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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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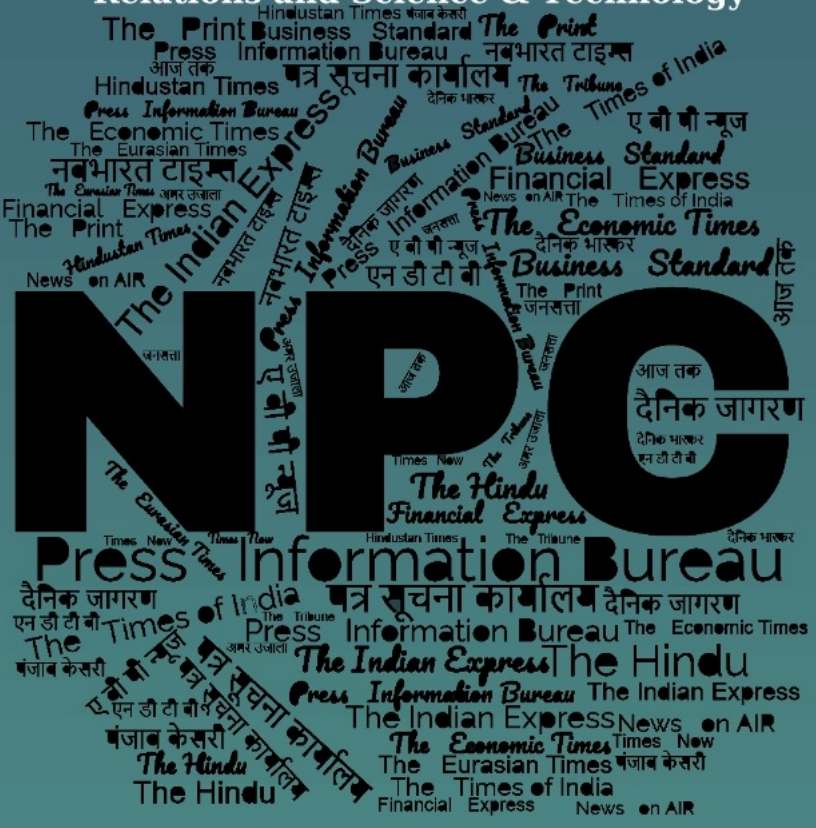


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Press Information Bureau
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**Ministry of Defence**

***Tue, 10 Dec 2024***

# Raksha Mantri & his Russian counterpart co-chair 21st session of India-Russia Inter-Governmental Commission on Military & Military Technical Cooperation in Moscow

## Shri Rajnath Singh stresses on new opportunities to enhance participation of Russian industries in 'Make in India' projects

## Operationalisation of Military Technical Cooperation agreement for 2021-31 will give necessary impetus to 'Make in India': Mr Andrey Belousov

The 21st session of the India-Russia Inter-Governmental Commission on Military & Military Technical Cooperation (IRIGC-M&MTC) was co-chaired by Raksha Mantri Shri Rajnath Singh and Russian Defence Minister Mr Andrey Belousov in Moscow on December 10, 2024. Raksha Mantri emphasised that the India-Russia relationship is very strong, and has lived up to the responsibilities of a special and privileged strategic partnership. He added that the ties have further strengthened with the recent exchanges including two visits of Prime Minister Shri Narendra Modi to Russia during 2024.

Shri Rajnath Singh voiced the Government of India's determination to extend the capabilities of its domestic defence industry across domains and industrial collaboration. He stressed on new opportunities for enhancing participation of Russian industries in the 'Make in India' projects. He reiterated India's commitment towards Special and Privileged Strategic Partnership with Russia.

The Russian Defence Minister emphasised on deepening relationship between both the countries which is based on mutual trust. He congratulated Raksha Mantri on the commissioning of INS Tushil. He further stated that the operationalisation of Military Technical Cooperation agreement for 2021-31 will give necessary impetus to 'Make in India'. Shri Rajnath Singh invited Minister Belousov to visit India to co-chair the 22nd session of IRIGC-M&MTC in 2025. The invitation was accepted.

At the end, the two Ministers signed the protocol of the 21st IRIGC-M&MTC meeting highlighting the ongoing and prospective areas of cooperation.

Prior to the meeting, Raksha Mantri inspected the Guard of Honour at the Russian Defence Ministry in Central Moscow. Earlier, he laid a wreath at 'The Tomb of the Unknown Soldier' in Moscow to honour the memory of the Soviet soldiers killed during the Second World War.


https://pib.gov.in/PressReleasePage.aspx?PRID=2082899

Press Information Bureau
Government of India

**Ministry of Defence**

***Tue, 10 Dec 2024***

# Raksha Mantri Shri Rajnath Singh calls on Russian President Mr Vladimir Putin in Moscow

## Discusses various issues of bilateral defence cooperation

Raksha Mantri Shri Rajnath Singh called on the President of the Russian Federation Mr Vladimir Putin in Moscow on December 10, 2024, on the margins of the 21st session of India-Russia Inter-Governmental Commission on Military and Military Cooperation (IRIGC-M&MTC). Raksha Mantri conveyed warm greetings of Prime Minister Shri Narendra Modi to President Putin.

Shri Rajnath Singh discussed various issues of bilateral defence cooperation. Both leaders expressed that partnership between both countries holds immense potential and combined efforts will pave way for remarkable outcomes.

During the meeting, Shri Rajnath Singh said “Friendship between our countries is higher than the highest mountain and deeper than the deepest ocean.” India has always stood by its Russian friends and will continue to do so in future, he added.

https://pib.gov.in/PressReleasePage.aspx?PRID=2082985

Press Information Bureau
Government of India

**Ministry of Defence**

***Tue, 10 Dec 2024***

# Suprabal Janasewashree General Ashok Raj Sigdel, Chief Of Army Staff, Nepali Army Arrives On A Visit To India

Suprabal Janasewashree General Ashok Raj Sigdel, Chief of the Army Staff (COAS) of the Nepali Army, commenced a significant official visit to India today, marking a key step in further strengthening the defence relations between Nepal and India. The visit, which is set to run from 11th to 14th December 2024, aims to enhance bilateral military cooperation and explore new avenues for defence collaboration. The Nepali Army COAS was warmly received by the Indian Army.

