

CLAWS Newsletter



Space & Disruptive Technologies Review | Volume I | Issue No. 06

by Amita Pilania

INDIA

28 September (PIB): India–France Space Cooperation Enters a New Phase

India and France signalled a renewed phase of space cooperation, with discussions spanning human spaceflight, startups and the wider NewSpace ecosystem. The partnership reflects the increasing importance of international collaboration in developing advanced space capabilities, sharing expertise and enabling commercial participation. For India, France is a significant European partner in launch systems, satellite technology and space diplomacy. The strategic relevance of such cooperation lies in the fact that modern space programmes increasingly require specialised supply chains and sustained investment across launch, spacecraft, communications and data services. Cooperation can support capability development while providing access to complementary expertise. At the same time, India's long-term objective remains to build domestic industrial depth so that partnerships strengthen, rather than substitute for, indigenous capability. The initiative also offers opportunities for startups and private firms to participate in joint projects, expanding the commercial foundation of the bilateral relationship.

03 October (PIB): India Demonstrates a 5.56-kilometre Free-Space Quantum Key Distribution Link

India demonstrated a 5.56-kilometre free-space quantum key distribution (QKD) link, according to the Press Information Bureau. QKD uses quantum properties to help detect attempts to intercept key exchange, and free-space links are relevant to potential communication between ground stations, aircraft and satellites. The demonstration adds to India's efforts to develop indigenous quantum-secure communications. The achievement is an important research milestone, but practical deployment depends on reliability under changing weather, atmospheric turbulence, alignment constraints and operational conditions. Quantum communication should also be understood as one element of a wider cyber-security architecture rather than a replacement for all conventional cryptography. For defence users, secure key distribution could eventually support sensitive communications and command networks. The strategic value will depend on scaling the technology, integrating it with existing networks and ensuring domestic control of critical components. The demonstration therefore indicates progress in quantum communication while leaving substantial engineering and systems-integration work ahead.

05 October (PIB): India Supports Development of an Indigenous AI Vision System-on-Chip

India's Technology Development Board announced support for BigEndian Semiconductors to develop an indigenous AI Vision System-on-Chip (SoC). The initiative reflects a broader push to create domestic semiconductor designs tailored to specific applications rather than relying entirely on imported processors. Vision SoCs combine image-processing and AI functions and can be used in cameras, robotics, industrial inspection and autonomous systems. For defence, local access to AI-capable vision hardware could support unmanned platforms, surveillance systems and edge processing where bandwidth or connectivity is limited. Indigenous design can improve control over intellectual property, security assurance and product roadmaps, although successful commercialisation will require validation, manufacturing access and a reliable component supply chain. The project is part of a wider strategic shift from assembly and integration towards domestic ownership of key technology. Its success will depend on whether the chip can meet performance, power, cost and reliability requirements in real operating environments.

06 October (PIB): IndiaAI Mission Expands University Engagement

The IndiaAI Mission organised a university engagement programme at the National Institute of Technology, Andhra Pradesh, to strengthen India's AI talent ecosystem. The initiative reflects the growing recognition that AI competitiveness depends on a broad base of skilled researchers, engineers and practitioners, not only a small number of specialist companies. Building capacity across universities can help connect research with startups, public services and industry. The national-security dimension is significant. Defence applications increasingly use AI for imagery analysis, predictive maintenance, autonomous navigation, cyber defence and decision support. These applications require trained personnel who understand not only algorithms but also data quality, reliability, testing and responsible deployment. Expanding the talent base can reduce bottlenecks and improve the ability of domestic organisations to adapt AI tools to Indian operational needs. However, training must be matched with access to compute, quality datasets, research funding and pathways to deployment. The programme is therefore one part of the broader infrastructure needed to build an indigenous AI ecosystem.

12 October ([PIB](#)): India and the United Kingdom Explore Wider Science and Space Cooperation

India and the United Kingdom advanced discussions on cooperation in space, civil nuclear energy and emerging technologies. The engagement reflects the growing role of science and technology in bilateral strategic relationships, alongside traditional diplomacy and trade. Space cooperation can span research, satellite applications, commercial ventures and opportunities for startups. The importance of such partnerships lies in access to complementary expertise and the ability to work on challenges that are costly for individual countries to address alone. In space, potential areas include Earth observation, sustainability, data applications and human spaceflight technologies. For India, collaboration can strengthen its international partnerships while supporting domestic capability development. The long-term value will depend on clearly defined programmes, industry participation and mechanisms that convert political commitments into technical projects. As the space economy becomes more interconnected, bilateral science agreements are increasingly part of a wider strategy for technological resilience and industrial competitiveness.

