distances. I am doubtful how far boron powered missiles can be credible undersea," Indian scholar on nuclear missiles, missile defense, and artillery Debalina Ghoshal, author of 'Role of Ballistic and Cruise Missiles in International Security' told the EurAsian Times.

Ghoshal feels that with boron-powered missiles there is the dilemma of "use them or lose them". "Naval operations of the boron-powered missile could become a complex task for China as opposed to Brahmos (not boron-powered). But now technical improvements are being made to improve the overall efficiency of the engine," Ghoshal said while adding: "So, it is very difficult to say the difference like that would be disadvantageous as Beijing is making improvements that in the past seemed to be limitations."

So far, for India, BrahMos has been the 'Brahmastra' (the ultimate celestial weapon) known for its speed and accuracy. BrahMos is technically a ramjet-powered supersonic cruise missile with a solid propellant booster that can be launched from land-based canisters, submarines, ships, and now aircraft. It travels at speeds of Mach 2.8 to 3.0 but is being upgraded to travel faster than Mach 5.0 for the hypersonic variant.

One of its special features is its ability to fly extremely close to the ground to avoid missile defense systems. In fact, during the terminal phase, the missile can fly as low as 10 meters to the ground. In the final phase, the missile relies on active radar seeker or inertial guidance. The missile's reputation and performance have been the reasons for the Philippines to choose it to defend its coastline from Chinese aggression.

**Scramjet Versus Ramjet**

While both the Chinese boron-fueled propulsion system and the liquid-fueled propulsion system are air-breathing systems, the difference is in the fuel. Boron, a lightweight element used in scramjet engines, is known for its supersonic combustion. Boron's unique properties make it ideal for such high-speed, high-efficiency engines capable of pushing the limits of modern weaponry.

When boron comes into contact with oxygen in the air, it ignites with remarkable intensity, rapidly propelling a missile to speeds surpassing five times the speed of sound. The main difficulty has been igniting boron underwater, a challenge Chinese scientists overcame. To solve this, the team created a new design that allowed the fuel to burn more effectively, improving the engine's efficiency. They also adjusted the amount of water vapor injected into the combustion chamber and fine-tuned the mix of other ingredients, like magnesium and aluminum. These changes helped the boron burn more completely in the vapor.

Ramjets are air-breathing engines that can operate efficiently at supersonic speeds. Unlike turbojets and turbofans, which rely on rotating blades to compress air, ramjets use the aircraft's high-speed forward motion to compress incoming air. Once compressed, air enters the combustion chamber, where fuel is injected and ignited. The burning fuel rapidly expands, creating a high-velocity exhaust jet that propels the aircraft forward. However, ramjets have a limitation – they cannot operate efficiently at speeds below Mach 2.

https://www.eurasiantimes.com/china-dares-brahmos-ramjet-tech-with/

# Science & Technology News

Press Information Bureau
Government of India

**Ministry of Science & Technology**

***Fri, 29 Nov 2024***

## Technology Development Fund Scheme

Since January 2023, a total sum of Rs 120 crore has been allocated and Rs 43.89 crore has been disbursed as grant-in-aid to the industries under the Technology Development Fund (TDF) Scheme, and 16 Micro, Small and Medium Enterprises (MSMEs) & 20 start-ups have been supported under the TDF Scheme since January 2022.

During the last five years, 42 projects of cost Rs 182.41 crore to MSMEs and 25 projects of cost Rs 59.47 crore to start-ups have been sanctioned under the TDF scheme. As of now, 26 technologies have been successfully developed.