**On 11th December 2024**, the Nepali COAS will lay wreath at the National War Memorial, New Delhi and will be given a Guard of Honour at the South Block Lawns, followed by an interaction with the General Upendra Dwivedi, COAS, Indian Army. General Ashok Raj Sigdel will also be briefed on India’s Security Perspective by Director General Strategic Planning (DGSP) and on the Indian Defence Industry by Additional Director General, Army Design Bureau. Thereafter, the Nepali COAS is scheduled to Call-on Shri S Jaishankar, Hon’ble EAM, Shri Ajit Doval, NSA, General Anil Chauhan, Chief of the Defence Staff, Mr Rajesh Kumar Singh, Defence Secretary and Mr Vikram Misri, Indian Foreign Secretary.

**On 12th December 2024,** General Ashok Raj Sigdel will attend the Investiture Ceremony at Rashtrapati Bhawan, wherein as per unique tradition between Indian Army and Nepali Army, he will be conferred with the Honourary Rank of General of Indian Army by Smt Draupadi Murmu, the Hon’ble President of India. The Nepali COAS would also interact with other dignitaries during High Tea at Rashtrapati Bhawan. He will also Call-on Shri Rajnath Singh, Hon’ble Raksha Mantri. A Reciprocal Lunch is being organised by the COAS, Nepali Army at the Embassy of Nepal, New Delhi. Later in the day, General Ashok Raj Sigdel will plant a sapling at the Manekshaw Centre, New Delhi. In the evening, he will depart for Pune.

**On 13th December 2024,** the Nepali COAS will visit Defence Industries and witness Static Equipment Display at Pune. He will engage with representatives of Indian Defence Industry. Thereafter, he would depart for Indian Military Academy, Dehradun, wherein he will attend the Reviewing Officer’s Dinner in the evening.

**On 14th December 2024,** General Ashok Raj Sigdel, COAS, Nepali Army, will Review Parade of the Gentleman Cadets and will take the Reviewing Officer’s Salute. He will sign the Visitors book, present awards to Colour Party and Cane Orderlies and would present Reviewing Officer Plate and Sword. He will also participate in Pipping and Oath Taking and interact with the newly

commissioned officers, which includes two Nepali Army Gentleman Cadets, who are getting commissioned.

General Ashok Raj Sigdel will thereafter depart for Ayodhya, wherein he will pay obeisance at the Shri Ram Mandir. In the evening, he will depart for New Delhi and would be hosted for dinner by General Anil Chauhan, Chief of Defence Staff. COAS, Nepali Army will depart for Kathmandu on 15th December 2024.

The visit by General Ashok Raj Sigdel aims at strengthening military cooperation between militaries of India and Nepal, besides exploring new avenues of collaboration between the two nations.

https://pib.gov.in/PressReleasePage.aspx?PRID=2082895

THE ECONOMIC TIMES

*Tue, 10 Dec 2024*

# Rajnath presses Russia to expedite delivery of remaining S-400 missile systems

Defence Minister Rajnath Singh on Tuesday pressed Russia to expedite the supply of two remaining units of S-400 Triumf surface-to-air missile systems as he held wide-ranging talks with his Russian counterpart Andrey Belousov in Moscow. In the meeting, Singh showcased new opportunities in India for Russian defence industries in joint production of various military hardware, noting that India-Russia engagement is very strong, and it has lived up to the "responsibilities" of a special and privileged strategic partnership.

Singh voiced India's determination to extend the capabilities of its domestic defence industry across domains and industrial collaboration, the defence ministry said.The meeting under the framework of India-Russia Inter-Governmental Commission on Military and Military Technical Cooperation was co-chaired by Singh and Belousov.

The Indian defence minister is on a three-day visit to Russia.Official sources said Singh strongly pitched for expedited delivery of the two remaining units of S-400 surface-to-air missile systems.

Russia has already completed supplies of the first three regiments of the missile systems. There has been a delay in supply of the remaining units in view of the Ukraine conflict.Singh also called for carrying out maintenance and related services of the missile systems in India.

During the talks, the defence minister emphasised that the India-Russia relationship is very strong, and has lived up to the responsibilities of a special and privileged strategic partnership, the ministry said.Singh reiterated India's commitment towards special and privileged strategic partnership with Russia, it said in a statement.

The Russian defence minister emphasised on deepening the relationship between both the countries which is based on mutual trust. He also congratulated Singh on the commissioning of INS Tushil.The Russian-manufactured guided missile frigate was commissioned into the Indian navy at Russia's coastal city of Kaliningrad in presence of Singh on Monday.

"He further stated that the operationalisation of the Military Technical Cooperation agreement for 2021-31 will give necessary impetus to 'Make in India'," the ministry said.Prior to the meeting, Singh inspected a guard of honour at the Russian defence ministry.

Earlier, he laid a wreath at 'The Tomb of the Unknown Soldier' in Moscow to honour the memory of the Soviet soldiers killed during the second World War.

https://economictimes.indiatimes.com/news/defence/rajnath-presses-russia-to-expedite-delivery-of-remaining-s-400-missile-systems/articleshow/116181712.cms

THE ECONOMIC TIMES

***Tue, 10 Dec 2024***

# BEML gets order for 50-tonne Trailer from Defence Ministry

State-owned BEML Limited on Tuesday said it has secured a contract from the defence ministry to supply a 50-tonne Trailer valued at Rs 83.51 crore. The order highlights BEML's strength and capability in delivering advanced, indigenous products to enhance India's defence infrastructure, the public sector undertaking under the Ministry of Defence said in a statement.

The heavy-duty Trailer is specifically designed for the transportation of battle tanks and features 12 twin wheels for durability and stability in challenging terrains.With a payload capacity of 50 tonnes, the Trailer is engineered to be towed by the BEML HMV 8x8 vehicle, BEML said.

Notably, it includes advanced features like a steerable turntable for 55-degree rotation in both directions, a twin-line air brake system, emergency brakes, and mechanically operated parking brakes, it added.

"We are proud to have the order and believe in our capacity to build indigenised products at scale. This contract is a testament to our growing role in supporting the defence sector, and we look forward to expanding our contributions even further," said Shantanu Roy, Chairman and Managing Director of BEML.

