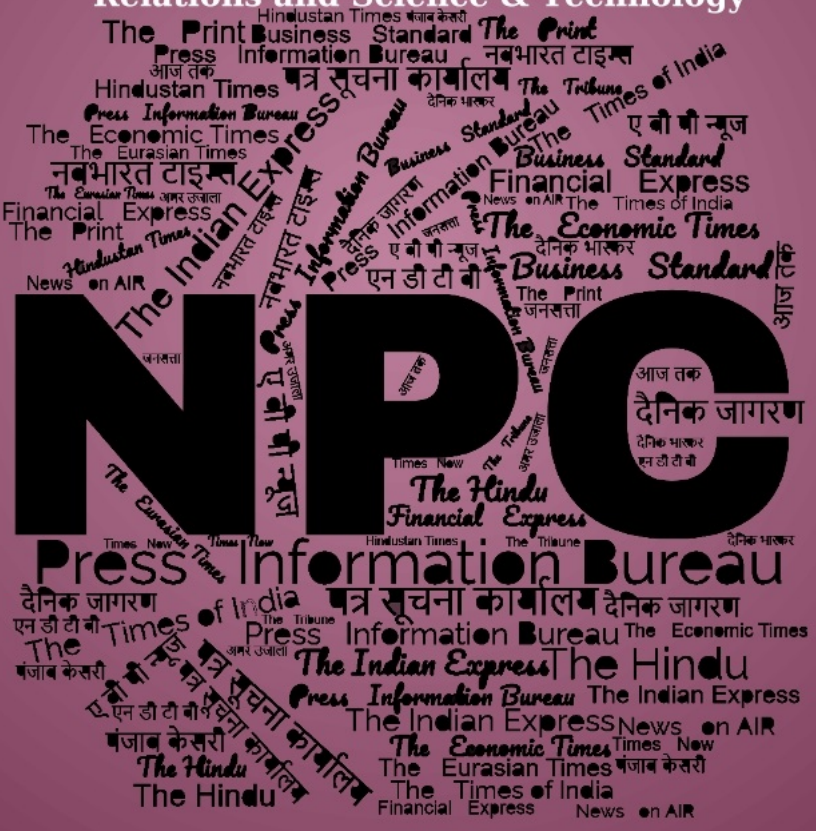
अक्टूबर
Oct
2024

खंड/Vol. : 49 अंक/Issue : 195
19-21/10/2024

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

A Daily service to keep DRDO Fraternity abreast with DRDO Technologies, Defence Technologies, Defence Policies, International Relations and Science & Technology



रक्षा विज्ञान पुस्तकालय
Defence Science Library
रक्षा वैज्ञानिक सूचना एवं प्रलेखन केंद्र
Defence Scientific Information & Documentation Centre
मेटकॉफ हाउस, दिल्ली - 110 054
Metcalfe House, Delhi - 110 054

CONTENTS

DRDO News

THE HINDU

Fri, 18 Oct 2024

Former DRDO DG services recalled

The contributions of **former Defence Research and Development Organisation (DRDO) director general Suri Bhagvanatam** instrumental in setting up a chain of defence laboratories for developing missiles, aircraft, combat vehicles, electronic warfare systems, etc., were recalled at the 115th birth anniversary celebrated by the Suri Bhagavatam on Thursday.

Tripura Governor N. Indrasena Reddy, former DRDO chairman G. Satheesh Reddy, Osmania University Registrar P. Lakshmi Narayana and others spoke in glowing terms about Suri Bhagavatam, who also worked as Director of Indian Institute of Science (IISc), and his role in developing the country's strategic weapons systems.

Excellence awards in his name were also given away to IIT-Hyderabad Director B.S. Murthy, DRDO DG-Missiles & Strategic Systems U. Raja Babu, NRSC director Prakash Chowhan, CEO & CTO IntelligentDesign Ravi Nimmagadda and chairman of Rivi group of companies M. Shashibusan, said a press release.

https://www.thehindu.com/news/national/telangana/former-drdo-dg-services-recalled/article68765552.ece

Defence News

Defence Strategic: National/International

Press Information Bureau
Government of India

Ministry of Defence

Sun, 20 Oct 2024

Indian Navy - Royal Navy Of Oman Maritime Exercise (Naseem Al Bahr)

INS Trikand and Dornier Maritime Patrol Aircraft, participated in the Indo-Oman bilateral naval exercise Naseem-Al-Bahr with the Royal Navy of Oman Vessel Al Seeb off Goa from 13 to 18 October 24.

The exercise was conducted in two phases: with harbour phase from 13 to 15 October 24, followed by the sea phase. As part of harbour activities, personnel from both Navies engaged in professional interactions, including Subject Matter Expert Exchanges and planning conferences. In addition, sports fixtures and social engagements were also held.

During the sea phase of the exercise conducted from 16 to 18 Oct 24, both ships carried out various evolutions, including gun firings at surface inflatable targets, close-range anti-aircraft firings, manoeuvres, and Replenishment at Sea Approaches (RASAPS). The integral helicopter operated from INS Trikand and undertook cross-deck landings and vertical replenishment (VERTREP) with RNOV Al Seeb. Additionally, the Indian Navy's Dornier aircraft provided Over-the-Horizon Targeting (OTHT) data with the participating ships. To further enhance interoperability, Indian Navy Sea Riders embarked on RNOV Al Seeb for a day. The exercise helped strengthen interoperability and enhanced understanding of each other's best practices.

The exercise was a resounding success, achieving its aims of enhancing interoperability, fostering mutual understanding, and strengthening cohesion between the Indian Navy and the Royal Navy of Oman.

This exercise further reaffirms India's commitment to constructive collaboration and mutual growth with like-minded nations in the Indian Ocean Region.

https://pib.gov.in/PressReleasePage.aspx?PRID=2066452

Press Information Bureau
Government of India

Ministry of Defence

Sat, 19 Oct 2024

Closing Ceremony Of Malabar 2024

The Sea Phase of MALABAR 2024 concluded on 18 Oct 24 at Visakhapatnam. This edition of MALABAR, witnessed participation of warships with their integral helicopters, long range maritime patrol aircraft and submarine. Units participated in complex and advanced exercises in the domains of surface, sub-surface and air warfare. Major exercises included surface weapon firings, anti-air shoots, air defence exercises, anti-submarine warfare exercises, extensive operations of ship borne helicopters, seamanship evolutions including fueling from tankers and maritime interdiction operations.

MALABAR 2024 Sea Phase serves as a testament to the commitment of participating nations towards enhancing understanding, collaboration and engagement in the maritime domain as the world grapples with increasingly complex maritime security challenges.

The sea phase culminated with a Closing Ceremony that included a review of operational aspects of the Sea Phase and enabled all participating navies to interact and exchange views by sharing experiences and best practices.

https://pib.gov.in/PressReleasePage.aspx?PRID=2066287

Press Information Bureau
Government of India

Ministry of Defence

Fri, 18 Oct 2024

Indian Navy's first Training Squadron departs Manama, Bahrain

Indian Navy's First Training Squadron (1TS) - INS Tir and ICGS Veera completed their long range training deployment to Manama, Bahrain, on 16 Oct 24. During the port call, Capt Anshul Kishore, Senior Officer, 1TS called on Maj Gen Salman Mubarak Al-Doseri, Royal Command Staff and National Defence College and Cmde Ahmed Ebrahim Buhamood, Commander Flotilla and held discussions on regional maritime security challenges and avenues for future collaboration in training and operations. Senior Officer, 1TS along with CO ICGS Veera also called on Cmde Mark Anderson of Royal Navy, Deputy Commander of Combined Maritime Forces (CMF). Interactions at US Naval Forces Central Command (NAVCENT) focussed on strengthening maritime

cooperation and reinforcing strategic partnership between the Indian Navy and other maritime forces in the region. Further, visits were organised onboard 1TS ships for Bahrain Defence Forces, CMF and Naval personnel from other friendly foreign nations, enabling understanding of common operating procedures paving way for collaborative exercises in the future. A delegation from 1TS including sea trainees visited Naval Support Facility, Bahrain gaining insights into Task Force 59, USNAVCENT and CMF operations.

In a spirit of camaraderie and goodwill, Naval personnel from USNAVCENT and Indian Navy participated in a friendly football match. In another event, the Indian Navy band delivered a captivating performance at Manama. A community outreach activity was undertaken at 'Tree of Life Social Charity Society'. Besides this, an official reception was hosted onboard 1TS for the delegates of Embassy of India, Bahrain Defence Forces and other military & civilian dignitaries and members of the Indian diaspora.

The visit concluded with a MPX between INS Tir, ICGS Veera and RBNS Al Farooq. The successful completion of the visit by ships of 1TS reaffirms strong maritime ties between the two Navies.

https://pib.gov.in/PressReleasePage.aspx?PRID=2066073

Press Information Bureau
Government of India

Ministry of Defence

Sat, 19 Oct 2024

Think critically, adapt to unforeseen circumstances & leverage latest technology to gain strategic advantage in today's times: Raksha Mantri to military leaders at National Defence College, New Delhi

"Need to stay prepared to tackle the possibility of adversaries weaponising day-to-day tools & tech"
"Ability to anticipate, adapt & respond will define our readiness to deal with emerging challenges"
Govt's focus is to make a technologically-advanced & future-ready military, says Shri Rajnath Singh

Raksha Mantri Shri Rajnath Singh has called upon the military leaders to think critically, adapt to unforeseen circumstances and leverage latest technological advancements to gain a strategic advantage in today's ever-evolving geopolitical landscape. Addressing the MPhil Convocation

ceremony of 62nd National Defence College (NDC) course (2022 batch) in New Delhi on October 19, 2024, he urged the officers to become strategic thinkers who are capable of anticipating future conflicts, understanding global political dynamics and leading with both intelligence & empathy.