The details of these technologies are as follows:

| S No | Successfully developed Technologies |
|---|---|
| 1. | AVPSM, ARINC 818 for an Advance Military Aircraft |
| 2. | SMFD (Smart Multi-Functional Display) for an advance Military Aircraft |
| 3. | 40TPH Pump (Submersible for watering & dewatering) for Indian Naval Ship |
| 4. | 125 TPH Pump (Recirculation Pump) for Indian Naval Ship |
| 5. | Pru Decorp 340mg capsule for decontamination CS/TL from body during Nuclear Emergency |
| 6. | Pru Decorp Mg 500mg capsule for decontamination CS/TL from body during Nuclear Emergency |
| 7. | Development of Health Usage and Monitoring System (HUMS) for MIG 29K |
| 8. | Development of WT/GT (Water Tight/Gas Tight) EMI/EMC compliant doors for Naval platforms |
| 9. | Development of WT/GT (Water Tight/Gas Tight) EMI/EMC compliant Hatches for Naval platforms |
| 10. | V/UHF Blade Antenna for Aircraft Application |
| 11. | Development of Temperature Transducer for Aircraft Application |
| 12. | Propellant & Thruster for Low Orbit Satellite using Ethanol & Hydrogen peroxide propellant system |
| 13. | Propellant & Thruster for Low Orbit Satellite using non toxic Hydrazine Nano propellant system |
| 14. | VLF Loop Aerial system for U/W platform |
| 15. | VLF-HF Matrix for U/W Platform |
| 16. | Al based detection of a person based on physiological parameters |

| | |
|---|---|
| 17. | Software to predict sensor reading within Noncontact strain measurement |
| 18. | Software for virtual sensor implementation in AGTE for strain measurement |
| 19. | Virtual sensor for compressor & turbine tip measurement in AGTE |
| 20. | Development JT cryocooler for missile application |
| 21. | Multi therapeutic technologies seeking for faster healing |
| 22. | Development of Simulator for Unmanned Ground, Marine (Sea-surface and Underwater) and Aerial Vehicles |
| 23. | Development of Tools for Data Assessment Active learning & Believability for Visual Data |
| 24. | Autonomous Drone as first responder for search & report mission in enclosed/indoor environment |
| 25. | Surge relief valve for F1F2, F1A tank, wing tank |
| 26. | AC double ended fuel booster pump for aircraft application |

This information was given by Raksha Rajya Mantri Shri Sanjay Seth in a written reply to Shri Rajesh Verma and others in the Lok Sabha today.

https://pib.gov.in/PressReleasePage.aspx?PRID=2078917

Press Information Bureau
Government of India

**Ministry of Science & Technology**

***Fri, 29 Nov 2024***

# Effective Science Communication Is Critical For Translating Innovations Into Societal Benefits - Dr. Jitendra Singh

Emphasising the importance of effective science communication, Union Minister of State (Independent Charge) for Science and Technology; Earth Sciences and Minister of State for PMO, Department of Atomic Energy, Department of Space, Personnel, Public Grievances and Pensions, Dr. Jitendra Singh said here today that effective science communication is critical for translating innovations into societal benefits.

Specialised science journalism and specialised science journalists can play a vital role in this, he added.

While presenting "Dr. Mangalam Swaminathan National Awards for Excellence 2024" instituted in the memory of late journalist Mangalam Swaminathan, Dr Jitendra Singh said, Mangalam was one of the early initiators of the trend of science reporting and science journalism in India, which was already prevalent in the western media. He said, Mangalam was a familiar figure in Delhi's media and cultural circles, and even at the time of her untimely death in 2017, she was writing a book on legendary scientist Homi Bhabah.

The Minister announced the 'Dr. Mangalam Swaminathan National Awards for Excellence 2024' in a ceremony that celebrated the legacy of the late Dr. Mangalam Swaminathan, a trailblazer in science journalism and communication. The event, attended by distinguished personalities, underscored the importance of science outreach in fostering innovation and public awareness.

The Dr. Mangalam Swaminathan National Award 2024 honoured distinguished individuals across various fields for their outstanding contributions. P. Narayanan received the award for Excellence in Journalism, while Shri Umendra Dutt was recognized for Excellence in Science Reporting. Shri Sathyanarayana Raju was celebrated for Excellence in Art and Culture, and Shri Jeejo John Puthezhath was awarded for Excellence in Medical Malpractices Investigation. Maneka Sanjay Gandhi was conferred with the Dr. Mangalam Swaminathan Foundation Dattopant Thengadi Seva Samman 2024. Other notable awardees included H.H. Rev. Moran Mor Baselios Cardinal Cleemis, G. Rajamohan, and Hareesh Kumar P., who were also honoured with the Dattopant Thengadi Seva Samman, alongside Nazeer V. Koyakutty and Ajith Nayar, recipients of the Pravasi Bharatiya National Excellence Award 2024.