BEML operates in three verticals -- defence and aerospace, mining and construction and rail and metro. It has manufacturing facilities located in Bangalore, Kolar Gold Fields (KGF), Mysore, and Palakkad, with R&D infrastructure and a nationwide network of sales and services.

https://economictimes.indiatimes.com/news/defence/beml-gets-order-for-50-tonne-trailer-from-defence-ministry/articleshow/116181252.cms

THE WEEK

***Tue, 10 Dec 2024***

# After INS Tushil, when will Russia deliver stealth frigate INS Tamal to Indian Navy?

In what comes as a significant milestone for the Indian Navy's capabilities in the Indian Ocean Region (IOR), the Russian-manufactured guided missile frigate INS Tushil was commissioned into

the Navy on Monday in Russia's coastal city of Kaliningrad in presence of Defence Minister Rajnath Singh.

INS Tushil, which is expected to significantly bolster the Indian Navy's operational capability in the IOR, has been constructed as part of an over $2.5-billion deal that India had inked with Russia in 2016 for four stealth frigates. Two of these, INS Tushil and the second frigate of project 11356, INS Tamal, are to be built in Russia while the other two are being constructed in India.

Chief executive of Yantar shipyard, Ilya Samarin , on Monday, said the Project 11356 Tamal frigate of the Indian Navy under construction at the shipyard is planned to be delivered in spring 2025.

"Construction of warships is the core business of the Yantar shipyard. Irrespective of whether it is a foreign or a domestic customer, we do our job similarly in good faith and responsibly. It is not accidental that this is already the fourth frigate built at our shipyard. We plan to deliver the fifth one next spring," news agency Tass quoted Samarin as saying.

He observed that the specific feature of ship construction is the installation of foreign customer’s equipment onboard, its integration with Russian systems, and the joint effort of Russian and foreign counter-parties during trials and at the closing stages of construction.

"Further to our construction of frigates, we also educate the Indian crew and specialists, transfer the experience and knowledge to them for the forthcoming service on this frigate and for further construction of ships in India," Samarin said.

https://www.theweek.in/news/defence/2024/12/10/after-ins-tushil-when-will-russia-deliver-stealth-frigate-ins-tamal-to-indian-navy.html

THE WEEK

***Tue, 10 Dec 2024***

# India's share in Russian arms export jumps 15 pc in just six months

In the past six months, India's share in Russia’s exports of weapons and combat vehicles has gone up by 15 per cent.

Viktor Yevtukho a high-ranking Russian presidential administration official has been quoted as saying, "India’s share in the export of Russian weapons and hardware has increased by 15 per cent in the past six months alone."

His remarks came on a day when Russia handed over guided missile frigate INS Tushil to Indian Navy.

He observed that the construction of these multi-role frigates is a cornerstone of Russian-Indian military-technical cooperation.

"These deals have demonstrated the Russian defense sector’s research and industrial potential and facilitated the development of the Russian school of surface military ship-building," he said.

He noted that six frigates of this project were handed over to India from 2007 to 2017 and the seventh was was transferred on Monday.

Yevtukho said the Russia-Indian military-technical cooperation is developed on the basis of long-term contracts and with a focus on localizing the production of Russian weapons and vehicles at Indian enterprises.

“Overall, Russia continues to be India’s leading partner in the defense sector. And not only because we have a vast potential inherited from the former Soviet Union but also thanks to joint work today. Our countries have more than 200 joint defense projects," he added.

https://www.theweek.in/news/defence/2024/12/10/indias-share-in-russian-arms-export-jumps-15-pc-in-just-six-months.html

ANI
South Asia's Leading Multimedia News Agency

***Wed, 11 Dec 2024***

# Defence Secretary Rajesh Kumar Singh meets German Delegate Andreas Schwarz

Defence Secretary Rajesh Kumar Singh engaged in discussions with German Parliamentarians in the national capital on Tuesday, highlighting the ties between India and Germany.

The delegation, led by Andreas Schwarz included rapporteurs of Germany's budget committee on defence.

Sharing details of the interaction, the Ministry of Defence posted on X (formerly Twitter), "Defence Secretary Shri Rajesh Kumar Singh interacted with German Parliamentarians, the rapporteurs of the budget committee of defence led by Mr Andreas Schwarz, in New Delhi today."

Earlier, Foreign Secretary Vikram Misri held a meeting with members of the German Parliament in the national capital on Tuesday and emphasised the significance of the India-Germany Strategic Partnership. During the meeting, he discussed global issues of mutual importance with German lawmakers - Andreas Schwarz, Ingo Gadechens, Gesine Lotzsch, Sebastian Schafer.

The engagement is seen as part of continued efforts to strengthen ties across various sectors, reflecting the mutual respect and collaborative aspirations shared by both countries.

India and Germany have maintained strong relations since the establishment of diplomatic ties in 1951. The partnership was elevated to a 'Strategic Partnership' in May 2000, further deepened by the Intergovernmental Consultations (IGC) framework launched in 2011. The IGC enables high-level reviews of cooperation and identifies new areas of collaboration.

India is among a select group of countries with which Germany engages through such a mechanism. The 6th IGC took place in Berlin in May 2022, and the 7th IGC is scheduled later this year.Germany remains one of India's most critical partners in Europe, given its influential role within the European Union.

The bilateral relationship also benefits from a thriving Indian diaspora in Germany, which numbers approximately 2.46 lakh as of December 2023. This includes professionals in IT, banking, finance, and healthcare, as well as researchers, students, and entrepreneurs, who play a vital role in fostering connections between the two nations.

https://www.aninews.in/news/world/asia/defence-secretary-rajesh-kumar-singh-meets-german-delegate-andreas-schwarz20241211082532/

The EurAsian Times

*Wed, 11 Dec 2024*

# Sukhoi Su-57: Russia Claims Integrating 6th-Gen Tech On Stealth Aircraft; IAF Veterans Speak Out

A high-ranking official from the United Aircraft Corporation (UAC), Russia's state-owned aircraft manufacturer, has disclosed that the country's fifth-generation Su-57 stealth aircraft is being equipped with sixth-generation fighter technology.

Speaking on the 'Military Acceptance' broadcast, UAC's Director General Vadim Badekha stated that the fifth-generation Su-57 fighter, a multi-role stealth aircraft, was developed with the "50-year modernization perspective" in mind and has received some elements of the sixth-generation combat aircraft.

"When creating this platform, we thought about at least a 50-year prospect of its development. Therefore, initially, the designers laid down the possibility of development and change by the customer's requirements, and the requirements of the time. We are already introducing sixth-generation elements into this aircraft," Badekha was quoted as saying by the state news agency TASS.