“Warfare, today, has surpassed the traditional battlefields and now operates in a multi-domain environment where cyber, space & information warfare are as critical as conventional operations. Cyber-attacks, disinformation campaigns and economic warfare have become tools that can destabilise a whole nation without a single shot being fired. There is a need for military leaders to possess the ability to analyse complex problems and devise innovative solutions,” Raksha Mantri said.

Shri Rajnath Singh described the rapid technological advancements in today’s times as the most crucial force which drives the evolution of a future-ready military. “From Drones and Autonomous Vehicles to Artificial Intelligence (AI) & Quantum Computing, the technologies shaping modern warfare are evolving at a breath-taking pace. Our officers must understand these technologies and be able to harness them,” he stated.

Raksha Mantri exhorted the defence officers to carry-out in-depth analysis on how best to leverage niche technologies, such as AI, which has the potential to revolutionise military operations. He also stressed on the need to decide on the threshold level of the decisions AI is allowed to take, highlighting the importance of human intervention. Increasing reliance on AI in decision-making processes can raise concerns about accountability & the potential for unintended consequences, he said.

Shri Rajnath Singh underlined the need to stay prepared to tackle the possibility of adversaries weaponising the tools and technologies used by people on a daily basis. “The mere thought that our adversaries exploiting the tools serves as a reminder of the urgency with which we must prepare for these threats. Institutions like NDC must evolve their course curriculum to not only incorporate case studies on such unconventional warfare but also to drive strategic innovation. The ability to anticipate, adapt & respond will define our readiness in the face of ever-evolving challenges,” he said.

On the aspect of ethical dilemma faced by military leaders about the extent to which machines should make life-and-death decisions, Raksha Mantri said academic learning in ethics, philosophy and military history will provide officers with the tools to handle the sensitive subject & make sound decisions. He highlighted the critical role played by defence academic institutions, such as NDC, in instilling the moral framework in future leaders to deal with the challenges of present-day warfare. He urged the officers to have a firm grasp of geopolitics, international relations & the complexities of global security alliances, as the decisions made by them can have far-reaching consequences that extend beyond the battlefield and into the realm of diplomacy, economics & international law.

Shri Rajnath Singh voiced the Government’s resolve of developing a technologically-advanced and agile military, capable of responding to emerging threats & safeguarding national security. He asserted that while efforts are being made to ensure that the Armed Forces remain future-ready and resilient, defence institutions like NDC play a pivotal role in shaping the perspectives of military

leaders & equipping them with the expertise necessary to handle the complexities of modern-day warfare.

Raksha Mantri added that the curriculum of academic institutions must remain dynamic and adaptable to ensure its relevance to practitioners in the field. He described the challenges of modern warfare, ethical dilemmas, and strategic leadership as not just topics for reflection, but the foundation upon which the future of India's national security will be built.

Emphasising that learning must be a continuous process not confined to the duration of a course, Shri Rajnath Singh suggested the introduction of online, short-term modules on critical subjects to extend the reach and impact of NDC. "This would allow more officers, irrespective of their geographical location or time constraints, to benefit from the knowledge and expertise offered by such a prestigious institution," he stated.

Raksha Mantri termed the extensive and well-established alumni network of NDC as an untapped resource that can play a pivotal role in this initiative. By leveraging the experience and insights of its alumni, NDC can foster a thriving, collaborative learning ecosystem that continuously enriches the professional development of defence personnel, he said.

Shri Rajnath Singh congratulated the officers of the 62nd NDC Course who were awarded the MPhil degree, especially those from friendly countries. He termed them as a bridge between India and their respective nations. He added that challenges and concerns shared during the course would pave the way for enhancing the collective security and prosperity in the region.

Defence Secretary-designate Shri RK Singh, Commandant NDC Air Marshal Hardeep Bains, Registrar, University of Madras Professor S. Elumalai, senior officers of Ministry of Defence and faculty members of NDC were present on the occasion.

https://pib.gov.in/PressReleasePage.aspx?PRID=2066290

Press Information Bureau
Government of India

Ministry of Defence

Fri, 18 Oct 2024

INS Shardul Concludes Port Visit At Dubai

INS Shardul as part of long range training deployment concluded its visit to Port Rashid, Dubai, UAE, on 16 Oct 24. The visit marked another important milestone in strengthening maritime cooperation between India and UAE. During the port call, the key engagements included interactions with UAE Navy, cross training visits, and community outreach activities.

The sea trainees of INS Shardul participated in organized visits to Naval Officers Training Academy and UAE Naval Ship providing opportunity for professional interactions and productive discussions on shared knowledge & training practices. Joint training sessions, yoga activities, and

friendly sports fixtures were the other highlights of the visit. A formal reception was hosted onboard INS Shardul which was attended by personnel and officials of UAE Navy, diplomats and distinguished members of the Indian community.

On departure from Dubai, INS Shardul participated in a Maritime Partnership Exercise with the UAE Naval ship Al Quwaisat. Both ships executed a series of naval maneuvers, communication drills, and coordinated movements, demonstrating mutual coordination and interoperability.

The visit of Indian Naval ship to Dubai underscores the importance of India-UAE maritime relations and commitment to capacity enhancement in maritime domain aligned with the vision of SAGAR in IOR.

https://pib.gov.in/PressReleasePage.aspx?PRID=2066123

THE HINDU

Fri, 18 Oct 2024

House panel to study armed forces' preparedness to deal with 'non-kinetic warfare'

Indian armed forces' preparedness to deal with "hybrid warfare" is one of the 17 subjects that the Parliamentary Standing Committee on Defence has narrowed down for deliberations for the year.

According to informed sources, Leader of the Opposition in the Lok Sabha Rahul Gandhi, a member of the committee, spoke extensively on the growing danger of "non-kinetic warfare" citing the examples of ongoing Russia-Ukraine and Israel-Palestine conflicts, where these methods have been deployed. He contended that the future wars will be fought using these tools and urged chairman and BJP MP Radha Mohan Singh, at the committee's first meeting on October 15, to ensure that the parliamentary panel closely investigates the Army's preparedness to face these threats.

Several other members concurred with the view, citing the recent spate of pager blasts in Lebanon, which is an example of a "non-kinetic warfare". As per the Lok Sabha bulletin dated October 16, "preparedness of the armed forces in terms of hybrid warfare including cyber, kinetic and non-kinetic warfare and anti-drone capabilities," is listed among the 17 subjects that the panel will discuss.

Evolving concept

Kinetic warfare typically means military means employing a range of weapons. Non-kinetic warfare is an evolving concept, it goes beyond the usual military tactics and can involve electronic warfare, cyber, information, psychological and economic among others. Importantly, it can involve non-military stakeholders too.

With technological progress, many believe that the non-kinetic warfare can turn out to be deadlier than the traditional methods and conflicts may be won by non-kinetic means even before a bullet is

fired. For example, a massive cyber or malware attack on critical infrastructure of a country such as power grids and hospitals can cripple a nation. Such cyberattacks have been seen globally. In the domain of counter-drone technologies, the armed forces have been looking to induct a range of kinetic and non-kinetic solutions to neutralise drones and drone swarms, which have emerged as major disruption in warfare as seen in Ukraine.

While kinetic options are to physically shoot and destroy the drones, non-kinetic options are jamming them or taking control of their operation, using laser or electro-magnetic waves to disrupt their operations. The House panel will also assess the "strategic operational preparedness of the defence forces in view of the current international security scenario, including border security," which will involve reviewing the prolonged stand-off on the Line of Actual Control (LAC) between India and China.

Indigenous production

Among other topics, the panel will be reviewing "indigenous defence production", "resettlement policies, healthcare facilities and avenues for ex-servicemen" and "assessment of next of kin policy in the armed forces."

Last month, under an initiative pushed by Chief of Defence Staff General Anil Chauhan, the Headquarters Integrated Defence Staff conducted a first of its kind tri-services "future warfare" course which the Defence Ministry termed a rank agnostic course for Major Generals to Majors and their equivalent level officers from other services.

It is intended to acquaint the officers with the operational and technological aspects of modern warfare. The course focuses on key areas related to future warfare to develop an understanding on the manner in which future wars will manifest in terms of being contact, non-contact, kinetic, non-kinetic, psychological or informational as also the domains where they will be fought, be it cyber, space or electromagnetic spectrum, according to the Defence Ministry.

https://www.thehindu.com/news/national/house-panel-to-study-armed-forces-preparedness-to-deal-with-non-kinetic-warfare/article68769409.ece

THE ECONOMIC TIMES

Sun, 20 Oct 2024

Indigenous marine utility copter set to fly by May next year

An indigenous marine utility helicopter, which is required in significant numbers by the Navy, is set to undertake its first test flight by May next year, with the prototype already under construction, officials aware of the program have told ET.

The Utility Helicopter Marine program has been underway to meet a requirement of 111 helicopters that can operate at sea and from frontline warships for utility missions like transportation of personnel, cargo delivery and emergency evacuation.

Sources said that the build process for the test aircraft is underway and systems that will be integrated onboard the machine are being simultaneously tested and certified on a test chopper by Hindustan Aeronautics Ltd. "The aircraft are getting built and by next year in May, we should be able to fly. We are already testing the systems that have to be integrated on the helicopter," officials said.