Speaking at the event, Dr. Jitendra Singh emphasized the pivotal role of specialized science journalism in India’s progress. “In a rapidly evolving world, effective science communication is critical to translate innovations into societal benefits,” he remarked. Highlighting Dr. Mangalam Swaminathan’s contributions, he noted her pioneering work in science journalism during a time when the field was still nascent in India.

The Minister underscored the necessity of building a culture of specialized science journalism in India. He lamented the lack of expertise in this area, noting, “Unlike in the West, where specialized journalists focus on niche areas like science or war reporting, in India, the same journalist often covers diverse topics, diluting the depth of expertise.” Dr. Mangalam Swaminathan, he added, had begun to change this narrative by fostering a nascent tradition of specialized reporting. The Minister also called attention to India’s strides in science and technology under the leadership of Prime Minister Narendra Modi. He referred key initiatives such as advancements in quantum technology and the bio-economy policy, which he described as “cornerstones of the next industrial revolution.”

The announcement comes at a time when India is rapidly emerging as a global leader in science and technology. Dr. Jitendra Singh highlighted the government’s landmark initiatives, including breakthroughs in quantum technology, bio-economy policy, and biotechnology for employment and the environment. These, he noted, are part of India’s larger vision of leveraging science for the public good.

One particularly innovative initiative mentioned was the Lavender Start-Up movement, also known as the “Purple Revolution,” which has enabled thousands of young entrepreneurs to achieve economic independence through the cultivation and commercialization of lavender. “The passion and determination of these individuals, many of whom are not even graduates, are a testament to the transformative power of science and technology,” Dr. Jitendra Singh said. Dr. Jitendra Singh emphasized that scientific advancements could only translate into societal benefits if the public is well-informed and engaged. He pointed to the critical role of science communicators in dispelling myths, breaking down complex topics, and making scientific knowledge accessible.

Dr. Jitendra Singh also called upon institutions like the Mangalam Foundation to introduce workshops, short-term courses, and other initiatives to train the next generation of science communicators. “This will not only honour her memory but also ensure that her vision of informed and engaged science journalism lives on,” he stated.

The Dr. Mangalam Swaminathan National Award for Excellence, established in her memory, aims to honour individuals making significant contributions to science communication and journalism. It seeks to inspire the next generation of communicators to bring complex scientific ideas to the masses in an accessible manner. Dr. Jitendra Singh paid tribute to her dedication, stating, “Dr. Mangalam Swaminathan’s legacy inspires us to promote science literacy. Her work exemplifies how expertise and passion can bridge the gap between scientific advancements and public understanding.”

The Minister concluded the event by reiterating the government’s commitment to fostering a culture of innovation and scientific inquiry in India. “The Dr. Mangalam Swaminathan National Award is not just an honour; it is a call to action for all of us to contribute to the advancement of science literacy and communication,” he said.

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Press Information Bureau
Government of India

**Ministry of Science & Technology**

***Fri, 29 Nov 2024***

# ANRF hosts Stakeholder Meeting on PAIR Program to strengthen research capabilities across institutions by fostering collaborative research & innovation

Faculty from institutions across the country participated in the first stakeholder meeting on the Partnerships for Accelerated Innovation and Research (PAIR) Program today at Bharat Mandapam, New Delhi organised by the Anusandhan National Research Foundation (ANRF). The program, rooted in the vision of the National Education Policy 2020, aims to address disparities in research

infrastructure and capabilities across Indian institutions while promoting collaborative and impactful research.

Prof. A K Sood, Principal Scientific Adviser to the Government of India highlighted that the PAIR programme would transform India's research ecosystem by pairing top institutions with other institutions to improve their facilities and resources. "It will benefit the scientific community through mentorship and leadership from top institutions which can act as catalysts of research excellence and will also help students."