The UAC Director General did not specify the exact sixth-generation technologies that may have been incorporated into the Su-57. When asked what sixth-generation features may have been incorporated into the aircraft, Air Marshal Anil Khosla (retd) told the EurAsian Times: "If the Su-57 has indeed incorporated elements of sixth-generation fighter technology, they are likely in the form of modular capabilities or groundwork for future upgrades."

Air Marshal Khosla named a few features that may have been integrated into the Su-57: "The possible sixth-generation elements may include multi-spectral stealth, combat networking, manned-unmanned teaming (M-UMT) or loyal wingman flying with a manned fighter, integration of hypersonic missiles, directed energy weapons (DEWs), integrated sensor suite, and cyber-security resilience."

Russia has been considering the development of a sixth-generation combat aircraft. Earlier this year, Evgeny Fedosov, Scientific Director of the State Research Institute of Aviation Systems (GosNIIAS), stated that Russia had set its sights on developing a sixth-generation fighter jet that could be deployed by 2050.

"Currently, we are thinking about the concept of a sixth-generation aircraft, conducting research and exchanging views with military specialists," he noted at the time. The sixth-generation fighter jet concept represents a new age of aerial warfare, which will largely focus on improved air-to-air combat performance and capability to breach restricted airspace to establish air superiority.

Several sixth-generation aircraft programs are ongoing worldwide: the US Next-Generation Air Dominance (NGAD), the Italy-UK-Japan-led Global Combat Air Program (GCAP), the France-Germany-Spain's Future Combat Air System (FCAS), and the Chinese Baidi. On the contrary, Russia has yet to unveil the concept of a sixth-generation manned aircraft—unlike its rivals and peers—making Badesha's remarks more intriguing. Furthermore, the UAC chief's latest assertions are noteworthy because many Western analysts have questioned whether the Su-57 could even qualify as a fifth-generation fighter.

Critics, for example, highlight design flaws, particularly the aircraft's questionable stealth characteristics compared to aircraft such as the US F-35. Critics have even gone so far as to claim that rather than being a fifth-generation stealth fighter, the Felon is more like a highly developed fourth-generation fighter jet.

**Russian Su-57 Is Riddled With Troubles**

The claims of integrating sixth-generation novel technology into the Su-57 come as Russia is pushing the Su-57 in the export market, albeit with little success. In fact, the assertions could give rise to speculation about whether these calls are meant to attract customers as it is struggling to take off in the export market. A host of challenges have held up the aircraft's sale in the past few years—including a protracted war, production-related difficulties exacerbated by overbearing Western sanctions, and persisting doubts over the aircraft's capability.

Additionally, experts often cite the agonizingly lengthy wait period between the aircraft's first flight in 2010 and its introduction into service in 2020. Moreover, the fact that actual manufacturing didn't begin until 2019 further highlights the industrial limitations that have impeded the fifth-generation aircraft program. Notably, fewer than 40 Su-57s have been built in Russia 14 years after the aircraft's first flight. In sharp contrast, the PLA Air Force constructed and introduced hundreds of Chinese J-20s, while Lockheed Martin built over 1,000 F-35 Lightning II fighter jets for customers worldwide.

Russia currently finds itself in a bind, with its production capacity hit due to the ongoing Ukraine war and in the wake of the international sanctions slapped on its industry. The production delays have tarnished the reputation of the aircraft, which, otherwise, comes with cutting-edge avionics that improve its situational awareness and survivability, such as electronic warfare systems, IRST (Infrared Search and Track), and AESA (Active Electronically Scanned Array) radar.

Moreover, the aircraft has been conspicuously absent from combat in Ukraine. While the aircraft has been deployed in the ongoing war, its role has been limited to conducting air defense patrols from the safety of Russian airspace despite being a stealth aircraft. At least one Su-57 was also allegedly damaged or destroyed in a Ukrainian missile strike.

All of the above factors have made it very challenging for Russia to woo buyers for its fifth-generation aircraft. Only last month, the state arms exporter Rosoboronexport announced the first export order for the stealth aircraft, concealing details about the mysterious buyer. Algeria is speculated to be the first buyer, but the country has not yet made any indication of a deal.

Even if the aircraft has finally made its debut in the export market, its woes are far from over. Several Russian allies and partners that have historically bought Russian military hardware have been looking into other options to diversify their fleets.

Russia's frustration with its inability to sell its fifth-generation aircraft has been palpable. For instance, Russia has renewed its offer to supply India with fifth-generation Su-57 stealth fighter jets. The latest pitch highlights advancements in combat capability, avionics, and stealth, including the incorporation of hypersonic missiles. Russia has reportedly lowered the cost of the aircraft and may even accept a special payment method in Indian rupees to make the deal more alluring.

Indian Air Force veteran and a seasoned aviation expert, Air Marshal Anil Chopra (retd) told EurAsian Times: "Sixth-generation technology is still evolving, all novel technology takes time to mature. We don't know what exactly Russia has integrated into the Su-57; it could be one or two new sixth-gen features, or it could be more. Even the fifth-gen aircraft of our time, including the Russian Su-57, the American F-35, and the Chinese J-20 are still maturing in terms of technology,

they are getting new upgrades. Even if some of the sixth-generation features are introduced into the Su-57, it will take time for them to evolve."

When asked by EurAsian Times whether these assertions are made to attract customers, Air Marshal Chopra said, "Of course, every seller of a product in the world does that. Russia is currently struggling with production and has inducted an insignificant number of aircraft into its own fleet, so it is likely pushing the aircraft for export by making tall claims. It does not mean that new technology cannot be integrated into the Su-57 but to what extent, that makes the difference. The success of these claims would depend on whether someone falls for it, or whether a targeted customer like India falls for it."

Besides the US and China, Russia is the only country with an operational fifth-generation stealth aircraft. Since the US has put restrictions on exporting its fifth-generation fighter and China has not overtly promoted its stealth fighters for export, Su-57 could be a viable option for countries interested in buying a fifth-generation aircraft.

https://www.eurasiantimes.com/su-57-export-russia-claims-integration-of-6th-gen-tech/#google_vignette

# Science & Technology News

Press Information Bureau
Government of India

**Ministry of Science & Technology**

***Tue, 10 Dec 2024***

## IIT Ropar's iHub AWaDH Unveils Cost-Effective Bluetooth Low Energy Gateway with Advanced Data Security to revolutionize IoT applications across various sectors

iHub – AWaDH (Agriculture and Water Technology Development Hub) at the Indian Institute of Technology (IIT) Ropar, under the National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS) by the Department of Science and Technology (DST), Government of India, with funding of ₹110 Crore has announced the launch of its state-of-the-art AWaDH's Bluetooth Low Energy Gateway and Node System.