While it is based on the advanced light helicopter design, officials said that extensive modifications and structural changes being done make it akin to the development of a new helicopter.

The program was handed to HAL after an initial plan to rope in a foreign helicopter manufacturer to produce them in India was put aside. Several major modifications are being done to the ALH platform to meet the requirements of the Navy.

https://economictimes.indiatimes.com/news/defence/indigenous-marine-utility-copter-set-to-fly-by-may-next-year/articleshow/114403511.cms

THE ECONOMIC TIMES

Sun, 20 Oct 2024

India-China talks over Ladakh patrolling points see advances

India-China talks over friction points along the Line of Actual Control in the Ladakh sector have witnessed forward movement during the last two weeks.

Interlocutors of both the countries are engaged in last-minute negotiations. Issues related to patrolling in Depsang and Demchok areas of Ladakh sector were discussed threadbare, said people in the know.

Disengagement of troops will be the first goal. Coming just days ahead of the BRICS summit in Russia, the development is being viewed positively by the two sides. Prime Minister Narendra Modi and Chinese President Xi Jinping will attend the meeting to be held in Russia's Kazan from Tuesday to Thursday.

During the 2023 BRICS summit in Johannesburg, Modi-Xi structured dialogue could not be organised due to last-minute differences. In September, India and China had agreed to "work with urgency and redouble their efforts" to realise complete disengagement in Ladakh.

In August, India and China, at the 31st meeting of the Working Mechanism for Consultation & Coordination on India-China Border Affairs, had decided to uphold peace in border areas.

https://economictimes.indiatimes.com/news/defence/india-china-talks-over-ladakh-patrolling-points-see-advances/articleshow/114403567.cms

THE WEEK

Sat, 19 Oct 2024

With ‘Sagar Kavach' exercise, Indian Coast Guard aims to unite forces against maritime threats

The Indian Coast Guard, in coordination with the Indian Navy, Customs, Coastal Police, Central Industrial Security Force, Mormugao Port Authority and the Goa government's Fisheries and Captain of Ports departments, conducted Coastal Security Exercise ‘Sagar Kavach’ with the aim of improving coastal and maritime security framework.

The exercise stimulated various realistic scenarios to test and improve the collective response of the forces to maritime security threats, such as infiltration, smuggling, piracy, and natural disasters.

‘Sagar Kavach’ aims to undertake awareness and information sharing among various stakeholders, to form a unified coastal security communication plan, the Coast Guard had said in a statement.

"This joint exercise demonstrates our commitment to safeguarding our coastline and protecting the nation's maritime interests," the Coast Guard further said.

The two-day drill began on Wednesday. This was the second edition of the security exercise.

The exercise aims to revalidate standard operating procedures (SOPs) and evolve synergy amongst various agencies to achieve 100 per cent effective patrolling along the coastline to identify gaps and interdict infiltrators to prevent landing and attacks on various state vessels, it added.

https://www.theweek.in/news/defence/2024/10/19/with-sagar-kavach-exercise-indian-coast-guard-aims-to-unite-forces-against-maritime-threats.html

THE ECONOMIC TIMES

Fri, 18 Oct 2024

Army's Sudarshan Chakra Corps conducts 'Swavlamban Shakti' exercise

With the aim of enhancing combat capabilities through the integration of niche and emerging technologies, the Army's Sudarshan Chakra Corps of Southern Command is conducting 'Exercise SWAVLAMBAN SHAKTI' at Babina Field Firing Ranges near Jhansi. The exercise began on Thursday and will continue till October 22, a defence release said here.

The XXI Corps or Sudarshan Chakra Corps, a strike corps of the army, is headquartered in Bhopal. The exercise that aims to integrate New Technology Equipment (NTEs) into the Army's offensive

strategies, ensuring readiness for future warfare scenarios, started in the presence of Lt Gen Prit Pal Singh, General Officer Commanding of Sudarshan Chakra Corps.

It is expected to help identify and prioritize critical technologies and equipment for future development and procurement, the release said. Approximately 1,800 personnel, 210 armoured vehicles, 50 specialist vehicles and a range of aviation assets are participating in the exercise.

Over 50 NTEs from more than 40 prominent industry partners-including DRDO labs and emerging defence startups are being showcased, the release said.

Some of the cutting-edge technology being evaluated includes Swarm Drones, Kamikaze Drones, Logistic Swarm Drones, Handheld Drone Jammers, Software Defined Radio-based Mobile Adhoc Network Systems and Robotic Mules, All-Terrain Vehicles (ATVs)/Light Armoured Multipurpose Vehicles (LAMVs), Guided Precision Aerial Delivery Systems (GPADS), LASER-based Communication Systems, Directed Energy Weapons, and indigenously developed long-endurance UAVs.

The exercise is a significant step towards fostering collaboration between the Indian Army and the defence industry, the release added. The event is also being conducted with an aim to boost indigenous defence manufacturing capability in fields of drone and antidrone technologies. It will provide an opportunity to young entrepreneurs and MSMEs to display and validate their capabilities, the release added.

https://economictimes.indiatimes.com/news/defence/armys-sudarshan-chakra-corps-conducts-swavlamban-shakti-exercise/articleshow/114356677.cms

ThePrint

Fri, 18 Oct 2024

German govt looks to ‘free’ India from dependence on Russia. Arms sales, military cooperation in focus

Expanding the security partnership between India and Germany, especially to reduce New Delhi’s reliance on Russian defence purchases, along with deepening economic and energy ties and promoting this within the European Union (EU), figure in the ‘Focus on India’ paper adopted by the German cabinet Wednesday.

The new perspective on ties comes around 10 days before Chancellor Olaf Scholz and at least eight cabinet ministers are expected to visit New Delhi for intergovernmental consultations.

One of the key pillars envisioned by Berlin is in the realm of security, specifically cooperation on arms and the joint presence of German and Indian armed forces in the Indo-Pacific on a “more permanent footing”.

“The German government aims to conclude an agreement on reciprocal logistical support of the armed forces with India in order to facilitate deployments of the Bundeswehr (German armed forces) in the Indo-Pacific in the future,” the paper said.

On 22 January 2022, the German naval frigate Bayern made a rare port call, docking in Mumbai as Berlin sought to send a signal to China by sailing through the South China Sea before reaching India.

The frigate Baden-Württemberg and a replenishment ship, Frankfurt am Main, are expected to dock at Goa around the time of Scholz’s visit later this month. The two ships will be participating in a manoeuvre with the Indian Navy over several days. Similarly, the German Air Force took part in the Tarang Shakti exercise hosted by the Indian Air Force in August.

Berlin ambitious about defence trade

If the range of direct armed forces cooperation has increased in recent years, Berlin’s ambitions include a greater role for its defence industry with India.

“Germany wants to be a reliable security partner… We want India to rely more strongly on German arms companies as partners in future, not least so that it can free itself further from its arms-related orientation towards Russia. The German government will therefore expand its arms cooperation with India,” the ‘Focus on India’ paper said.

German company ThyssenKrupp Marine Services (TMSS) is one of the two companies in the running for the contract for the Indian Navy’s P75 submarine project. The other is Spain’s Navantia. Spanish Prime Minister Pedro Sánchez is expected in India the day after Scholz leaves.

The project envisions six conventional diesel-electric submarines with air independent propulsion (AIP) technology, which will allow the submarines to stay longer underwater. First envisioned in 1998, the project is now awaiting India’s final decision on the winning bidder.

Economic and energy partnership

Berlin is keen to deepen the economic relationship with New Delhi, especially as it aims to diversify its supply chains with the aim of making them more resilient.

China and Russia have long been important economic partners for Germany. However, since the start of the Russia-Ukraine war, Berlin has sought to search for other energy sources, aiming to cut down on its reliance on Moscow and looking to expand its economic footprint in India.

On the latter, the new paper says: “The German government will strive to overcome structural challenges which make it difficult for German companies to enter the Indian market. Especially the fast pace at which renewable energies are being expanded in India offers great potential for cooperation, as does a future green hydrogen economy and closer cooperation on critical raw materials.”

A bridge between India & EU

Berlin has come out in strong support of a comprehensive free trade agreement between India and the European Union (EU), which has been under negotiation since 2022. However, in the past few

days, both India and the EU Ambassador to India, Hervé Delphin, have highlighted that there exist quite a few differences between the two parties in terms of where they stand.

Piyush Goyal, India's minister for commerce and trade, has specifically hit out at the EU's new environmental regulations that will come into force in the next couple of years—the Carbon Border Adjustment Mechanism (CBAM).

Acknowledging India's concerns over CBAM—a border tax being introduced from 1 January, 2026 on seven energy-intensive sectors—the paper highlighted that Berlin would support a dialogue with India over this issue.

"In order to address the Indian government's concerns about trade policy in light of the EU's Carbon Border Adjustment Mechanism (CBAM), we intend to call within the EU for a constructive dialogue with India which focuses on economic incentives for climate action measures, thus promoting the clean production of industrial products in states outside the EU," it read.

Other sectors that Berlin is looking to explore include labour mobility, sustainable development, support for reform of the United Nations and triangular cooperation with third countries—specifically in Africa.

https://theprint.in/diplomacy/german-govt-looks-to-free-india-from-dependence-on-russia-arms-sales-military-cooperation-in-focus/2318099/

The Indian EXPRESS

Fri, 18 Oct 2024

Amidst global conflicts, inward looking approach key for aviation equipment sustenance: Air Marshal Garg

AMIDST ONGOING conflicts in the world, an inward-looking approach in design, development, and the certification of aviation equipment is the only way for sustenance in the long run, said Air Marshal Vijay Kumar Garg of the Indian Air Force's Maintenance Command during a seminar in Pune.

