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TECHNOLOGY

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Article on

Remote Identification : An Essential Technology for Safe Intergration of Drones into Airspace

Dr. Lalit Gupta

PM tweets in Sanskrit to welcome Rafale jets, says no virtue like protecting nation

There is no virtue like protecting the nation, Prime Minister Mr Narendra Modi said as welcomed the first batch of five Rafale jets which landed in Ambala with a tweet in Sanskrit. He also shared a brief video of a Rafale fighter aircraft landing at the Ambala Air Force station. Broadly translated, the prime minister said in his tweet that there is no virtue like protecting the nation, there is no vow like defence of the nation.

Tweet in Sanskrit ::

राष्ट्ररक्षासमं पुण्यं,
राष्ट्ररक्षासमं व्रतम्,
राष्ट्ररक्षासमं यजो,
दृष्टो नैव च नैव च।।
नभः स्पृशं दीप्तम्...
स्वागतम्!

"Swagatam" (welcome), he said with the hash tag "RafaleInIndia".
The Rafales were escorted by two Sukhoi 30 MKIs after they entered the Indian air space and were given a water salute when they landed in Ambala.

Source: https://economictimes.indiatimes.com/

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CURRENT AFFAIRS

New defence procurement policy in the pipeline, says HAL CMD R Madhavan

With an aim to push indigenous and local material and software as part of the 'Atmanirbhar Bharat' initiative, the Union government announced a slew of measures taking the vision of the draft defence procurement policy even further. ET Now spoke to R Madhavan CMD, Hindustan Aeronautics about the government's initiatives and gauging the impact of the lockdown on the company. Hailing the government's moves as extremely positive, Madhavan said raising the sectoral cap of foreign direct investment (FDI) (automatic approval) from the existing 49 per cent to 74 per cent and a negative list for the import of defence equipment in India were major steps in the right direction. "India has become an attractive destination on the defence front. A negative list of imported weapons will allow Indian products to be used more in the defence sector. Opening FDI should look to bring new technology along with manufacturing," he said. "The private industry should take the initiative and partner with OEMs to set up manufacturing in India. The availability of a large population of technically qualified manpower is a boost for the country." Although he is of the view that there is a need to see a speed up the decision-making process. Aerospace according to him will see an increase in demand. "Aerospace is highly technologically driven and needs a lot of capex. There is a requirement of enhancing capacity in certain areas," said Madhavan.

Source: https://www.timesnownews.com/

New Rafale Jets fly out of France, arrival in India on July 29: All you need to know

A new batch of five Rafale jets fly out of France to join the growing Indian fleet of aircraft and are scheduled to arrive in the country two days later. The aircraft will be refuelled by French Air Force tanker aircraft on their way to an airbase in the UAE before leaving for India.

* French defence major Dassault Aviation, the company which manufactures Rafale, has since October 2019 handed over a total of ten aircraft to the IAF. Five will stay back in France for training mission. The ceremony of the first handover was attended by the French minister for armed forces Madame Florence Parly and the Indian Defence minister Rajnath Singh.

* In September 2016, the Indian government had placed an order of 36 Rafale jets with Dassault Aviation in a deal worth Rs 59,000 crore. The delivery of all 36 aircraft will be completed as per schedule by the end of 2021.

* In accordance with the contract, Indian Air Force pilots and supporting personnel have been provided full training on aircraft and weapon systems by Dassault. At least 12 IAF pilots have been trained in operating Rafale. Further batches of IAF pilots will continue training over the next nine months.

* In a gesture of friendship, government of France will send an aircraft with medical equipment and experts on July 26 to support India's efforts against the Covid-19 pandemic.

Source: Times of India

IAF to induct 5 Rafale jets at Ambala air base on July 29

The Indian Air Force will induct its first batch of five Rafale fighter jets imported from France at the Ambala air base on July 29 if weather permits, an IAF spokesperson said. "The IAF's air and ground crews have undergone comprehensive training on the aircraft, including its highly-advanced weapons systems and are fully operational now. Efforts will focus on operationalisation of the aircraft at the earliest," said Wing Commander Indranil Nandi. A formal induction ceremony will take place next month, he said.