Professor Abhay Karandikar, Secretary of the Department of Science and Technology (DST), and CEO ANRF underlined that the ANRF's PAIR program has its genesis in the National Education Policy (NEP) 2020 and is designed to fulfil the objective of upgrading institutions across the country, particularly those with untapped potential.

"Well-established institutions will provide the necessary mentorship to elevate overall research standards. In its first phase, ANRF is focused on building regional diversity by targeting select universities and institutions. As the program progresses, the scope will be expanded through subsequent calls. The goal is to enhance the research ecosystem within our universities. Participants are encouraged to collaborate under this network through the Hub and Spoke model, fostering partnerships and innovation," he added.

Shri. Sanjay Kumar, Secretary, Ministry of Education, stressed on the pivotal role of research and development (R&D) in national progress. He emphasized the need to enhance institutional capacity to do R&D, bring in a plethora of institutions in the structure and create a diverse ecosystem of research-oriented institutions to drive innovation.

The event brought together around 200 participants, including directors, deans, and vice chancellors of universities and research institutions across the country. Their queries were addressed by the dignitaries at the stakeholder meeting which provided an opportunity to clarify doubts and pave the way for strong proposals. The PAIR programme will facilitate systematic research growth across institutions through a mentorship-driven hub and spoke framework. Hubs will guide emerging institutions (spokes) in research activities, provide access to harness their resources and expertise, thus bridging the gap between institutions and nurturing a robust research ecosystem in India.

https://pib.gov.in/PressReleasePage.aspx?PRID=2079112

Press Information Bureau
Government of India

**Ministry of Science & Technology**

***Sat, 30 Nov 2024***

# The Story of Viksit Bharat Will Be Written in the Alphabet of Science - Dr. Jitendra Singh

## Union Minister Inaugurates IISF 2024 Showcasing India's Scientific Prowess

## Six Landmark Decisions in First Five Months of PM Modi's Third Term, Accelerating India's Scientific Progress

## IISF 2024 Showcases India's Scientific Achievements with Engaging Exhibits and Interactive Events

## Dr. Jitendra Singh Celebrates Northeast's Transformation at IISF 2024, Highlights Its Central Role in India's Growth

## Over 10,000 Students from Across India Join IISF 2024, Highlighting the Event's Massive Participation and Youth Engagement

The story of Viksit Bharat will be written in the alphabet of science," declared Union Minister Dr. Jitendra Singh as he inaugurated the 10th edition of India International Science Festival (IISF) 2024 in Guwahati.

Addressing the audience, the emphasized that India's path to becoming a developed nation is deeply intertwined with its commitment to scientific advancement and innovation. Dr. Jitendra Singh underscored the importance of fostering a culture where science drives progress, shaping a future where technology and research contribute to every facet of society, from healthcare to infrastructure. His words served as a powerful reminder of the transformative power of science in realizing Prime Minister Narendra Modi's vision of a Viksit Bharat.

During his address, Dr. Jitendra Singh spotlighted six key decisions made by the Modi government in its third term just within first five months so far, which underscore India's commitment to scientific advancement. Among these were the establishment of the ₹1 lakh crore National Research Foundation, a ₹1,000 crore Venture Fund for space startups, and the launch of Mission Mausam to enhance weather forecasting. He also discussed the Bio-E3 initiative, designed to leverage biotechnology for environmental, economic, and employment growth, and the introduction of the "One Nation, One Subscription" policy to provide universal access to academic journals for over 2 crore students. Additionally, the Atal Innovation Mission, which has garnered global recognition for fostering innovation, was further extended to expand its impact.

The festival's theme, India as the Global Manufacturing Hub for Science and Technology, aligns with the nation's aspirations to lead in bio-manufacturing, semiconductors, and medical instruments. Dr. Jitendra Singh highlighted that India is making rapid strides in these fields, with significant investments and policy frameworks supporting advancements like the quantum mission and semiconductor manufacturing. He emphasized that the government's vision is to position India as a global leader in science and technology.