The Headquarters Maintenance Command of the IAF hosted a seminar, titled AVISEM-24 on Thursday and Friday at IAF's Base Repair Depot in Pune on the theme 'Avionics Standards and Certification'. The event was presided over by Air Marshal Vijay Kumar Garg, Air Officer Commanding in Chief, Maintenance Command, and was attended by senior functionaries of the Air Headquarters. Attendees included scientists from the Centre for Military Aviation Certification (CEMILAC), Directorate General of Aeronautical Quality Assurance (DGAQA), National Aerospace Laboratory (NAL), Aeronautical Development Agency (ADA) as well as representatives of private industry bodies.

Thursday's sessions included requirment projections for the IAF to undertake indigenous repairing, designing and development of different avionics systems, followed by an exhibition of capabilities of private industry. On Friday, brainstorming sessions were conducted on the theme 'certification and quality assurance'.

"Air Marshal Garg touched upon the importance of becoming self-reliant in sustaining the wide range of assets the IAF operates. On the background of ongoing conflicts in the world, he emphasised that looking inwards while undertaking in-house design, development and certification of aviation equipment is the only way forward to ensure sustenance in the long run. On this front, the Air Marshal informed the industry participants about the commitment of IAF to pursue indigenous and in-house repair, refurbishment and replacement of avionics systems on board the IAF platforms. He touched upon different projects currently underway in Maintenance Command worth up to Rs 6000 crore." said a press statement issued through the Defence PRO, Pune.

"In conclusion Air Marshal reiterated the commitment of IAF in handholding the industry partners in sharing available information and knowledge during the process as well as sharing the resources for testing and evaluation of products. NAL has been co-opted by the IAF as their consultant in this process to help the industry in all the steps involved in indigenous design and development of avionics systems." the release said.

The two-day event saw participation by over 100 industry partners by way of displaying their capability, sharing their experiences as well as understanding requirements of IAF. A Memorandum of Understanding (MoU) between Headquarters Maintenance Command and MCCIA for exploring areas of cooperation for such work was also signed during the event on Friday.

https://indianexpress.com/article/cities/pune/amidst-global-conflicts-aviation-equipment-sustenance-air-marshal-garg-9627252/

ThePrint

Sun, 20 Oct 2024

Indian Army helmets in spotlight. Upgrades over the yrs & how they stack up against US & China's gear

The India-US '*Yudh Abhyas*' in Rajasthan last month has sparked comparisons between the helmets worn by Indian and American troops. While the US soldiers wore ballistic helmets during the joint military exercise, Indians troops were equipped with mere bullet-proof helmets, which provide little protection.

This is not the first time that such comparisons have emerged. In 2018, when India-US conducted the 'Yudh Abhyas' in Uttarakhand's Chaubatia, the US Army's official X handle posted a photo of an Indian Army personnel trying on the Advanced Combat Helmet of one of the US troops. Many social media users, at the time, noticed the drastic differences in the helmets of the two sides.

A lot has changed since 2018. The standard-issue Model 1974 Helmet was around till 2018. Kanpur-based Indian company MKU's bullet-proof helmets have replaced them now. The phasing out of older models for newer ones though is an ongoing process.

Model 1974, with its fibre-glass body and nylon suspender, could withstand a round from a 9mm carbine, but an AK-47 round from close range could easily pierce it. In 2018, the Indian Army ordered 1,58,000 bullet-proof helmets from MKU, but these do not help against AK-47 bullets.

When it came to counter-insurgency operations in Jammu and Kashmir and the Northeast, Indian soldiers made a jugaad—patkas. Rounded, thick steel with a combat cloth around it, a patka protects soldiers from close-range heavy firing, say from an AK-47 used by militants. However, patkas are crude and heavy, weighing roughly 2.5 kg. Also, patkas do not provide full protection, covering only the forehead and back of the head. There have been cases where soldiers using patkas were injured due to hits to the head or ricochets.

Back in 2018, the Indian Army, apart from the MKU helmets, ordered nearly 1.6 lakh Kevlar-based helmets, which are lighter. But, to this day, soldiers in several operational areas continue to rely on the patkas during close encounters with insurgents.

In 2020, the Army started procuring ballistic helmets by issuing an RFI (request for information). Currently, 4.8 lakh frontline troops have ballistic helmets. According to Army sources, 40 percent of the procurement is complete, while 50 percent is left. Roughly 10 percent of the procurement will be left untouched for future development, i.e., in case of any technological advancements, the Army will get new versions of those helmets, ensuring that at least some frontline troops get the newer versions.

Several Army commands and specific units have already gone in for specialised ballistic helmets that provide better protection and allow the soldier to use several gadgets. For instance, troops in the Special Forces use the EXFIL ballistic helmets, which feature a hybrid composite shell for increased strength and a unique geometry for optimal fit. India acquired the US-made EXFIL High Cut Ballistic Helmet in limited numbers in 2020.

Moreover, MKU has designed its first combat helmet for Sikh soldiers. The Kavro SCH-112-T—a special ballistic helmet that Sikh soldiers can wear on the top of their turban—provides 'all-round ballistic protection'.

MKU has exported over 30,000 helmets to the Philippines Army and police forces, according to a report. Several other countries, such as Indonesia, Thailand, Malaysia and Egypt, have shown an interest in MKU body armour, including helmets.

MKU, in November last year, unveiled its latest product, the Kavro Doma 360 lightweight ballistic helmet, at MiliPol in Paris.

A look at what major armies are using

The US

The United States replaced most of the Personnel Armour System for Ground Troops (PASGT) helmets with the Advanced Combat Helmet, known to be lighter than the PASGT and equipped with a Night Vision Goggle (NVG) bracket hole.

Several types of advanced helmets, now used by militaries across the globe, are more than just a piece of protective headgear. Currently, helmets infused with technology aim to drive situation awareness for the troops using them.

The latest headgear has several devices attached to it, such as night goggles or electro-optical devices, GPS devices and several other HMDs (head-mounted devices). These devices enable real-time situational awareness that soldiers can convey to command and control centres for inter- and intra-squad operational efficiency.

One of the main changes in protective headgear is that newer versions are lighter in weight but provide increased protection against ballistics penetration or resistance to fragmentation by ballistics. There is also a difference in the material used to make the helmets—'aramids'/Kevlar in older helmets, and polyethylene in the newer ones.

The US has been making strides in inducting newer types of helmets. According to Army Times, the US Army's 82nd Airborne Division received the Next Generation Integrated Head Protection System helmet, the latest version of the Integrated Head Protection System (IHPS), in February 2024. The new helmet weighs nearly 3.27 pounds. The Army Times reported further that the helmet provides increased ballistic and fragmentation protection while reducing the weight required to reach this protection level by 40 percent.

The US Army also has some PASGT and the Modular Integrated Communications Helmet (MICH) in service.

Russia & China

The Russian Army uses the 6B47 helmets. These are ballistic helmets, part of the Ratnik infantry combat programme, aimed at modernising the Russian military. The helmets use aramid material. It is capable of being equipped with mounting communication equipment.

Russia also has the Bars-L helmet, designed by the Steel Research Institute, part of Rostec's Kalashnikov Concern. Russia first demonstrated the Bars-L at an arms exhibition in St Petersburg in April 2024.

Russian forces also use the 6B7 helmets, which have replaced the older SSh-68 helmet.

While not much information is available on helmets used by China, the QGF-O3 helmet took design elements from the American PASGT and German M826s, according to Far East Tactical. The helmets use Kevlar composite material. Previously, the Chinese Army used the steel GK80 helmets. The Chinese military is now expecting to get the Type 21 PLA helmet.

Reports suggest China has also come up with advanced antenna helmets, equipped with bomb-triggering buttons, including a 'self-destruct' button.

https://theprint.in/defence/indian-army-helmets-in-spotlight-upgrades-over-the-yrs-how-they-stack-up-against-us-chinas-gear/2317783/

The EurAsian Times

Sun, 20 Oct 2024

From MiG-21 With A Handycam To MQ-9B Predator Drones & SPS III — India's ISR Capability Gets A Big Boost

The Kargil conflict in 1999 revealed Indian inadequacies in surveillance of the conflict zone. It took definitive time to identify the positions occupied by the enemy. In fact, a young IAF pilot innovated by flying a MiG-21 with a Handycam to film enemy positions, which led to accurate targeting.

25 years later, the government of India has taken two crucial decisions to boost surveillance capability and national security: approving the procurement of Predator Drones from the US and the Space Based Surveillance III project. Both these decisions will boost strategic surveillance capability and send a strong signal in the region. The Cabinet Committee on Security (CCS) approved the acquisition of 31 MQ-9B weaponized Unmanned Combat Aerial Vehicles (UCAV) for the three services under the Foreign Military Sales (FMS) process.

This is an important step in the long-debated acquisition of highly capable drones for the armed forces. On 15 October 2024, both sides signed the contract for this procurement, worth nearly USD 4 billion. The Cabinet Committee on Security (CCS) also approved the launch of 52 satellites in various orbits under the Space Based Surveillance-III (SBS-III) project, which is worth 26,968 Crores ($3.1 billion). The project envisages the production and launch of 21 satellites by ISRO and 31 satellites by private companies. These satellites will be positioned in Low Earth Orbit (LEO) and Geosynchronous orbit (GEO).