Developed by IIT Ropar, this first-of-its-kind cost-effective system connects Bluetooth-enabled sensors to cloud platforms, enabling seamless data transmission, real-time environmental monitoring, and advanced analytics across diverse sectors such as agriculture, logistics, and environmental resilience. With features designed to support scalable IoT deployments, the BLE Gateway system reinforces AWaDH's commitment to sustainable and technology-driven advancements.

**Key Features of the BLE Gateway**

- Robust Connectivity: Offers 4G, WiFi, and LAN compatibility for flexible networking.

- Long-Range Communication: Supports data transmission up to 1 km in line-of-sight (LOS) scenarios.
- Data Aggregation: Collects and processes data from multiple connected nodes, streamlining analysis and decision-making.
- Weatherproof and Compact Design: Providing durability in extreme weather conditions while maintaining a compact and user-friendly form.
- Wireless Connectivity: Eliminates the need for extensive wiring, reducing installation costs and supporting remote deployments.
- Low Power Consumption: Delivers energy-efficient performance for prolonged operation.
- Scalability: Manages over 100+ connected BLE nodes, ideal for large-scale IoT networks.
- Firmware Over-The-Air (FOTA): Allows remote firmware updates to keep the system up-to-date with minimal manual intervention.
- Compatibility: Fully supports integration with mobile apps, cloud platforms, and diverse sensors for enhanced flexibility.
- Enhanced Features: Includes external RTC with coin cell, USB supply/charging, humidity/temperature sensor, optional battery status indication, and a relay for switching local peripherals.

**Value Propositions**

- Energy Efficiency: BLE technology ensures extended battery life and reduced energy consumption.
- Seamless Integration: Fully compatible with mobile apps and cloud platforms for remote monitoring.
- Data Security: BLE encryption safeguards sensitive environmental data.
- Cost-Effective and Durable: Weather-resistant materials minimize maintenance costs while ensuring reliability in harsh environments.

The system’s technical advancements significantly impact various sectors. In agriculture, it supports precision farming by monitoring critical factors such as soil moisture and air quality, enabling better control and sustainable practices. For logistics, it ensures optimal environmental conditions for perishable goods in cold storage and transit, mitigating risks of spoilage. Smart cities and industrial sites can leverage the system for large-scale monitoring networks to enhance operational efficiency and security. Real-time data transmission and customizable alerts allow for proactive responses to changes such as temperature spikes or unauthorized movements, reducing potential losses and enhancing resource management.

This innovation also integrates seamlessly with mobile apps and cloud platforms, enabling users to access data remotely for enhanced convenience and decision-making. Its energy-efficient BLE technology supports long battery life, while data encryption ensures secure transmissions, safeguarding sensitive information.

https://pib.gov.in/PressReleasePage.aspx?PRID=2082722

THE ECONOMIC TIMES

*Tue, 10 Dec 2024*

# ISRO carries out 'well deck' recovery trial of Gaganyaan

Indian Space Research Organisation (ISRO) and the European Space Agency (ESA) signed a Technical Implementing Plan (TIP) on Wednesday. This will enable ESA to provide critical ground tracking support for India's Gaganyaan missions.

ISRO on Tuesday said it carried out 'well deck' recovery trials of the Gaganyaan with the Indian Navy on December 6. The trials were carried out at Eastern Naval Command using a well deck ship off the coast of Vishakhapatnam, ISRO said in a statement.

The space agency said the well deck in a ship can be flooded with water so that boats, landing crafts, recovered spacecraft can be taken inside to dock within the ship.Once the Crew Module touches down in the sea at the end of the mission, crew have to be recovered in the minimum possible time and with the least discomfort, it said.

One of the preferred options is to tow the Crew Module along with the crew inside the well deck of the ship where the crew can come out comfortably, ISRO explained.It said that the trials for well deck recovery were carried out using a mass and shape simulated Crew Module Mock-up.

The sequence of operations for well deck recovery of Crew Module was carried out by Indian Navy and ISRO during the trials. The sequence includes the attachment of the recovery buoy, towing, entering into the well deck ship, positioning of Crew Module on the fixture and draining of the well-deck, ISRO said.

"This trial validated the overall sequence of operations, ground fixtures and will help in fine tuning Standard Operating Procedures (SOP). This trial is part of the series of recovery trials being carried out by Indian Navy and ISRO to finalise the SOPs for recovery operations for nominal as well as off-nominal conditions," the Indian space agency explained.

Gaganyaan, which is among the projects approved by the Union Cabinet, is India's first human mission.Gaganyaan project envisages demonstration of human spaceflight capability by launching crew of three members to an orbit of 400 km for a three-day mission and bringing them back safely to Earth, by landing in Indian sea waters.ISRO Chairman S Somanath in September said that this mission will be ready for launch by the end of 2024.

https://economictimes.indiatimes.com/news/science/isro-carries-out-well-deck-recovery-trial-of-gaganyaan/articleshow/116180259.cms