14 October ([Reflect Orbital](#)): Skyroot Secures Two Launches for Reflect Orbital

India's Skyroot Aerospace secured an agreement to provide two launches for Reflect Orbital, demonstrating growing international interest in emerging Indian commercial launch providers. The agreement is significant for a private launch sector seeking to move from technology development towards repeat customers and commercial operations. Launch contracts can provide revenue visibility and help companies plan production, testing and infrastructure. The strategic value of a domestic launch industry extends beyond commercial earnings. Local launch capacity can support Indian satellite operators, improve access to orbit and diversify options for government and private missions. However, international competitiveness will depend on reliability, launch cadence, payload integration, insurance and transparent scheduling. Contracts are an important step, but sustained execution is what establishes credibility in the global market. The agreement also illustrates how India's space reforms may enable private firms to participate in international supply chains rather than operating only as subcontractors to national programmes.

14 October (PIB): India Supports an Autonomous Heavy-Lift Aerial Logistics Vehicle

India's Technology Development Board announced support for ideaForge to develop YETI, a heavy-lift autonomous aerial logistics vehicle. The initiative reflects the increasing importance of unmanned aircraft for transporting supplies in difficult terrain and in locations where conventional logistics are costly, slow or hazardous. Heavy-lift systems can potentially support disaster relief, infrastructure operations and military resupply. For defence, autonomous logistics can reduce the exposure of personnel and provide flexible support to dispersed units, particularly in mountainous and remote regions. Their effectiveness depends on payload capacity, range, endurance, weather tolerance, secure command links and reliable navigation. Indigenous development can also help build domestic expertise in flight control, propulsion, batteries and autonomy. As with other emerging systems, operational testing and lifecycle support will be essential before large-scale deployment. The project demonstrates how dual-use technologies can contribute to both civilian resilience and military logistics.

15 October (DD News): India's Emerging Technology Agenda Highlights Physical AI and Robotics

A curtain-raiser for India's Emerging Science, Technology and Innovation Conclave highlighted autonomous systems, physical AI and robotics. Physical AI refers to systems that connect machine-learning capabilities with real-world perception and action, including robots, autonomous vehicles and intelligent machines. The focus signals that India's technology policy is broadening beyond digital services and software towards hardware-intensive technologies. The defence relevance is substantial. Autonomous platforms and robotics may support logistics, surveillance, explosive ordnance disposal, maintenance and operations in hazardous environments. Yet deployment requires dependable sensors, actuators, energy systems, secure communications and extensive testing. AI performance in controlled demonstrations does not automatically translate into reliability in complex operational settings. India's opportunity lies in linking its software and engineering strengths with domestic hardware manufacturing, research institutions and military users. The policy emphasis is therefore an indicator of growing interest in technologies that bridge AI research and deployable physical systems.

16 October (PIB): India Provides ₹150 Crore Support for Indigenous Quantum-Secure Technology

The Technology Development Board announced ₹150 crore in research, development and innovation support for QNu Labs to strengthen India's indigenous quantum-secure technology ecosystem. The support reflects a policy priority to build domestic capability in advanced communications and security technologies, including systems designed to address future risks to conventional cryptography. Quantum-secure communications are relevant to government, financial and defence networks, but the field includes distinct approaches such as quantum key distribution and post-quantum cryptography. Each has different deployment requirements and threat models. For India, a resilient strategy will likely require a combination of cryptographic migration, secure hardware, network engineering and specialised quantum technologies where appropriate. Public support can help bridge the gap between research and commercial deployment, but success will depend on independent testing, interoperability and real-world performance. The initiative signals that quantum security is increasingly being treated as an element of national technology sovereignty.

16 October (PIB): Indian Scientists Identify Mars Analogue Sites

Indian scientists identified sites on Earth that may serve as analogues for selected Martian environments, according to a Department of Science and Technology update. Analogue research helps scientists test instruments, field procedures and scientific methods in environments that reproduce some of the geological or environmental challenges expected on Mars. Such work can support mission planning and prepare teams for future planetary exploration. The strategic and technological value lies in the testing of instruments and operational procedures before deployment in expensive, remote missions. Planetary exploration requires reliable sensing, autonomous operations and careful coordination between robotic systems and ground teams. The skills developed through analogue research can also benefit terrestrial remote sensing, robotics and harsh-environment engineering. For India's space programme, such research contributes to long-term scientific capability and mission readiness. While analogue sites cannot fully replicate Mars, they provide practical environments for validating methods and reducing uncertainty before future missions.