The capability will substantially enhance the persistence of monitoring extended regions beyond our borders and will also help in civilian applications. Satellites are inherently dual-use, and that is where the cost-effectiveness can be gainfully leveraged. Both these programs have been in the works for many years, and their approval will provide the much-needed impetus to surveillance capability during these uncertain times.

Intelligence, Surveillance, and Reconnaissance (ISR) is a time-sensitive function in military operations. It provides timely inputs on infrastructure development, force movement, and overall capability assessment, which are essential for targeting. ISR is undertaken using both aerial platforms, such as aircraft and drones, and space-based platforms, such as satellites. Persistent ISR is a prerequisite for multi-domain awareness, and it provides the military leadership with vital inputs in decision-making.

India currently has some aerial platforms for surveillance with the three services and other agencies. All three services operate Searcher and Heron UAVs procured from Israel. Additionally, the Indian Army and Indian Navy are procuring Drishti 10 MALE UAVs based on the Hermes 900 platform of Elbit, Israel.

The tactical UAV segment has also been strengthened with the procurement of UAVs with specific mission capabilities and limited endurance to meet tactical objectives. The three services have also procured these UAVs. The encouraging fact is that many tactical UAVs are coming from indigenous companies. What we lacked is the High-Altitude Long-Range (HALE) capability, which will be achieved by the Sky Guardian UAVs.

Indian armed forces operate in diverse terrains, from deserts and oceans to the high mountains of the Himalayas, which demand multi-layered surveillance capability. This void was acutely felt during the Eastern Ladakh situation. With mountains rising to more than 17000 feet, surveillance of the areas across LAC with MALE UAVs was a major constraint due to limited visibility of available payloads at their operating altitudes of around 25000 to 30000 ft while operating well into their own airspace.

On the other hand, China has a variety of HALE UAVs like Wing Loong, Xianglong, WJ-700, and WZ-10, which can perform diverse roles and possess the capability to operate over extended periods and long ranges, thus providing them with continuous surveillance capability. Caihong-5 (CH-5) is the closest copy of the MQ-9 UAV. Also, Pakistan's UAV capability has grown multifold, piggybacking on China.

Predator drones are the improved version of the earlier MQ-9A Reapers, which gained prominence in the Middle East and Afghanistan operations. In recent times, MQ-9Bs have been used for counter-terrorist operations and surveillance over Yemen, Iran, Syria, and other hot spots across the world. MQ-9A was commonly known as Reaper, and its improved version, MQ-9B, which has a Short Takeoff and Landing (STOL), is called the Sky Guardian/ Sea Guardian.

Sky Guardian is optimized for ISR over land and mountains, while the Sea Guardian carries payloads optimized for surveillance over high seas. The weaponized UAV has the dual capability of ISR and strike. It can carry Hellfire air-to-ground missiles, laser-guided bombs (LGB), and glide bombs. Available information suggests that India will be getting Hellfire missiles and glide bombs. The IAF already has the expertise of using Hellfire missiles on Apache attack helicopters procured earlier from the US.

With a wingspan of 24 meters and a length of 11.7 meters, the MQ-9B is as big as a conventional fighter aircraft. Just to put things into perspective, the Rafale has a wing span of 10.9 meters and a length of 15.3 meters. MQ-9B can fly continuously for more than 40 hours at more than 40,000 feet. The UAV has been developed with an open architecture that allows plug-in and play for diverse payloads and easier upgrades in the future.

India should aim to integrate indigenous weapons and payloads on aircraft in the future. The drone can carry a plethora of payloads to provide seamless ISR capability. It carries a weapons load of 2155 kgs, or 2.1 tons, on nine hardpoints and internal payloads weighing more than 360 Kgs. The drone could potentially be used in both ISR and strike roles, along with dynamic or time-sensitive targeting. The Sky Guardian has secure communication systems and can operate at extended ranges using satellite communications. The payloads include an Electro-Optical/infrared sensor and a multi-mode radar. Some other payloads can also be integrated into Electronic warfare.

The Indian Navy has operated the leased Sea Guardians for ISR tasks over the last two years, which provides us with a good understanding of its capability and the India-specific enhancements required to meet our operational needs. Interestingly, the MQ-9B is equipped with all the instrumentation and gadgets required to fly in a highly congested civil airspace. This will facilitate inter-theatre employment and operations during peacetime in civil airspace.

The aircraft is presently operated by the U.S., Italy, the Netherlands, France, Poland, the UK, Spain, and Belgium. Canada has been using it extensively for surveillance of its vast territories.

The US has strictly controlled the sale of these UAVs outside of NATO due to the technology they carry and their strike potential. India was offered these UAVs after it was recognized as a Major Defence partner in 2016.

Consequently, in 2023, US Defense Secretary Lloyd Austin traveled to India, where he signed a new “defense industrial base cooperation roadmap” with his Indian counterpart. While the contract does not include the transfer of technology, it does mandate General Atomics, the manufacturer of Sky Guardian, to set up an MRO facility in India.

The second important decision was to approve SBS-III, which is the follow-up of SBS-I and SBS-II. SBS-I was initiated by the Vajpayee government in 2001, consequently, number of satellites were launched. SBS-II commenced in 2013 and is currently ongoing. Under these two programs, India launched the CARTOSAT (Electro-Optical) and RISAT (Synthetic Aperture Radar) series of satellites.

While these satellites have strengthened the region’s space-based surveillance capability, they are still inadequate to meet the nation’s growing strategic surveillance needs. Clearance of SBS-III is crucial in this pursuit. Giving the nod to private companies producing and launching satellites endorses their growing capability and the nation’s faith in them delivering this critical defense capability.

It also indicates ISRO’s willingness to collaborate with private players and help them accelerate the nation’s space-faring capability. The National Security Council Secretariat will steer this project, which will be executed by the Defence Space Agency (DSA). Space based surveillance capability is necessary to cover the gaps arising out of the limitations of aerial surveillance platforms and for persistence in surveillance.

Satellites in sufficient numbers are required to ensure continuous surveillance of areas of interest. These satellites will greatly enhance the monitoring of activities and developments in land and maritime domains in strategically important regions and around our borders.

While some satellites will be dedicated to each service requirement, they can also meet the tri-services requirements in certain key areas. The satellites will be launched over five years and will have Artificial Intelligence embedded for faster processing and tagging of geo-intelligence.

The key feature of this constellation of satellites will be a triggering mechanism. If a satellite in Geostationary orbit (36,000 km above the earth) observes something, it can trigger a satellite in LEO (400 to 600 Km above the earth) to examine the activity more closely. The resolution of LEO satellites is much better because they orbit closer to Earth. This feature will enhance efficiency through automation.

These satellites will be useful in monitoring the entire land borders and beyond, the Indian Ocean region, and the Indo-Pacific. Infrastructure development, troop movements, equipment movements, missile regiment movements, and any missile test/ launch undertaken in the region can be easily monitored. Additionally, the satellites will contribute to civilian applications such as disaster management, environmental monitoring, and infrastructure development.

The acquisition of 31 Sky/ Sea Guardian UAVs and the launch of 52 satellites will give military surveillance a boost. These decisions will economize effort, create greater interoperability, cover all levels of surveillance, from tactical to strategic, and facilitate dynamic and time-sensitive targeting.

This capability, stitched with other platforms and SBS-III, will provide military leadership with seamless information in multiple domains for swift decision-making. All that now remains is to bring all these platforms on one real-time and seamless network.

https://www.eurasiantimes.com/from-mig-21-with-a-handycam-to-mq-9b-predator/

THE WEEK

Sat, 19 Oct 2024

Is Pakistan procuring military-grade equipment from China?

Military-grade consignments originating from China and destined for Pakistan's strategic entities have become the latest worry of Indian port authorities, who have doubled up efforts to scan the country's coastline, ensuring maritime traffic passing through does not pose a threat to regional security.

While in certain regions the risk has increased like the Red Sea, Bab al-Mandab strait and the Gulf of Aden, Indian agencies are not losing sight of the threats that may reach Indian shores. Suspected clandestine proliferation activities have come to light in the last few months despite numerous seizures and even sanctions on alleged state-supported entities and shell companies.

Three interdictions between June and August are under scanner of defence and intelligence authorities – the first of 25,609kg aluminium alloy materials at Nhava Sheva port on June 11 while on voyage from Qingdao Port in China to Karachi; the second instance came soon after when a consignment packed in 14 packages, weighing 3,130kg was shipped on July 30 from Ningbo Port in China to Karachi and got interdicted at Nhava Sheva Port on August 15.

The third was an interdiction of L-30 CNC lathe machine transshipped at Port Klang in Malaysia to another merchant vessel which began sail on July 7 to Karachi. When this vessel reached Pipavav Port in Gujarat on July 14, Indian customs authorities offloaded the consignment during a surprise check. These three cases have been reported to New Delhi which has ordered detailed inquiries to study the dual-use consignments.

The first case of seizure of aluminium alloy tubes and fittings has revealed that the tubes were made of aluminium alloy 6061 T6 type, considered suitable for manufacturing structural components for aerospace or missile industry. Further investigation shows how Multinational Engineering Associates, an alleged shell company of the infamous Khan Research Laboratories (KRL) was the consignee, and a Sharjah-based company, Cameron Scrap, was mentioned as the shipper.

“The use of a UAE-based front company was being done by Pakistan to avoid international scrutiny in procuring sensitive or dual-use equipment,” said a senior security official. The goods were seized under Section 110 of The Customs Act, 1962 and Section 5 of The Weapons of Mass Destruction and Their Delivery Systems (Prohibition of Unlawful Activities) Act, 2005.