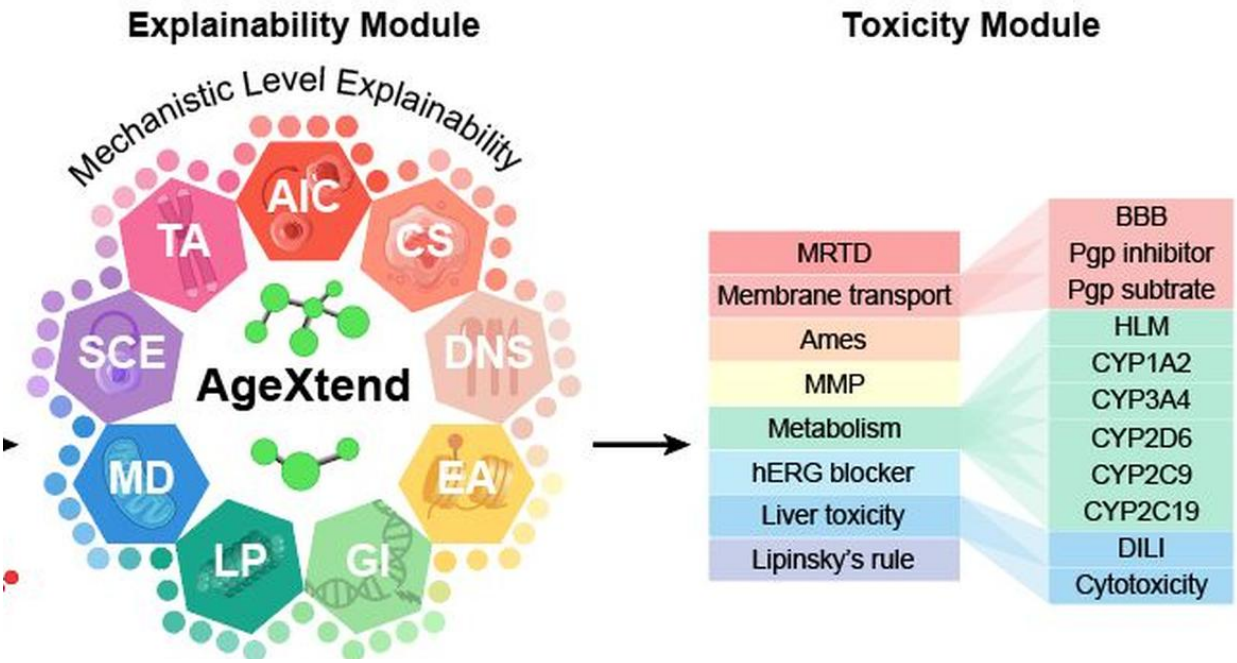
THE HINDU

*Wed, 11 Dec 2024*

# Indian researchers develop AI-based platform to identify age-defying molecules rapidly

Longevity has always been the Holy Grail of medicine, and extending life beyond its conceivable end has driven kings, researchers and pharma companies alike through a roller-coaster ride that

invariably stops at ground level, no wonder the search continues. Now, it is an Indian group from the Indraprastha Institute of Information Technology, Delhi that has used a platform based on Artificial Intelligence to discover molecules that promote healthy ageing.




Researchers at IIIT-Delhi have developed AgeXtend as a tool to efficiently cut down the time taken to identify viable molecules with geroprotectors, or age defying properties, through conventional research. The authors who have published the experiment in a recent issue of *Nature Aging*, have said that they screened over 1.1 billion compounds, over a period of two years, and the platform had uncovered several promising candidates validated through experiments on yeast, worms (*C. elegans*), and human cell models. A fraction of them, less than 1%, have been identified with anti-ageing properties.

The immense potential, and practical use of AI in ophthalmologyGaurav Ahuja, one of the authors, from the department of Computational Biology, IIIT- Delhi, says, “AgeXtend uses AI to predict and identify compounds with anti-ageing properties, assess their safety, and understand their biological effects. It looks at the structure of new molecules and can predict accurately if they have gero-protective characteristics. But where this product diverges from others that might already have been employed by researchers is that it can explain why it considers certain compounds as anti-ageing, it reveals why it chose these components — the mechanisms. This will help to guide further research and indicate the particular direction in which validation needs to proceed.”

**How exactly does it work?**

“The chemical space is like a universe, and I do not know the co-ordinates for my intended destination. What AgeXtend does is to serve as the GPS, pointing out to us where exactly we need to go,” Dr. Ahuja explained. Apparently, it had successfully identified the benefits of well-known molecules like metformin and taurine, even without prior knowledge of these compounds, he added.

IIIT-D PhD scholar Sakshi Arora who is also the lead author in the journal paper, described AgeXtend as “a discovery engine unlocking new possibilities for promoting health and longevity.”

Google announces free access of Maps for Indian developers to help build better solutionsScanning 1.2 billion molecules makes this the largest study so far on the subject, Dr. Ahuja claimed. Candidates scanned included compounds from commercial drugs, Chinese drugs, ayurveda and molecules approved by the U.S. Food and Drug Administration.

The research team has made available its code and data on open source on the website, free for researchers and students, and at a charge for companies. They have also reached out to pharma companies to further investigate the viable compounds.

https://www.thehindu.com/sci-tech/science/indian-researchers-develop-ai-based-platform-to-identify-age-defying-molecules-rapidly/article68969986.ece

THE HINDU

***Wed, 11 Dec 2024***

# New scheme to triple those with access to top journals

The Centre's One-Nation-One-Subscription (ONOS) scheme will more than triple the number of State-affiliated colleges and individual beneficiaries who can access research papers — in the sciences and humanities — from the world's top publishers. While this will double the Centre's annual spend on subscriptions, it will also mean a 62% increase in the number of journals – that make up 95% of published research – available to students.

"In the first phase that will begin on January 1, 2025, such access will be available to all States or government institutions (including State colleges, research bodies). In 2027, after a review, we can consider private universities and colleges," said Ajay Sood, Principal Scientific Adviser (PSA) at a press conference here on Tuesday.

The expected outlay from 2025-2027 for the scheme is ₹6,000 crore. At present, the Centre spends around ₹1,000-1,500 crore annually on journal subscriptions, according to data shared by the PSA officials.

Another initiative as part of the scheme would be the creation of an Article Processing Charges (APC) fund worth ₹150 crore. APC are charges borne by individual researchers, or their institutions, to make their peer-reviewed published research papers freely available. Typically, articles are put behind a paywall and are accessible only to subscribers. The APC charge in an apex journal, such as Nature, is €10,290 (₹9.1 lakh) – though average APC charges are around $2-3,000 (₹80,000-1,60,000).

"We will set up a process to determine which journals and who can be eligible for this," said Mr. Sood.

The overarching sentiment behind the ONOS scheme was to expand the research literature available to students and faculty, outside of privileged Centrally funded institutes and the 171 Institutes of National Importance, said Abhay Karandikar, Secretary, Department of Science and Technology.

India's 'One Nation, One Subscription' plan | Explained"Think of it like getting a cable television package with access to the full bouquet of channels. This doesn't mean we are discouraging open-access publication or giving a preference to non-Indian publishers. Individual institutions can continue their existing practices," he added.

The nodal agency that will coordinate subscriptions will be the Information and Library Network, an autonomous inter-university centre of the University Grants Commission. This network covers more than 6,300 institutions, translating into nearly 1.8 crore students, faculty and researchers. “The student or faculty can register for the service through their institution and read and download papers, even when they aren’t physically present on campus,” said P. K. Banerjee, Joint Secretary, Department of Higher Education.