18 October (PIB): India Showcases AI Applications in Healthcare and Assistive Technologies

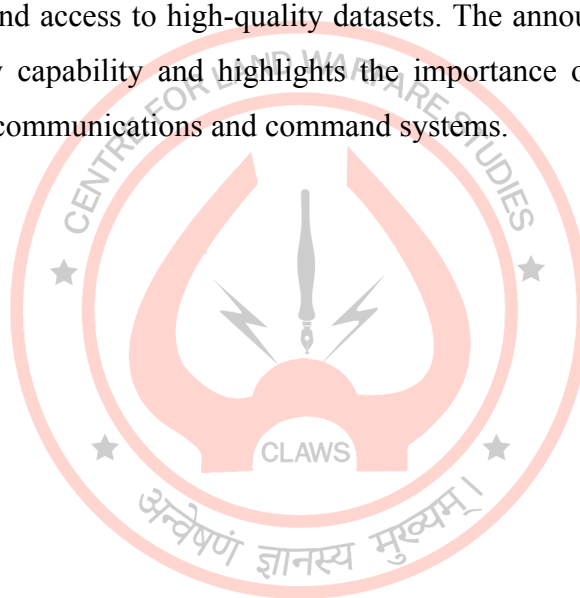
A Science and Technology Parks of India technology conclave highlighted the potential of AI in healthcare and assistive technologies. Although the immediate focus was civilian, the event reflected the broader spread of AI from general-purpose software into specialised systems that support diagnosis, accessibility and human-machine interaction. These applications require reliable data, domain-specific testing and systems designed around user needs. The wider technology lesson is that AI adoption increasingly depends on sector-specific implementation rather than the development of a model alone. Similar principles apply to defence and security applications, where AI must operate with defined performance standards, explainability requirements and clear accountability. Technologies developed for healthcare may also contribute to computer vision, edge processing and human-machine interface research. For India, the challenge is to translate its expanding AI research base into dependable products, supported by compute infrastructure, skilled personnel and validation frameworks. The event illustrates how AI capabilities are spreading across sectors while raising common questions about reliability and governance.

20 October (SpaceX): SpaceX Deploys 32 Payloads on Bandwagon Rideshare Mission

SpaceX launched 32 payloads on a Bandwagon rideshare mission to mid-inclination orbit. Rideshare services offer satellite operators access to orbit without the cost of purchasing a dedicated launch, supporting the deployment of smaller spacecraft and experimental payloads. The model is increasingly important for commercial operators and research organisations seeking to validate technologies or build distributed constellations. For defence and security users, small satellites can offer flexible options for communications, sensing and technology demonstration. A rideshare ecosystem can reduce barriers to entry, but operators must manage orbital coordination, launch schedules and the risk of dependence on external launch providers. The mission also demonstrates the extent to which commercial launch providers now shape the pace of the wider space economy. For India, growth in rideshare and small-satellite markets creates opportunities for domestic payload developers, while reinforcing the need for reliable launch access and supportive regulation.

23 October ([Moneycontrol](#)): India Develops an Indigenous Military AI Layer

India is developing an indigenous artificial-intelligence layer for military applications, Defence Secretary Rajesh Kumar Singh said, with work involving the IndiaAI Mission and private companies. Intended areas include decision support, target acquisition and data fusion. The initiative reflects a move beyond assembling platforms towards domestic control of critical software, designs, intellectual property and source code. The strategic importance is especially clear in the sensor-to-shooter chain, where information from satellites, drones, radars and other sensors must be integrated rapidly. AI can help process large data volumes and support decision-making, but it also introduces risks related to data quality, bias, cyber security and over-reliance on automated outputs. Sovereign development can improve control over sensitive data and operational requirements, though it requires sustained compute infrastructure, testing and access to high-quality datasets. The announcement positions AI as a foundational military capability and highlights the importance of integrating indigenous software with sensors, communications and command systems.



USA**28 September ([NBC News](#)): Starship Reaches Orbit During Flight 14, but Mission Ends Early**

SpaceX's Starship Flight 14 reached orbit for the first time and deployed 26 V3 Starlink satellites, but the mission ended earlier than planned after an engine-related issue. The flight was an important technical milestone for a launch system designed to carry large payloads and eventually support full reusability. The outcome demonstrated progress while also underlining the remaining engineering challenges. If operational, Starship could significantly change launch economics by carrying larger payloads and supporting rapid deployment of next-generation satellite constellations. For defence users, high-capacity launch could enable faster replenishment or deployment of distributed space assets. Yet the early end of the mission is a reminder that launch innovation involves iterative testing and reliability maturation. The strategic value of a launch system ultimately depends not only on payload capacity but also on repeatability, safety, turnaround time and the ability to integrate it into dependable national space architectures.