Threats have multiplied since. On July 30, a Zhejiang-based Chinese supplier shipped a consignment of “Ceramic crucibles and riser tubes” to Pakistan. When this consignment set sail from Ningbo Port in China to reach Karachi, it was offloaded at Nhava Sheva Port on August 15 on the suspicion of port authorities.

It turned out that the same company as in the case of the aluminium alloy tubes was the consignee. The detained consignment was examined by experts who found the confiscated items to be potential dual-use applications and also listed under SCOMET List category 4A008 as a controlled substance.

The third interdiction further exposed how Pakistan is not only acquiring sensitive equipment from China, but also exploring other markets in the field of automation and CNC cutting technology.

A CNC machine, worth PKR 23.7 million was shipped in May from Yokohama Port in Japan, transshipped at Port Klang in Malaysia to another Liberia-flagged merchant vessel when Indian customs officials decided to do a surprise check at Pipavav Port in Gujarat on July 14.

Investigation revealed that one of Pakistan’s strategic entities had ordered the CNC lathe (Model: Microstar TNC-L30 Gang type) machine from a Japanese manufacturer. Documents revealed that the corporate branch of the ‘National Bank of Pakistan’ was the consignee of the equipment.

“These entities do not justify the use of a sensitive equipment,” said an official involved in the investigation.

“This is because the machine finds usage in numerous military applications, including manufacturing of key aircraft components like landing gear shafts, turbine blades, aircraft engine parts.”

While Pakistan and China have vehemently denied shipments of any dual-use items on their shores, what adds to the worry of defence authorities is that the alleged misrepresentation of final user details by Pakistan, like in the case of Japan might have gone unnoticed in some other cases.

https://www.theweek.in/news/defence/2024/10/19/india-seizes-3-pak-bound-chinese-military-grade-consignments-between-june-august-launches-probe.html

THE WEEK

Sat, 19 Oct 2024

Xi Jinping asks China's missile troops to strengthen their deterrence, combat capabilities

Chinese President Xi Jinping, who inspected the brigade of the Chinese People's Liberation Army Rocket Force (PLARF) recently, asked Beijing's strategic missile troops to strengthen their deterrence and combat capabilities. According to Chinese news agency Xinhua, Xi, who is also the chairman of the Central Military Commission, asked the troops to resolutely fulfill the tasks entrusted by the Party and the people.

Further, he also emphasised the need to "adhere to political guidance, strengthen mission responsibility," and "promote high-quality development of the force construction," Chinese media outlet Cailianshe reported. PLARF is responsible for China's strategic and tactical missile capabilities. The conventional arm of the PLARF is reportedly the largest ground-based missile force in the world.

"The PLARF plays a critical role in maintaining China’s national sovereignty and security. It comprises nuclear missile, conventional missile and support forces, and subordinate missile bases," according to Defense White Paper: 'China’s National Defense in the New Era'. According to the paper, the PLARF has been enhancing its capabilities of nuclear deterrence and counterattack, "strengthening intermediate and long-range precision strike forces, and enhancing strategic counter-balance capability, so as to build a strong and modernized rocket force."

The PLARF seemingly makes a major contribution to the “strategic balance” between Beijing and its chief strategic competitors. A few days ago, PLARF was in the news when it conducted its first intercontinental ballistic missile (ICBM) test over the Pacific Ocean in four decades.

https://www.theweek.in/news/defence/2024/10/19/xi-jinping-asks-chinas-missile-troops-to-strengthen-their-deterrence-combat-capabilities.html

THE ECONOMIC TIMES

Sun, 20 Oct 2024

Japan, UK and Italy agree to accelerate joint nextgeneration fighter jet project to replace F-2s

The defense ministers of Japan, the U.K. and Italy agreed to accelerate the joint development of a next-generation fighter jet, and announced that a trilateral government organization would be established by the end of this year to work with the parties producing the aircraft, Japanese officials said Sunday.

The three countries agreed in 2022 to jointly produce a new combat aircraft that will be ready for deployment in 2035, under the Global Combat Air Program, or GCAP, to strengthen cooperation in the face of growing threats from China, Russia and North Korea.

The next-generation stealth fighter jet would replace Japan's retiring F-2s that it jointly developed with the U.S., and Eurofighter Typhoons, which were produced in partnership with the U.K, Italy, Spain and Germany.

On Sunday, Japanese Defense Minister Gen Nakatani, after meeting with his U.K. and Italian counterparts, John Healey and Guido Crosetto, said a joint body called the GCAP International Government Organization, or GIGO, will be set up by the end of this year to oversee the aircraft's development. The ministers met on the sidelines of the Group of Seven defense ministers meeting in Naples, Italy.

Several private sector companies, including Japan's Mitsubishi Heavy Industries, Britain's BAE Systems PLC and Italy's Leonardo, are taking part in the project. GIGO, to be based in the U.K. and headed by a Japanese official, will oversee the aircraft's development.

"We now see the launch of GIGO and a joint venture on track" toward signing their first contract next year, Nakatani said. Sunday's agreement addresses concerns over the progress of the project despite changes of leadership in both Japan and the U.K. Mitsubishi Heavy and their U.K. and Italian counterparts had a 1/10th model of the joint fighter jet on display at their GCAP booth for the first time in Japan at a major aerospace exhibit in Tokyo last week.

Akira Sugimoto, MHI's Japan program senior representative for GCAP, said that the joint fighter jet development will be meaningful for Japanese suppliers and for the country's industrial base.

"Our basic position is to bring our strengths together to develop a high quality fighter jet. I believe Japanese suppliers have outstanding technologies and I do hope as many of them as possible would join (GCAP)," Sugimoto said.

"I think it will also help Japanese suppliers to enhance their capacity to develop equipment and contribute to provide a better outlook and business environment and stability," he said.

Japan, which is rapidly building up its military, hopes to have greater capability to counter China's rising assertiveness, and the joint fighter jet project would help strengthen Japan's mostly domestic and underdeveloped defense industry.

Japan has significantly eased its arms export restrictions to allow foreign sales of the future fighter jet and licensing back of weapons, such as surface-to-air PAC-3 missile interceptors produced in Japan to complement U.S. inventory, which has decreased because of its support for Ukraine.

https://economictimes.indiatimes.com/news/defence/japan-uk-and-italy-agree-to-accelerate-joint-next-generation-fighter-jet-project-to-replace-f-2s/articleshow/114400519.cms

THE WEEK

Fri, 18 Oct 2024

China's surveillance network expansion: New radar in South China Sea region aims to enhance strategic superiority

China's signals intercept, electronic warfare capabilities and surveillance network in the South China Sea region are set to get a major uplift with the setting up of a radar system in Triton Island.

Triton Island is a contested landmass located in the Paracel Islands of the South China Sea. According to a report by British think tank Chatham House, China is turning the island into an intelligence hub to boost its surveillance capabilities in the region.

Known as SIAR (synthetic impulse and aperture radar), the radar system is capable of detecting stealth aircraft. When completed, this radar will be part of a wider network of counter-stealth radars built by China across the South China Sea.

Satellite images have shown a tower near the SIAR radar, which could be the operations centre.

China has not officially spoken about the purpose of the building work on the island.

According to J. Michael Dahm, Senior Resident Fellow for Aerospace and China Studies at the Mitchell Institute, this new radar will help China fill the gap in its air surveillance coverage between Subi Reef, a low-tide elevation located in the Spratly Islands, and Hainan Island.

There are also other building projects on the island, satellite imagery shows. This includes a large pad that could probably be used for a mobile anti-ship missile battery and a storage facility for missile transport vehicles.

The radar facility will make it easy for China to counter the attempts by the US, the UK, and Australia to patrol the region.

The developments might be a warning that China is planning to mount another drilling expedition, according to Chatham House's Bill Hayton.

https://www.theweek.in/news/defence/2024/10/18/chinas-surveillance-network-expansion-new-radar-in-south-china-sea-region-aims-to-enhance-strategic-superiority.html

Press Information Bureau
Government of India

Ministry of Science & Technology

Fri, 18 Oct 2024

Novel Insights into Electron Scattering in Semiconductors Creates Potential for more Efficient Electronic Devices

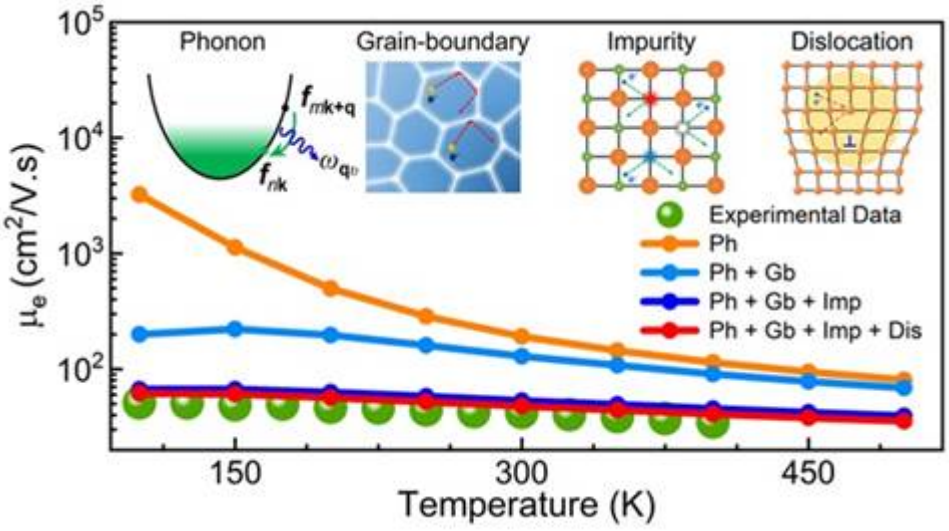
In a significant advancement for the semiconductor industry, researchers have unveiled novel insights into the mechanisms that limit electron mobility in semiconductors. The study which represents a major leap forward in understanding the electronic properties of semiconductors, holds promise for developing more efficient electronic devices.