Science communication emerged as a key focus during the Minister's address, as he emphasized the need to inspire young minds across the country. Dr. Jitendra Singh noted that startups in

biotechnology, space, and agritech have predominantly emerged from cities like Bengaluru and Pune and stressed the importance of reaching smaller towns and rural areas. “The startups of tomorrow must emerge from every corner of the nation,” he said, urging enhanced outreach and accessibility for young innovators.

The IISF 2024 offers a diverse range of activities to engage participants and showcase India’s achievements in science and technology. Among the highlights are the Museum of Moon exhibit, a 3D laser show, the Reimagining Bharat Exhibition, and the Young Scientist Conclave. A Science Defence Expo and an exclusive science odyssey dedicated to exploring the Northeast’s scientific resources further underscore the event’s mission to foster curiosity and innovation.

Dr. Jitendra Singh also highlighted the significance of hosting the event in the Northeast, a region that has undergone remarkable transformation under the Modi government. He recalled how, prior to 2014, much of the Northeast lacked basic infrastructure, but today boasts expanded railways, waterways, and road networks. “The Northeast is no longer on the periphery but is central to India’s growth story,” he remarked, celebrating the region as a vital contributor to the country’s development.

A unique feature of IISF 2024 is its collaborative “Whole of Science” approach, which unites all science ministries and policymakers under one roof. This model extends to a “Whole of Government” strategy, with the central government and Assam’s administration working in harmony to ensure the festival’s success. Dr. Jitendra Singh also emphasized the broader vision of a “Whole of Nation” effort, bringing together citizens, startups, and policymakers to achieve the goal of a scientifically advanced India by 2047.

With over 10,000 students from across India participating, IISF 2024 has witnessed unprecedented engagement, underscoring its significance as a platform for inspiring the next generation of scientists and innovators. This massive participation reflects the festival\u2019s appeal and its role in fostering a culture of curiosity and scientific exploration among youth. The event serves as a catalyst for young minds to connect, learn, and contribute to India’s growing reputation as a global leader in science and technology.

The festival drew luminaries from India’s scientific community, including Dr. VK Saraswat of NITI Aayog, Professor A.K. Sood, Principal Scientific Advisor to the Government of India, Dr. N. Kalaiselvi, the first woman to lead CSIR, Dr. Rajesh Gokhale, Secretary of Biotechnology, and Professor Abhay Karandikar, Secretary of the Department of Science and Technology. Their presence highlighted the festival’s role as a platform for scientific innovation and collaboration.

The Council of Scientific and Industrial Research (CSIR) is organising IISF 2024, highlighting its commitment to promoting science and technology in India. Union Minister Dr. Jitendra Singh lauded Dr. N. Kalaiselvi, the Director General of CSIR, for her leadership in executing such a large-scale and impactful event.

In his closing remarks, Dr. Jitendra Singh expressed optimism about India’s scientific future. As we march towards 2047, the youth, especially our startups, will lead us to our destiny as a global leader,” he declared, affirming the nation’s commitment to innovation, collaboration, and progress.

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Press Information Bureau
Government of India

**Ministry of Science & Technology**

***Sat, 30 Nov 2024***

# Two events ‘S&T Media Conclave’ and ‘Vigyanika’ being ready to discuss effective science communication strategies in IISF 2024, Guwahati

IISF 2024 has total 25 events that are planned to discuss Science and technology among every section of society but two of them play an important role because without them it is not possible to reach out to masses. These two events are S&T Media Conclave and Vigyanika which are being organized by CSIR- National Institute of Science Communication and Policy Research (NIScPR), a constituent organization of CSIR which is promoting science and technology activities of India.

The Science and Technology Media Conclave 2024 and Vigyanika are inevitable events of IISF 2024 that aims to bring together scientists, journalists, and media professionals to discuss the importance of science communication and literacy in India.

Scheduled to take place on December 1-2, 2024, the Media conclave promises to be a thought-provoking platform for science communicators which will feature a range of exciting sessions, including panel discussions, interactions, and a science mentalism show during two day scheduled program. The event is spread into 6 sessions, 3 on each day having various themes to cover every aspect of science communication and dissemination.