01 October ([SpaceX](#)): Transporter-18 Launch Deploys 130 Payloads

SpaceX launched 130 payloads on its Transporter-18 rideshare mission, illustrating the continuing role of shared launches in reducing the cost of access to orbit for smaller satellite operators. Rideshare missions allow universities, startups and established companies to deploy spacecraft without purchasing an entire launch. This model has helped broaden participation in space activity and supports the growth of distributed satellite constellations. The strategic implications extend to defence and national resilience. Small satellites can provide communications, Earth observation, maritime awareness and technology demonstration at comparatively low cost. A diversified ecosystem of satellite operators can increase the number of available services, although governments must still assess data security, service continuity and dependence on commercial providers. For India, rideshare opportunities can help domestic startups and research institutions validate technologies and reach orbit, while a strong domestic launch market could retain more of the economic value within the country. The mission demonstrates how launch services are becoming an enabling layer for a broader space economy.

02 October ([Space.com](#)): NASA's Crew-13 Reaches Space Station in Record Launch-to-Docking Time

NASA's SpaceX Crew-13 mission launched on 1 October from Cape Canaveral with commander Jessica Watkins, pilot Luke Delaney, Canadian astronaut Joshua Kutryk and Roscosmos cosmonaut Sergey Tetyatnikov. The Dragon docked with the International Space Station after a launch-to-docking interval of just under eight hours, which NASA described as the fastest for a US crewed mission. Separately, NASA and Boeing have outlined plans for an uncrewed Starliner-1 flight in December 2026 or January 2027. The mixed US-Russian-Canadian crew illustrates the continuing functional cooperation on the ISS despite wider geopolitical friction. Starliner's return to flight status will determine whether NASA regains a second, independent crew-transport option.

14 October ([USSE](#)): US Space Force Activates Special Operations Component

The US Space Force activated Space Forces Special Operations, its new component under US Special Operations Command, formally established on 7 October. The move gives Guardians a dedicated structure for supporting special-operations missions with space-derived effects such as navigation, communications, targeting and electronic-warfare support. It comes as Space Force components for regional combatant commands are also expanding. The step reflects the integration of space capabilities into tactical-level operations rather than only strategic support. It also signals institutional maturation of the service as it seeks a larger role in joint planning.

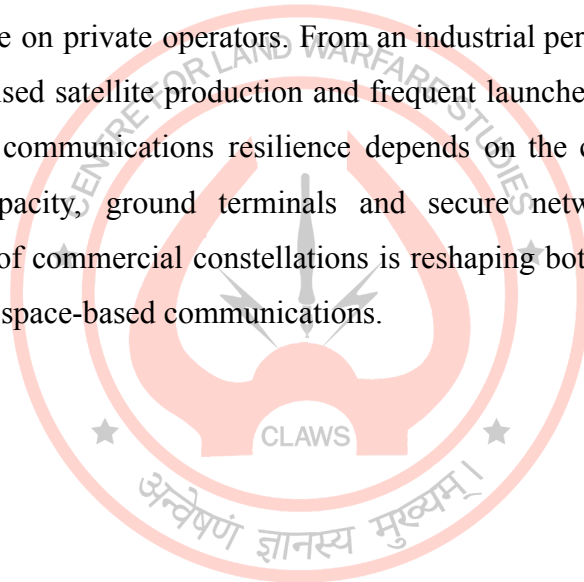
20 October ([Defence News](#)): US Army Details Support Role for Golden Dome Missile Shield

The US Army outlined how its newly populated Space Operations Branch and an air-defence unit earmarked for Golden Dome will support the project, including planning drills led by a Northern Command task force. The Pentagon has requested USD 17.5 billion for Golden Dome in fiscal 2027 through a USD 350 billion reconciliation package, with only about USD 400 million in base-budget research funds. The funding structure leaves Golden Dome exposed to the fate of the reconciliation package, a risk for a programme that requires

sustained, multi-year investment. Army involvement underscores that homeland missile defence will span ground, air and space layers.