The ONOS scheme has been in the works since 2019 with India in talks with the European Union to jointly negotiate a deal with major scientific publishers to reduce the cost of access to research literature. The effort, called Plan S, however, was shelved with India choosing to begin its own negotiations. One of the major points of negotiation was trying to keep research publications, resulting from publicly funded effort, free to access. There were also negotiations to reduce APC charges. The current ONOS scheme, however, does not seem to have succeeded on that front though Mr. Sood said that “discounts” could be available if authors published in ‘select’ journals.

“One of the major challenges was getting publishers to commit to having all the journals in their stable be made accessible,” said Virandar Chauhan, senior scientist and involved with the negotiations with publishers.

**ONOS bitten: On India’s ‘One Nation, One Subscription’ plan**

Independent experts said that the ONOS scheme, in its current form, had the promise to improve access to a substantial section of faculty and students in under-served institutions.

However, given that science – India and globally -- generally greatly valued publications in peer-reviewed publications, which were published by large private publishers, affordable, credible open-access publication was a distant dream.

“I still get requests from scientists in smaller universities to forward research papers. Frequently the lack of access meant they – students and professors – are unaware of emerging developments in research and the ONOS can certainly help with that,” said L.S. Shasheedhara, Director, National Centre for Biological Sciences. “However, scientists want their work to be published in high-visibility journals and that comes at a cost. Several models and approaches have been tried but we are still a long way.”

https://www.thehindu.com/sci-tech/science/onos-to-give-under-served-access-to-research-papers-principal-scientific-adviser/article68969769.ece

THE HINDU

***Wed, 11 Dec 2024***

# Deepening India’s steps as a key space-faring nation

India has set ambitious goals for its space programme in the next two decades. These goals hinge on powerful, reusable rockets such as the Indian Space Research Organisation (ISRO)’s upcoming Next Generation Launch Vehicle (NGLV). In addition to the NGLV, India must tap into its private sector to develop more such rockets in order to secure strategic autonomy in its access to outer space.

From an infant space programme in the 1960s, India has grown into a powerful space-faring nation. Preparations for the Gaganyaan mission are underway. Gaganyaan will take an Indian crew to space for the first time, demonstrating Indian human-spaceflight capability. By the end of the

next decade, India aims to have a more sustained presence in space by having its own space station in orbit around earth. It also aims to expand its human-spaceflight capabilities to the moon.

Six decades since Thumba launch, slew of private cos prep for flightRealising these objectives effects a road map that consists of multiple uncrewed missions to the moon, mastering human-centric technologies for space travel and developing powerful new rockets. These rockets have to carry heavier payloads to support humans in space. They should also be financially viable as it will take many test flights to reach the safety and the reliability standards for human-spaceflight to the moon. ISRO is fulfilling these requirements with its upcoming NGLV, which has been recently approved for development by the Union Cabinet.

The significance of the NGLV lies in its heavy lift capability and reusability. The NGLV will triple the payload capacity of the LVM3 (Geosynchronous Satellite Launch Vehicle Mk III), which is India's most powerful rocket. This comes with numerous benefits. Heavy lift rockets ease restrictions related to weight and volume. It frees up the focus of engineers and scientists that would otherwise have to be spent on miniaturisation or weight reduction. It greatly increases the potential of space-related missions. The possibilities increase exponentially.

In contrast to all of India's existing rockets which are expendable as they are built for one-time use, a major part of the NGLV will be reusable. Reusability requires that the rocket keep some of its fuel for controlled descent back to the earth's surface. This reduces the capacity of the rocket to carry heavier loads but offers massive cost savings. Reusability has become necessary for rockets to remain competitive.

The immediate needThe NGLV's development phase will last for the next eight years. In the meantime, the need for heavy lift capability is already felt. India's next uncrewed moon mission is slated to use not one, but two rockets. Two LVM3s will carry the requisite modules. They will then be assembled in space to form one composite vehicle that will go to the moon.

In another instance, GSAT-N2, a communication satellite built by ISRO, was launched on SpaceX's Falcon 9 rocket. It weighed 4,700 kg while the maximum weight that an LVM3 can carry to the Geostationary Transfer Orbit (GTO) is 4,000 kg. A reusable Falcon 9 from SpaceX, a U.S. company, can carry up to 5,500 kg to the Geostationary Transfer Orbit (GTO). Foregoing reusability, an expendable Falcon 9's capacity increases to 8,300 kg. Even this figure is dwarfed in comparison to SpaceX's Falcon Heavy and Starship rockets.

The Starship, which completed its sixth test flight recently, has already achieved significant milestones surrounding heavy lift and reusability. Its mind-boggling capacity to lift over 21,000 kg to the GTO (1,00,000 kg to the Low Earth Orbit) while remaining reusable, shows that the Starship is already past the level of advancement that the NGLV hopes to achieve at the end of its eight-year development phase.

Leveraging the private industrial baseThis is no surprise given ISRO's wider scope, capability and focus. However, it also raises questions about why India is not exploring more paths to produce multiple reusable, heavy lift rockets.

In parallel to developing the NGLV, the Department of Space can give out contracts to the private industry in India to design and develop reusable, heavy lift rockets of their own. Space is an emergent sector with massive potential for commercialisation.

There is likely to be strong private sector interest in India to take up these contracts with the right incentives. Even with a lack of existing faculty in rocket technology among Indian corporations, they can explore foreign collaboration. For instance, various rocket engines are already sold commercially.

A milestone-based funding mechanism where the Department of Space pays private players after they meet certain objectives at every stage is a great way to ensure accountability and reduce cost overruns. In the best case, India may end up with multiple NGLV-like rockets alongside the NGLV, resulting in much-needed redundancy and greater launch frequency. In the worst case, there may be delays but that is accompanied by positive spillovers of innovation, technical capability and infrastructure which will ultimately yield positive outcomes.