Source: https://www.hindustantimes.com/

IAF's rapid deployment of assets in eastern Ladakh sent signal to adversary: Rajnath Singh

Defence Minister Rajnath Singh complimented the Indian Air Force for its rapid deployment of assets at forward locations in response to the border row with China in eastern Ladakh, saying its Balakot strike and the current combat readiness have sent a strong message to "adversaries".

Source: Times of India

India, US negotiating UAV co-development programme: Pentagon official

The US and India are negotiating a co-development programme for the air-launched unmanned aerial vehicle (UAV), a top Pentagon official has said. Addressing the India Ideas Summit organised by the US-India Business Council, the top Pentagon official said that the US Air Force research labs have signed a cooperative research and development agreement with an Indian start up to support the development of the air-launched UAV. "

Source: Times of India

With Rafales' induction, IAF will have an edge over neighbours. Here's how

Five Rafale fighter jets of the 36 ordered by the Indian Air Force (IAF) from France will land at their home base in Haryana's Ambala long-planned to update its fighter jet force. Defence experts have said the induction of the controversial Rafale fighter jets will be a "game-changer" for India in regional politics of South Asia. France has expedited the deliveries of Rafale fighters to India and five jets are coming to Ambala instead of four that were originally planned to be delivered in the first batch. Here's how the Rafale fighter aircraft will add to IAF power:

* The Rafales will be a part of the IAF's No 17 Squadron, which is also known as the "Golden Arrows". The first squadron of the aircraft will be stationed at Ambala air force station, considered one of the most strategically located bases of the IAF. The second squadron of Rafale will be stationed at Hasimara base in West Bengal.
* The IAF spent around Rs 400 crore to develop infrastructure like shelters, hangars and maintenance facilities at the two bases.
* India will be the fourth country, after France, Egypt and Qatar, to fly the Rafale.

Source: https://economictimes.indiatimes.com/

Navy's 'White Tigers' squadron completes 60 yrs

Indian Navy's premier fighter squadron based at INS Hansa, Goa completed 60 years in service to the nation. The INAS 300, the longest serving combat unit of the navy, gave birth to the Indian Navy's carrier borne aviation on July 7, 1959 and fighter jets from the squadron participated in Operation Vijay in 1961, Indo-China war in 1962 and the Indo-Pak wars in 1965 and 1971. The 'White Tigers', as the squadron is popularly known, has the rare distinction of operating all three fighter aircraft of the Indian Navy - Sea Hawk, Sea Harrier and MiG 29K - from all three aircraft carriers - INS Vikrant, INS Viraat and INS Vikramaditya. "In its current avatar as the MiG-29K training squadron, INAS 300 has the responsibility to produce top-notch, war-ready, deck-borne fighter pilots who can be relied upon to defend the fleet or carry out a precision strike on enemy warships when needed," said a senior naval officer. In 2016, the navy inducted the MiG-29K with a squadron based at INS Hansa and another squadron of MiG-29K fighters deployed aboard the INS Vikramaditya.

Source: Times of India

Mig-29K to be retired in 2034, TEDBF to join Navy in 2032

The Navy is expected to start receiving new twin-engine aircraft carrier-based fighter aircraft being developed by the Defence Research and Development Organisation (DRDO) by 2032 and it will be a replacement for the Russian MiG-29K carrier jets in service, a defence source said. "The Navy is expected to get the Hindustan Aeronautics Ltd. (HAL)-built twin-engine carrier aircraft by 2032. It will replace the MiG-29Ks in service which are scheduled to start going out by 2034," the source said. The Navy currently operates Russian-origin carrier INS Vikramaditya and expects to have the first Indigenous Aircraft Carrier (IAC-I) Vikrant operational by 2022. In January, the naval Light Combat Aircraft (LCA) successfully completed arrested landing and take-off on board Vikramaditya and has since undertaken several trials.

Deck-based fighter Based on the experience of the carrier landing, the DRDO has offered to develop a twin-engine deck-based fighter for the Navy. With the successful deck-landing, they decided to drop the naval LCA Mk2 and move on to the twin-engine jet, the source said. The new jet being developed by DRDO should be ready by 2026, Navy Chief Admiral Karambir Singh stated in last December. The design specifications have since been finalised. The Navy currently has 45 Russian MiG-29K aircraft and its officials had stated that there will not be enough aircraft to operate from both carriers. The Navy is currently evaluating the responses to the Request For Information (RFI) from Boeing with its F-18 Super Hornet and Dassault Aviation with its Rafale jets. Both companies had stated that their jets can operate off the ski-jump of Vikramaditya and in future the Vikrant.