23 October ([Space.com](https://www.space.com)): SpaceX Adds 27 Starlink Satellites to Low-Earth Orbit

SpaceX launched 27 Starlink satellites from Vandenberg Space Force Base on 23 October. The Falcon 9 first stage completed another recovery, demonstrating the operational maturity of the reusable launch system. The mission added capacity to a large low-Earth-orbit broadband constellation that supports consumer, enterprise and government communications. Large LEO networks are increasingly relevant to strategic communications because they can offer low-latency connectivity and alternative pathways when terrestrial infrastructure is degraded. Their use in crises also raises questions about service continuity, national jurisdiction and reliance on private operators. From an industrial perspective, Starlink's scale is enabled by standardised satellite production and frequent launches. For India, the broader lesson is that satellite communications resilience depends on the combined availability of spacecraft, launch capacity, ground terminals and secure network management. The continued deployment of commercial constellations is reshaping both the economics and the strategic importance of space-based communications.



Other Nations

25 September ([European Spaceflight](#)): Callisto Reusable Rocket Demonstrator Takes Shape Ahead of 2027 Hop Test

The German Aerospace Center completed a major hardware milestone for the Callisto reusable rocket demonstrator, with the programme preparing for a future hop test. Callisto is intended to validate technologies associated with reusable launch vehicles, including controlled descent and recovery. European efforts to develop reusable systems reflect the strategic importance of lowering launch costs and improving independent access to space. Reusable launch capability is not simply a matter of recovering a booster. It requires reliable propulsion, thermal protection, guidance, landing systems and rapid inspection between flights. Europe's work illustrates how space powers are investing in demonstrators to build experience before committing to operational vehicles. For India, these programmes provide useful indicators of the technologies and test infrastructure required to make reusability practical. The broader competitive question is whether launch systems can achieve not only successful recovery but also high flight rates and economically sustainable operations.

20 October ([The Hindu](#)): Japan Launches MMX Mission to Mars's Moons on H3 Rocket

JAXA launched the Martian Moon's exploration mission aboard an H3-24L rocket from Tanegashima. MMX will study Phobos and Deimos and aims to return a sample from Phobos by 2031, arriving in Mars orbit in 2027. The mission includes a French-German rover and contributions from NASA. A successful Phobos sample return would be a first and would extend Japan's record in small-body sample return. The launch also marks a strong recovery for the H3 after its December 2025 failure.

23 October ([Space.com](#)): Rocket Lab Launches Earth-Observation Satellites for HawkEye 360

Rocket Lab launched an Earth-watching satellite mission carrying three HawkEye 360 satellites. HawkEye 360 operates a commercial constellation that detects and geolocates

radio-frequency emissions, a capability relevant to maritime awareness, spectrum monitoring and intelligence analysis. The launch demonstrates the continuing expansion of commercial sensing beyond optical imagery into the electromagnetic spectrum. Radio-frequency data can complement satellite imagery by identifying patterns of electronic activity even when objects are obscured by weather or darkness. For security users, such information may support maritime monitoring and situational awareness, although it must be interpreted carefully and integrated with other sources. Commercial constellations can expand access to specialised data, but users need to assess coverage, latency, reliability and data governance. The mission illustrates how private satellite operators are creating niche capabilities that governments can use alongside national systems. It also reinforces the importance of combining multiple sensor types to build a more complete operational picture.

24 October ([China in Space](#)): China Launches Multiple Classified Yaogan Satellites

China conducted multiple launches involving Yaogan satellites on 23 October, including a Long March 4B mission carrying several classified spacecraft and a separate Long March 6A mission. The Yaogan series is associated with remote sensing, and analysts commonly assess that at least some satellites support military-relevant observation. The launches underline China's continuing investment in space-based sensing. The strategic significance of such missions lies in the role of persistent space-based intelligence, surveillance and reconnaissance. Satellites can provide broad-area observation and support maritime awareness, target monitoring and operational planning. Distributed deployments can also improve resilience by reducing dependence on a small number of spacecraft. However, the precise functions of classified payloads cannot be confirmed from launch announcements alone, and assessments should distinguish public facts from outside analysis. For regional security, China's launch activity reinforces the importance of India's own space situational awareness, secure communications and resilient observation capabilities.

About the Author

Amita Pilania is currently serving as a Research Assistant at the Centre for Land Warfare Studies (CLAWS), New Delhi. Her research focuses primarily on Space and Disruptive Technology. Prior to joining CLAWS, she completed her Master's degree in Defence and Strategic Studies from Amity University, Noida, Uttar Pradesh. She also holds a B.Sc. (Hons.) in Physics from Kalindi College, affiliated with University of Delhi.

All Rights Reserved 2026 Centre for Land Warfare Studies (CLAWS)

No part of this publication may be reproduced, copied, archived, retained or transmitted through print, speech or electronic media without prior written approval from CLAWS. The views expressed and suggestions made in the article are solely of the author in his personal capacity and do not have any official endorsement. Attributability of the contents lies purely with author.