The entire gamut of space activities, which ranges from using satellite data for development to extending Indian presence to the moon and Mars, hinges on a resilient supply of space transportation services. India must foster a strong ecosystem for the growth of a specialised industrial base that can cater to India's needs and ambitions in outer space.

https://www.thehindu.com/opinion/op-ed/deepening-indias-steps-as-a-key-space-faring-nation/article68970283.ece

The Indian EXPRESS

*Wed, 11 Dec 2024*

# IIT Madras researchers take a rare look inside the baby brain, one slice at a time

Researchers at IIT Madras have unveiled a cutting-edge tool — a detailed 3D map of five developing baby brains from the second trimester. This map, now the most detailed high-resolution 3D representation of the foetal brain, shows how it undergoes rapid growth during this critical stage and can detect possibilities of brain disorders like autism.

Called DHARINI, this brain atlas is the largest of its kind and the only one that captures the developing brain at such an early stage. It uses advanced technology to map over 5,000 brain sections and more than 500 brain regions. It will be completely free for anyone to access, opening up new possibilities for understanding how our brains grow.

**Why is this brain map significant?**

"This is groundbreaking research for clinicians — it will help us study how the human brain develops in the womb. For instance, we've discovered some surprising differences in timelines; what we previously thought occurred at 14 weeks may actually happen at 17 weeks," said Dr J Kumutha, dean and professor of Neonatology at Saveetha Medical College and Hospital, which collaborated on the project.

Dr Kumutha highlighted that this data could provide crucial insights into developmental disorders like autism, which remain poorly understood and managed. "It may also help explain why some children suffer permanent damage and develop cerebral palsy after hypoxia (a lack of oxygen) while others recover without lasting effects," she said. Additionally, the findings could shed light on changes in the adult brain linked to mental health conditions such as depression or bipolar disorder.

"The output from this will keep scientists busy around the world for years to come. The developments in artificial intelligence and machine learning came from us wondering about how the brain works and trying to recreate that magic using silicon. Better understanding of human brains will create newer models, better models. And though AI is being talked about at the moment, there are improvements that need to be made. We need to understand what intelligence is

from a human perspective to create a better AI tool that we can use," said Kris Gopalakrishnan, co-Founder of Infosys. The research was conducted at the Sudha Gopalakrishnan Brain Centre.

The brain atlas created by IIT Madras is not only the largest dataset in the world, it is also the only one that has been able to capture the growing brain in foetuses. The only other publicly available brain atlas such as this was released by US Allen Institute for Brain Science in 2016. It captured the brain of an adult woman in 1,356 plates.

**How was the mapping done?**

To capture the complex structures of the brain at a cellular level, researchers from IIT Madras used the brains of five still-borns in the second trimester — at 14, 17, 21, 22 and 24 weeks of pregnancy. The brains were frozen and thinly sliced, enabling scientists to see the structures. "The brains are very thinly sliced using complex robotic instrumentation — the slices are of just 10 to 20 micron thickness which is equivalent to 1/10th or 1/5th the thickness of human hair," said Prof Mohanasankar Sivaprakasam, who heads the centre that created the atlas.

These thin slices, which become transparent, are then stained and microscopically imaged in extreme detail. Once digitised, these slides are put together to create a 3D map.

The technology used for freezing, slicing, creating plates, digitising, and putting the map together has been indigenously developed by the IIT researchers. "We are imaging whole human brains at scale — we are processing almost one large brain a month," said Prof Sivaprakasam. To compare, Allen Institute took around five years to map the brain. The IIT centre has collected nearly 230 brains of still- borns and neonates as of now. The institute also plans to study paediatric and older brains.

https://indianexpress.com/article/health-wellness/baby-brain-iit-madras-researchers-look-inside-9718090/

The Indian EXPRESS

***Wed, 11 Dec 2024***

# Aditya L1 and Proba-3 to conduct joint solar observations in 2025

The Aditya L1 mission will be working closely with the European Space Agency's (ESA) Proba-3 mission in making solar observations starting sometime in the second quarter of 2025.

India had launched its maiden mission to study the Sun in September 2023 and Aditya has been operating from the Lagrange point (L1) – at about 1.5 million km away from the Earth – since January this year. Last week, the Indian Space Research Organisation (Isro) successfully launched the ESA-built Proba-3 mission. It is the first space mission with two satellites designed to perform flight formations to mimic the solar eclipse, enabling studies of the solar corona.

What Aditya L1 and Proba-3 share in common is the coronagraph – an instrument designed to block the sun's bright rays and allow astronomers to view and study its periphery, nearby features or objects. Onboard Aditya is the Visible Emission Line Coronagraph (VELC) and the Association of Spacecraft for Polarimetric and Imaging Investigation of the Corona of the Sun (ASPIICS) is on Proba-3.

ASPIICS offers a field of view between the Sun's outer and inner corona – a circular belt that is normally observable during solar eclipse events. It has a 1.4-metre diameter occulting disk mounted on it. Effectively, this means that ASPIICS will facilitate a close-up view of this belt from an earlier 3 solar radii to 1.08 solar radii.

Indian and ESA solar physicists participated in Proba-3's Science Working Team (SWT) meet organised last week in Chennai. During the day-long gathering, discussions on scientific collaborations took centrestage and ways to plan joint solar observation campaigns between Aditya and Proba-3 were tabled.

"Proba-3 has a specific time window for observations. During periods when coronagraphic observations are planned, we would like to conduct specific observation campaigns. It will benefit both ESA and the Indian scientific communities," Dipankar Banerjee, director, Indian Institute of Space Science and Technology, Thiruvananthapuram, who led the Indian delegation at the SWT meet, told The Indian Express.

Post its launch on December 5, the ESA team's Proba-3 Mission Operations Centre in Belgium has been monitoring the twin satellites and sources said their performance has been nominal. Usually, post-launch, the payloads undergo calibration and commission.

On Monday, the ESA said Proba-3's commissioning phase is going on and the onboard were tracking the orientation of the slowly spinning spacecraft. Presently, the ESA teams are conducting initial calibrations. The actual solar observations are expected to commence sometime around the end of February-March next year. Among the three main payloads, the Digital Absolute Radiometer (DARA) could be the first that is likely to commence operations soon. Comparatively, it is a small payload that will maintain a continuous measurement of the Sun's total energy output, known as the total solar irradiance.

According to the latest update by ESA, depending on the first commission phase of Proba-3's success, the spacecraft pair – the coronagraph and the occulter – is expected to get separated sometime in early 2025. Individually, they will then begin check-outs and carry out early observations.

https://indianexpress.com/article/technology/science/aditya-l1-and-proba-3-to-conduct-joint-solar-observations-in-2025-9717143/