It has themes like S&T Dissemination in North-East Media which will focus on the challenges and opportunities of science communication in the North Eastern region of India, for which experts and leaders of science organizations of North East India have been invited for discussions. Similarly, there is a session on ‘Impact of Science-based films in creating scientific awareness’ among masses by National Award film makers and other sessions on how to bridge the gap between S&T organizations and mass media platforms for effective science news dissemination through one to one interaction (1st day) and panel discussion (2nd day). To make understand that science communication is a fun based learning activity, the Media conclave also has ‘Science Mentalism Show’ which is going to connect science and magic.

The dignitaries who will be present in Media Conclave event are Dr. Arup Misra, Chairman, PCB, Assam & Former Director, ASTEC, Guwahati; Dr. L. Minaketan Singh, Director, Manipur S&T Council; Dr. Jaydeep Barua, Director, ASTEC; Shri Bhupendra Kainthola, Principal Director General, Registrar of Newspapers of India (RNI) & Former, Director, FTII, Pune; Dr. Arvind C. Ranade, Director, National Innovation Foundation (NIF), Ahmedabad; Shri Ritesh Taksande, Sr Manager-Consultant & Producer-Filmmmaker, NFDC Ltd, Mumbai; Shri. Pallav Bagla, Science Journalist, Ex- journalist, NDTV; Prof Shambhu Nath Singh, Vice Chancellor, Tezpur University, Assam; Dr. Manish Gore, Pri. Scientist, CSIR-NIScPR and many others.

“Vigyanika”, another important event of IISF which will focus on science communication also takes place during December 1-2, 2024. While Media conclave discuss various media formats, Vigyanika concentrate on science communication and dissemination through scientific literature platforms like Journals and magazines.

There are various sessions in ‘Vigyanika’ too that focus on effective science communication through the use of literature. And how literature can be used in different ways is reflected in the themes of the sessions that have been designed during two day event. The sessions on the first day will have discussions on the use of National as well as local languages in S&T communication and workshop on scientific writing. The first sessions on the second day will have panel discussion on changes that AI has brought to the scientific writing, the second session will be a workshop on interactive approaches of science communication and then talks by stalwarts of scientific literature writers and communicators like Dr Manoj Kumar Pataiariya and others. The last session in the forenoon of 2nd Dec. of Vigyanika event will have fun based experience of sharing thoughts of promoting scientific literature through ‘Kavi Samellan’ where science based poems will be shared and ‘Science puppet show’ will be performed among the attendees.

The Vigyanika’ event will be graced by leaders of science and science communicators like Dr Ranjana Aggarwal, Director NIScPR, Dr Manoj Kumar Pataiariya, Former Director, NISCAIR, Dr Shekhar C Mande, Former DG-CSIR and many others.

About CSIR-NIScPR

The CSIR-National Institute of Science Communication and Policy Research (NIScPR) is a constituent laboratory of the Council of Scientific & Industrial Research, Ministry of Science and Technology, Government of India. It is dedicated to science communication, policy research, and the promotion of scientific awareness among the public.

https://pib.gov.in/PressReleasePage.aspx?PRID=2079308

Press Information Bureau
Government of India

**Ministry of Science & Technology**

***Sun, 01 Dec 2024***

# The Minister addresses the Round Table of Institutional leaders from across the country on the sidelines of the India International Science Festival 2024

## Dr. Jitendra Singh calls for strong StartUp-Industry linkage as the key to India's sustainable economic growth

# India's rich traditional knowledge coupled with cutting-edge technology together offer a unique edge

## Space Startups, Success of Vaccine Development and Lavender Innovation is the testimony to scientific prowess of the country

## Guwahati Science Declaration - 2024 signed by Union Minister Dr. Jitendra Singh

Addressing the Round Table of Institutional leaders from across the country on the sidelines of the India International Science Festival (IISF) 2024 here, Union Minister of State (Independent Charge) for Science and Technology; Earth Sciences and Minister of State for PMO, Department of Atomic Energy, Department of Space, Personnel, Public Grievances and Pensions, Dr. Jitendra Singh called for strong StartUp-Industry linkage as the key to India's sustainable economic growth.