Source: The Hindu

Keep Hindustan Aeronautics Ltd out of Naval helicopter plan, private companies tell govt

The private sector wants the Centre to bar Hindustan Aeronautics Ltd NSE -2.65 % (HAL) from a ₹ 21,000 crore plan to manufacture naval utility helicopters (NUH), saying that the state-owned company has an undue advantage as it has access to government-funded infrastructure and the ability to cross-subsidise the bid through other nominated orders. The companies were responding to a question posed by the defence ministry in May on allowing HAL in the competition, which was reserved for the private sector as reported by ET. They said the monopoly of the state-owned enterprise needs to be broken and a level playing field is needed for all bidders. Four Indian companies – Bharat Forge NSE -0.61 %, Tata Aerospace and Defence, Mahindra Defence Systems and Adani Defence – are contending for the Make in India programme to manufacture 111 naval utility helicopters under the strategic partnership (SP) model in collaboration with a foreign technology provider.

Source: https://economictimes.indiatimes.com/

Space policy, Space Activities Bill in final stages

The space policy and the Space Activities Bill are in the final stages, Indian Space Research Organisation (ISRO) Chairman K Sivan said, days after the government opened up the space sector for private players. A dedicated policy for space and legislation on space activities has been under works for some time now. But with the government allowing the private sector, these have now got traction. When asked whether the government is coming up with a space law, Sivan, who is also secretary, Department of Space, said, “Yes, we definitely have to do that also.” “There are two aspects. One is space policy and (the other) Space Activities Bill... both are final stages,” Sivan told PTI. Last month, the government announced a major reform in India’s space arena by allowing the private sector to carry out space activities like building rockets, satellites and providing launch services. The ISRO chairman said very soon a system will be put in place for approval that will enable these activities to happen without any hindrance. The space policy and the Space Activities Bill will help address legal issues in this strategic sector. Last month, during an online briefing, Sivan had said a new Navigation Policy is also being proposed and suitable changes in Remote Sensing Data Policy as well as SATCOM policy are also on the anvil. These changes are aimed at aligning these policies to an open and inclusive space sector, Sivan had said.

Source: Times of India

ISRO will allow private sector to set up own launchpad at Sriharikota

Kicking off the process of “unlocking” the space sector, Indian space research organisation (ISRO) will allow the “private sector to set up their own launchpad at the Sriharikota launch centre” (SHAR). Talking to TOI, ISRO Chairman K Sivan said, “The space agency has started the process of involving the private sector in space activities. We will allow the private entities to set up their own launch facility at Sriharikota that they can use for launching their spacecraft or rocket. We won’t charge anything for such launches. Instead, we will provide them all the expertise they need from us for setting up such facilities.” Currently, ISRO has two launchpads and two rocket assembly buildings at Sriharikota. He said that ISRO is also ready to share its expertise for free with the private sector in areas where monetary support is not involved like providing technical support. “Department of space is in the process of setting up Indian National Space Promotion and Authorisation Centre (IN-SPACe) (which is being set up to promote, hand-hold, monitor and supervise space activities by the private sector). But we don’t want the industry to wait till it is set up. If private entities are interested, they can apply for it (using ISRO’s space assets) now itself.

Source: Times of India

Indian forces to acquire Heron drones, Spike anti-tank guided missiles from Israel

Engaged in a boundary dispute with China in eastern Ladakh, India is planning to enhance its surveillance capabilities and firepower by placing orders for Heron surveillance drones and Spike anti-tank guided missiles from Israel under the emergency financial powers granted by the government. The Heron unmanned aerial vehicles are already in the Air Force, Navy, and the Army and are being used extensively at the moment by both Army surveillance and Target acquisition batteries and Air Force in the Ladakh sector. “There is a need for acquisition of Heron UAVs to add to the existing fleet of these drones for meeting the requirements of our Air Force fleet. We are planning to place orders for these UAVs,” government sources told here without specifying the numbers to be procured.