Semiconductors form the backbone of modern electronics, powering everything from smartphones and computers to advanced medical devices and space technologies. The search for new semiconductor materials has intensified as the demand for faster, more efficient, and more reliable electronic devices continues to grow. Scandium Nitride (ScN), a rocksalt semiconductor, has emerged as a promising candidate for next-generation electronics due to its high thermal stability, robustness, and electronic properties. However, despite its potential, the practical application of ScN in electronic devices has been hindered due to its relatively lower electron mobility. This key factor influences the speed and efficiency of semiconductor devices and researchers had been curious to unravel why the mobility of the electrons are limited.

Scientists from Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bangalore, an autonomous institute under the Department of Science and Technology (DST) explored the factors that limit electron mobility in ScN. Their research spearheaded by Associate Professor Bivas Saha focused on identifying and analysing the dominant scattering mechanisms that impeded the flow of electrons and reduced their mobility. Through a combination of theoretical analysis and experimental validation, the researchers were able to pinpoint the specific scattering mechanisms at play. Their results showed that though interactions between electrons and longitudinal optical phonon modes, often described as the Fröhlich interactions set an intrinsic upper bound for ScN's electron mobility, ionized-impurity and grain-boundary scatterings significantly reduced mobility. Therefore, depositing single-crystalline ScN that are devoid of impurities and defects is expected to increase its mobility significantly.

"The findings from this study have far-reaching implications for the global semiconductor industry. As manufacturers seek to push the boundaries of electronic device performance, the insights provided by our research could lead to significant advancements in the design and fabrication of ScN-based components," said Prof. Bivas Saha. "By addressing the identified

scattering mechanisms, it may be possible to engineer ScN materials with improved electron mobility, making them more suitable for a wide range of high-performance applications. These could include thermoelectricity, neuromorphic computing, high mobility electron transistor, and Schottky diode devices," Sourav Rudra, the lead author of this study pointed out.



As the semiconductor industry continues to evolve, the findings from this study are expected to serve as a foundation for future research into scandium nitride and other semiconductors. Moreover, JNCASR's work in the field of semiconductor materials is poised to have a lasting impact on the development of future technologies, contributing to India's vision of becoming a global leader in science and innovation. Apart from JNCASR, Prof. Samuel Poncé, a researcher from the Université catholique de Louvain, Belgium also participated in this study.

The research findings have been published in the journal Nano Letters under the title "Dominant Scattering Mechanisms in Limiting the Electron Mobility of Scandium Nitride."

https://pib.gov.in/PressReleasePage.aspx?PRID=2066046

THE ECONOMIC TIMES

Sat, 19 Oct 2024

By 2050, will China's lunar station change the face of space exploration? Here's what we know

China has announced ambitious plans to enhance its space program significantly, focusing on establishing a lunar space station and exploring the potential for habitable planets.

This roadmap, revealed on Tuesday by China's leading space authorities, outlines a comprehensive strategy that will unfold from 2024 to 2050, marking a pivotal chapter in the nation's space exploration efforts.

Manned Lunar Mission Setto Launch

The new program emphasizes the goal of launching a manned lunar mission in the near future. This initiative reflects China's commitment to advancing scientific knowledge and investigating the possibility of life beyond Earth. The ambitious plan aims not only to deepen understanding of space but also to enhance technological capabilities in lunar exploration.

Building a Lunar Space Station

Ding Chibiao, Vice President of the China Academy of Sciences (CAS), announced that the construction of the lunar space station will occur in phases, targeting completion between 2028 and 2035. Once operational, this station will act as a key base for scientific research and exploration missions across the solar system.

It will build on previous successes, including the Tiangong space station and various Chang'e lunar missions, which have already gathered vital insights into the Moon's surface. With the new station, scientists will conduct experiments that will deepen our understanding of the Moon and prepare for more advanced space ventures.

Exploring Habitable Worlds

Beyond lunar exploration, China is set to expand its focus to deeper space missions. The CAS and the China Manned Space Agency have outlined 17 key areas of research, including the search for exoplanets and the investigation of other celestial bodies for their habitability.

Ding Chibiao noted, "The mission will focus on finding planets and atmospheres that could potentially support life while also providing insights into the broader evolution of the universe." These missions aim to advance understanding of cosmic phenomena and the factors influencing planetary habitability.

Investigating Cosmic Mysteries

China's long-term vision extends to broader investigations into the origins of the universe, gravitational waves, and the nature of cosmic matter. The program includes research into the Sun's behavior and Earth's cyclical systems, enhancing knowledge of space weather and interactions between Earth and its heliosphere. This comprehensive approach positions China as a formidable player in future cosmic exploration.

Aiming for Global Leadership in Space Science

With this ambitious agenda, China aims to establish itself as a global leader in space science by 2050. The planned initiatives could reshape the landscape of space exploration, paving the way for future human settlements beyond our planet.

China's extensive program, which also emphasizes the importance of studying extreme cosmic conditions, the detection of dark matter, and gravitational wave research, indicates a strong commitment to expanding humanity's understanding of both Earth and the cosmos.

https://economictimes.indiatimes.com/news/science/by-2050-will-chinas-lunar-station-change-the-face-of-space-exploration-heres-what-we-know/articleshow/114378003.cms

THE ECONOMIC TIMES

Fri, 18 Oct 2024

Ananth Technologies successfully completes satellite integration project for ISRO

Ananth Technologies Private Limited (ATL) said on Friday that it has successfully completed the integration of two 400 kg class satellites for the Indian Space Research Organisation (ISRO).

This marks a significant milestone as it is the first time ISRO has awarded such a project to a private industry partner, the Hyderabad-headquartered aerospace and defence company said in a statement.

The Assembly, Integration, and Testing of the satellites was conducted at ATL's new state-of-the-art facility in the KIADB Aerospace Park, Bengaluru. This 10,000 square metre facility is equipped to manufacture electronic subsystems and integrate up to four large satellites simultaneously, the statement said. ATL Chairman Dr Subba Rao Pavuluri, said this achievement is a testament to his company's vision and commitment towards India's space sector.

"We have been manufacturing electronic subsystems for ISRO since 2000 and have been an integral part of every Indian space programme over the last two decades," he said.

"The project involved over 100 highly trained engineers and technicians, making it the most sophisticated satellite integration project undertaken by a private sector company in India to date," the company said.

https://economictimes.indiatimes.com/news/science/ananth-technologies-successfully-completes-satellite-integration-project-for-isro/articleshow/114357418.cms

THE WEEK

Sat, 19 Oct 2024

Why SPADEX is crucial to India's growing space ambitions

SPADEX (Space Docking Experiment) is one of ISRO's most significant steps towards developing autonomous docking technology, crucial for India’s growing space ambitions. Docking systems allow two spacecraft to connect in orbit, enabling critical operations like assembling space stations, refueling, or transferring astronauts and cargo. SPADEX is key to achieving India's long-term space exploration goals, including manned spaceflight, satellite maintenance, and future space station construction.

The mission involves two vehicles—‘Chaser’ and the ‘Target’—coming together and connecting in space. It will also test how well the combined spacecraft maintains stability and control after docking, ensuring smooth operations for future missions.

Once docked, the two spacecraft will later separate to perform additional tasks. This experiment is crucial for ISRO to develop the skills needed for advanced missions, such as human spaceflight and lunar sample returns. Mastering these docking and rendezvous techniques is essential for the success of such ambitious operations.

Hyderabad-headquartered Ananth Technologies, an aerospace and defence company, successfully completed the satellite integration project for ISRO. This also marks a private player joining the SPADEX Mission. Ananth Technologies Private Limited (ATL) successfully assembled two 400 kg satellites for ISRO and delivered them to the UR Rao Satellite Centre (URSC) in Bengaluru. This centre is responsible for designing and developing satellites for various space missions. "We have been manufacturing electronic subsystems for ISRO since 2000 and have been an integral part of every Indian space programme over the last two decades," Subba Rao Pavuluri, chairman of ATL, said.

ISRO usually builds its satellites at the URSC. However, for the first time, the complete assembly, integration and testing of satellites have been handled by an Indian private company at a private facility. This change is possible thanks to the recent space sector reforms, which provide more opportunities for private companies to participate in India’s space missions. Since the satellites have arrived at the URSC, they will soon be transported by truck to the Indian Spaceport in Sriharikota. There, they will undergo further testing, be fuelled, and be prepared for launch in the coming months.

“Docking plays a vital role in managing space stations and undertaking complex space projects. Astronauts travelling to a space station depend on precise docking to connect their spacecraft safely, allowing them to transfer smoothly between vehicles. This process ensures a secure journey and helps complete missions successfully, whether the astronauts remain in space or return to Earth,” remarked space expert Girish Linganna.

He said when two satellites approach each other at speeds of around 8 kilometres per second, they must coordinate carefully to avoid a collision. Using cameras or lasers, the lead satellite slows down to allow the trailing one to catch up smoothly. Once aligned, the two satellites connect to form a larger system. These precise connections enable more complex operations and allow multiple components to function together, expanding what can be achieved in space beyond the limits of a single satellite.