The Round Table was attended by heads of all the important R&D institutes, Vice Chancellors of Universities and later joined by Industry leaders as well. In an inspiring address at the Round Table, the Minister emphasized complete synergy of Research, Academia, StartUps and Industry to achieve the optimum goals. He underlined the pivotal role of science and innovation in driving India’s journey towards becoming a developed nation. Dr Jitendra Singh called for a strategic, collaborative approach involving academia, research institutions, and industry to tap into India’s potential and push forward with groundbreaking progress.

Dr Jitendra Singh emphasized the need to harness India’s exclusive assets, including its rich traditional knowledge coupled with cutting-edge technology, which together offer a unique edge. When you combine our traditional knowledge with modern science, you create an exclusive Indian cocktail that sets us apart on the global stage, he said. The Minister praised the National Research Foundation as a major step forward, noting its potential to foster deeper cooperation between public and private sectors, both domestically and internationally. Drawing on examples from the biotech and space sectors, he called for increased global partnerships that would bring in international expertise and industry leaders to amplify India’s scientific endeavors.

Addressing the need for greater integration between industry and science, Dr. Jitendra Singh highlighted the importance of aligning scientific research with market demands. He emphasized the role of private sector investment in sustaining startups and creating an ecosystem where innovation thrives. We must involve industry leaders not just as participants but as partners who help shape the direction of research and development, he stated. Echoing the sentiments of many scientists present, he underscored that the future of India depends on fostering a culture of public-private participation and collaborative problem-solving.

Dr. Jitendra Singh stressed the importance of creating a skilled workforce equipped to meet the demands of a rapidly evolving global economy. He called for the integration of cutting-edge technologies such as Artificial Intelligence (AI), the Internet of Things (IoT), quantum computing, and sustainable manufacturing into research and education programs, which he described as essential to India’s future readiness. Furthermore, he highlighted the need to empower young

innovators and startups by leveraging institutional expertise and infrastructure, while embedding initiatives like Startup India and the Atal Innovation Mission into institutional frameworks.

In his concluding remarks, Dr. Jitendra Singh reminded the audience that the confidence and momentum generated under Prime Minister Narendra Modi's leadership must be channeled into action. Science will be the driving force for the future of Bharat, he affirmed, urging those in the room to strategize and push forward with a unified vision. His words resonated as a call to action for the scientific community to harness its collective strength for the betterment of the nation and to contribute to India's emergence as a global leader in science and technology.

https://pib.gov.in/PressReleasePage.aspx?PRID=2079523

THE ECONOMIC TIMES

***Sun, 01 Dec 2024***

## ISRO to launch ESA's Proba-3 mission on December 4

ISRO's trusted workhorse Polar Satellite Launch Vehicle (PSLV) will blast off from Sriharikota spaceport in Andhra Pradesh on December 4 carrying ESA's Proba-3 mission, the Indian space agency said on Sunday. The European Space Agency's (ESA) Proba-3 Mission is happening in collaboration with ISRO's commercial arm NewSpace India Limited (NSIL).

"This mission will place ESA's PROBA-3 satellites (550kg) into a unique highly elliptical orbit, reinforcing PSLV's reliability for complex orbital deliveries," ISRO said in a post on 'X'.

According to ISRO, the satellite will take off at 4.08 pm on Wednesday. The ESA said Proba-3 is the world's first precision formation flying mission. It will study the solar corona, the outermost and hottest layer of Sun's atmosphere.

https://economictimes.indiatimes.com/news/science/isro-to-launch-esas-proba-3-mission-on-dec-4/articleshow/115867154.cms

THE HINDU

***Fri, 29 Nov 2024***

## Indian astronauts selected for joint ISRO-NASA mission to International Space Station complete initial training

The Indian Space Research Organisation (ISRO) on Friday (November 29, 2024) said that Indian astronauts Group Captain Shubhanshu Shukla and Group Captain Prasanth Balakrishnan Nair who have have been selected for the upcoming Axiom-4 mission to the International Space Station (ISS) have completed the initial phase of training.

“Towards the goal of accomplishing a joint ISRO-NASA effort to the International Space Station, the two Gaganyatris (Prime-Group Captain Shubhanshu Shukla and Backup-Group Captain Prasanth Balakrishnan Nair) assigned for Axiom Mission 4 (Ax-4) commenced their training in the U.S.A from first week of August, 2024. The initial phase of training has been completed successfully by the Gaganyatris,“ ISRO said.

The space agency added that during this phase of training, the Gaganyatris have completed initial orientations for mission-related ground facility tours, initial overview of mission launch phases, SpaceX suit fit checks, and selected space food options.

“Furthermore, the training also included familiarisation sessions with the SpaceX Dragon spacecraft and various onboard systems of the International Space Station, including photography from space, daily operations routine, and communication protocols. One of the important highlights of this phase was training for various types of emergencies in space, including medical emergencies,” ISRO said.

It further said that upcoming training will primarily address the remaining modules of the U.S. Orbital Segment of the space station along with training towards conducting scientific research experiments in microgravity environment during the mission. In addition, the crew will train and perform different mission scenarios in the SpaceX Dragon spacecraft.

https://www.thehindu.com/sci-tech/science/indian-astronauts-selected-for-joint-isro-nasa-mission-to-international-space-station-complete-initial-training/article68926601.ece

DECCAN HERALD

***Sun, 01 Dec 2024***

# IIT Madras researchers develop machine learning based predictor for protein mutations

Researchers at the Indian Institute of Technology (IIT), Madras have developed a machine learning-based predictor for protein mutations which has surpassed existing methods that are time-consuming and expensive, according to officials.

The artificial intelligence-based tool, 'DeepPPAPredMut', includes a user-friendly web server that enhances accessibility for researchers. The findings of the research have been published in the prestigious peer-reviewed journal 'Bioinformatics'.

According to the officials, the study of proteins, often referred to as 'building blocks of life', is important as they play a crucial role in cell signalling and immune response and cell cycle.They can exist as enzymes to catalyse biochemical reactions. They also have structural and mechanical functions like those of actin and myosin in muscle.

"Problems arise when mutations occur in these protein-protein complexes, which affects the stability of the complex and disturbs the functionality, thus leading to diseases. A property of protein-protein complexes is the binding of two or more proteins."

"This interaction is known as 'binding affinity', the strength of the interaction between two or more molecules of proteins, is crucial when assessing how mutations affect protein-protein complexes," M Michael Gromiha, Professor at Department of Biotechnology, IIT Madras, told PTI.

Gromiha explained that there are several methods to detect the effect of mutation on the binding affinity of protein-protein complexes, but these are labour-intensive, time-consuming and expensive.

"There is therefore a need for computational methods to predict the binding free energy changes upon mutation in protein-protein complexes. Currently, there are two computational methods to study mutation in protein-protein complexes, namely 'structure-based' and 'sequence-based' methods."

"But these methods too have limitations. Structure-based methods, which use the structural properties from protein complexes to predict the change in binding affinity upon mutation, are limited because of the lack of availability of experimentally known structures of protein-protein complexes," he said.

Sequence-based methods have been developed for predicting changes in binding affinity upon mutation.In this study, the researchers addressed these limitations and developed 'DeepPPAPredMut', which takes a protein sequence and mutation as input from the user and predicts the change in the binding affinity upon mutation in the protein complex.

Rahul Nikam, Department of Biotechnology, IIT Madras said protein-protein interactions underpin many cellular processes and their disruption due to mutations can lead to diseases.

"With the evolution of protein structure prediction methods like AlphaFold2 and the availability of extensive experimental affinity data, there is a pressing need for updated computational tools that can efficiently predict changes in binding affinity caused by mutations in protein-protein complexes," he said.

https://www.deccanherald.com/science/iit-madras-researchers-develop-machine-learning-based-predictor-for-protein-mutations-3298986