“In addition to supporting human spaceflight, docking is critical for constructing larger space structures. By connecting different spacecraft and modules, docking makes it possible to build advanced facilities in orbit and expand space exploration. Without these techniques, large-scale space projects would not be feasible,” added Linganna.

ISRO has acquired two satellites, each weighing 400 kg, for a SPADEX mission. In this mission, a single rocket will launch both satellites into space, placing them in slightly different orbits. This

setup is essential to test how well the satellites can approach, align and dock with each other in orbit, demonstrating key technologies for future missions.

The two satellites, travelling at about 28,000 km/h (or around 8 km per second), will carefully align with each other to perform a ‘space handshake’, where they will connect and attach mechanically, becoming a single unit in orbit. This experiment is important because mastering docking is essential for future missions, such as Chandrayaan-4 and India’s proposed Bharatiya Antariksha Space Station.

The history of docking systems dates back to the Cold War when the Soviet Union achieved the first successful docking in space. On October 30, 1967, the Soviets completed the historic docking of Kosmos 186 and *Kosmos 188—the first fully automated docking between two unmanned spacecraft. This paved the way for later space exploration efforts, including long-term stays aboard space stations. The United States followed this with the Apollo-Soyuz Test Project in 1975, which was the first international docking between NASA and the Soviet space agency, marking a new era of cooperation despite ongoing geopolitical tensions.

Docking technology has evolved considerably since then. Early systems required significant manual input from astronauts, but advances in automation have changed this dramatically. Russia’s Soyuz and Progress spacecraft, which service the ISS, have highly reliable automated docking systems. NASA’s Commercial Crew Program, which relies on spacecraft like SpaceX’s Crew Dragon, also uses automated systems, often with the International Docking System Standard (IDSS) for compatibility across different space missions. China, too, has developed its Tianzhou cargo spacecraft, which docks autonomously with the Tiangong space station, showcasing its growing sophistication in space operations.

“India’s SPADEX experiment is unique because it focuses on developing indigenous, scalable, and cost-effective docking technology. This experiment involves two spacecraft docking autonomously in orbit, demonstrating precision, navigation, and control capabilities critical for future missions. SPADEX is designed to serve a wide range of spacecraft sizes and mission objectives, including potential collaborations for building space stations or deep space exploration,” remarked Srimathy Kesan, founder and CEO of Space Kidz India, which is into design, fabrication and launch of small satellites, spacecraft and ground systems.

India is advancing in space exploration at an accelerated pace. ISRO's recent successes, such as the Chandrayaan-3 mission, which made a soft landing on the Moon’s south pole, and the launch of Aditya-L1 to study the Sun, demonstrate the agency's capabilities. “SPADEX aligns with these achievements, reinforcing ISRO’s long-term vision for space exploration, especially as the Gaganyaan mission approaches. Gaganyaan, India’s first manned mission scheduled for 2025, will require docking technology to ensure safe crew transfer and module operations. SPADEX is integral to this, as autonomous docking will be essential for future crewed missions, satellite servicing, and space station operations,” said Kesan.

https://www.theweek.in/news/sci-tech/2024/10/19/why-spadex-is-crucial-to-indias-growing-space-ambitions.html

ThePrint

Fri, 18 Oct 2024

US C-130 en route to India with critical payload: NISAR's radar antenna reflector

The National Aeronautics and Space Administration (NASA) has dispatched the radar antenna reflector—a vital component of the NASA-ISRO Synthetic Aperture Radar (NISAR)—to India, onboard its four-engine turboprop military transport aircraft C-130 Hercules, the American space agency confirmed Friday.

In a statement, NASA's Wallops Flight Facility said the C-130 Hercules team was carrying out a cargo transport mission to Bengaluru, India, in support of the NISAR mission. "The C-130 departed from NASA's Wallops Flight Facility in Virginia, Tuesday, Oct. 15, to embark on the multi-leg, multi-day journey," NASA said.

The statement added, "The flight path will take the aircraft coast to coast within the United States, across the Pacific Ocean with planned island stops, and finally to its destination in India. The goal: safely deliver NISAR's radar antenna reflector, one of NASA's contributions to the mission, for integration on the spacecraft."

NISAR is an Low Earth Orbit (LEO) observatory being jointly developed by NASA and the Indian Space Research Organisation (ISRO) to map the globe in 12 days, while gathering spatially and temporally consistent data that will provide insights into Earth's ecosystems, ice mass, vegetation biomass, sea level rise, groundwater and natural hazards including earthquakes, tsunamis, volcanoes and landslides, among others.

The satellite carries a Synthetic Aperture Radar (SAR) which operates in both L-band and S-band frequencies, to observe large swaths with high-resolution data, making it the first radar imaging satellite to use dual frequencies. The SAR is a technique that uses a moving radar system to produce high-resolution images of Earth's surface.

The initial plan was to launch the satellite early this year, but the launch had to be postponed after a minor fault was detected in the radar antenna reflector. The reflector—a part of the NISAR satellite—had to be returned to the US for a special thermal coating in March. It is expected to reach India by the first week of November.

Senior officials said NISAR's launch will likely be around February 2025 from Satish Dhawan Space Centre in Sriharikota onboard ISRO's Geosynchronous Satellite Launch Vehicle Mark-II (GSLV Mk-II).

Journey to India

NASA's latest statement said the cargo transport mission will encompass "approximately 24,500 nautical miles and nearly 80 hours of flight time for the C-130 and crew". The flight took off on 15 October.

"The flight plan includes strategic stops and rest days to service the aircraft and reduce crew fatigue from long-haul segments of the flight and mnultiple time zone changes," the US space agency said.

It added that before the C-130 reaches India, it will make a pitstop at the March Air Reserve Base in California to retrieve the radar antenna reflector from NASA's Jet Propulsion Laboratory. It will also be stopping at the Hickam Air Force Base (Hawaii), Andersen Air Force Base (Guam), Clark Air Base (Luzon, Philippines), and Hindustan Aeronautics Ltd Airport in Bengaluru, India, for tests.

Mission technicalities

The spacecraft bus and the SAR payloads mounted on an integrated radar instrument structure (IRIS) are together known as the 'observatory'. The mission profile also highlighted that NISAR uses a sophisticated information-processing technique known as synthetic aperture radar to produce extremely high-resolution images.

Radar penetrates clouds and darkness, enabling NISAR to collect data day and night in any weather, the mission document said. The instrument's imaging swath—width of the strip of data collected along the length of the orbit track—is greater than 150 miles (240 km), which allows it to image the Earth in 12 days.

"By combining two kinds of synthetic aperture radars, it will offer measurements of Earth's evolving surface—including changes in ice sheets and glaciers, wetlands and forests, and land around volcanoes and earthquake faults," NISAR's mission document read.

In an email response to ThePrint in April this year, NASA's Jet Propulsion Laboratory (JPL) said that an addition of the special coating on the reflector was a precautionary step to mitigate any temperature increases that could potentially affect the deployment of the reflector. "Testing and analysis identified a potential for the reflector to experience higher-than-previously-anticipated temperatures in its stowed configuration in flight," the JPL said.

https://theprint.in/science/us-c-130-en-route-to-india-with-critical-payload-nisars-radar-antenna-reflector/2318039/

The Indian EXPRESS

Fri, 18 Oct 2024

What is the Moonlight programme, Europe's mission for lunar explorations?

The European Space Agency (ESA) at the International Astronautical Congress, launched its Moonlight Lunar Communications and Navigation Services (LCNS) programme on Tuesday, October 15. The ESA is said to be developing infrastructure to assist with future lunar missions.

With this, the ESA aims to offer critical support for over 400 moon missions planned by space agencies and private companies in the next 20 years.

What is the Moonlight programme?

The programme will have a constellation of about five lunar satellites that will allow accurate autonomous landings, high-speed communication, and surface mobility. These satellites will reportedly enable data transfer over 2,50,000 miles or 4,00,000 kilometres between the Earth and the Moon.

Talking about the mission, Josef Aschbacer, director general of the ESA, said that the agency is taking a crucial step in supporting the future of the commercial lunar market as well ongoing and future lunar missions. As part of the programme, the first step will be the launch of Lunar Pathfinder, a communications relay satellite built by Surrey Satellite Technology LTD, in 2026.

The initial services of the programme will reportedly begin by the end of 2028, and the system is said to be fully operational by 2030. The prime focus of the Moonlight programme will be to offer coverage at the Moon's South Pole, a key area for many missions owing to lighting conditions and the potential presence of water ice within craters that perpetually remain in the shadows.

Global space collaboration

At a time when Nasa's Artemis programme plans to get astronauts back to the moon, the ESA is actively involved in contributing to the Artemis' Gateway project. Europe reportedly also has plans to land its Argonaut spacecraft on the moon by 2031. According to Javier Benedicto, ESA's director of navigation, the recently signed Moonlight agreement forms the foundation for future navigation systems around and on the Moon's surface.

The programme will involve numerous ESA directorates who will engage with a wide range of nations along with various industrial partners. The key advantage of Moonlight's communications infrastructure is that it will likely reduce the need for standalone communication systems, enabling mission teams to focus more on astronauts and robotics.

As part of the programme, the ESA is working with NASA and the Japanese space Agency JAXA on LunaNet, which is essentially a framework to standardise communication and navigation for the Moon. The agency also hopes to build on the technologies and lessons learned from this mission to develop Mars Communication and Navigation Infrastructure (MARCONI) for future Mars missions.

https://indianexpress.com/article/technology/science/what-is-moonlight-programme-europes-mission-for-lunar-explorations-9626741/