Source: https://www.hindustantimes.com/

First anniversary of Chandrayaan-2 launch

Chandrayaan-2 marked one year of completion of launch by GSLV MkIII –M1 today. The Chandrayaan-2 spacecraft was inserted into lunar orbit on August 20, 2019. All eight payloads on Chandrayaan-2 are performing well. The global mapping of lunar surface and polar coverage are being carried out as per the mission plan. Extensive data has been acquired from Chandrayaan-2 payloads and parameters are being derived for (i) presence of water-ice in the polar regions, (ii) X-ray based and Infrared spectroscopic mineral information and (iii) mid and high latitude presence of Argon-40, a condensable gas on the Moon which gets released internally by the radio-active decay of 40 K . The report on the major findings from Chandrayaan-2 science experiments was planned to be released at the Annual Lunar Planetary Science Conference in March 2020; however due to COVID-19, it has been cancelled. Public release of Science data from Chandrayaan-2 for global use will begin in October 2020, wherein details for accessing the data will be provided.

Source: https://www.ISRO.gov.in/

TECHNOLOGY

ISRO’s MOM captures image of the Mars’ biggest moon Phobos

The Mars Colour Camera (MCC) onboard ISRO’s Mars Orbiter Mission has captured the image of Phobos, the closest and biggest moon of Mars. The image was taken on July 1 when MOM was about 7,200 km from Mars and 4,200 km from Phobos. “Spatial resolution of the image is 210 m. This is a composite image generated from 6 MCC frames and has been colour corrected,” ISRO said in an update along with the image. Phobos is largely believed to be made up of carbonaceous chondrites. According to ISRO, “the violent phase that Phobos has encountered is seen in the large section gouged out from a past collision (Stickney crater) and bouncing ejecta.” “Stickney, the largest crater on Phobos along with the other craters (Sokolsky, Roche & Girdling) are also seen in this image,” it said. The mission also known as Mangalyaan was initially meant to last six months, but subsequently ISRO had said it had enough fuel for it to last “many years.” The country had on September 24, 2014 successfully placed the Mars Orbiter Mission spacecraft in orbit around the red planet, in its very first attempt, thus breaking into an elite club. ISRO had launched the spacecraft on its nine-month- long odyssey on a homegrown PSLV rocket from Sriharikota in Andhra Pradesh on November 5, 2013. It had escaped the earth’s gravitational field on December 1, 2013. The Rs 450-crore MOM mission aims at studying the Martian surface and mineral composition as well as scan its atmosphere for methane (an indicator of life on Mars). The Mars Orbiter has five scientific instruments - Lyman Alpha Photometer (LAP), Methane Sensor for Mars (MSM), Mars Exospheric Neutral Composition Analyser (MENCA), Mars Colour Camera (MCC) and Thermal Infrared Imaging Spectrometer (TIS).

Source: https://www.hindustantimes.com/

BUSINESS

India moves to buy 6 more Poseidons from US for $1.8bn

India has formally kicked off the acquisition process for six more long-range Poseidon-8I aircraft from the US, while a plan is also underway for fast-track procurement of six Predator-B armed drones amidst the ongoing military confrontation

with China. India is extensively using the naval P-8I patrol planes, which are packed with radars and electro-optic sensors as well as armed with Harpoon Block-II missiles and MK-54 lightweight torpedoes, for surveillance missions over the Indian Ocean as well as eastern Ladakh. The Navy had inducted eight Boeing-manufactured P-8I aircraft under a $2.1 billion deal inked in January 2009, while the next four will be delivered from this December onwards under another $1.1 billion contract signed in July 2016. Top defence sources said the "letter of request" for six more P-8Is for around $1.8 billion has now been issued to the US for the government-to-government deal under Pentagon's foreign military sales (FMS) programme. "The US, in turn, will soon send the 'letter of acceptance' after congressional approval. The contract should be inked by early next year," said a source. Concurrently, the armed forces are examining "an emergency procurement" of six Predator-B or weaponized Sea Guardian drones from the US in wake of the ongoing confrontation with China along the 3,488-km long Line of Actual Control, especially in eastern Ladakh. TOI was the first to report last year that India had finalized the plan to acquire 30 Predator-B drones, 10 each for the Army, Navy and IAF, with different payloads to hunt and destroy targets over land and sea.

Source: Times of India

ACHIEVEMENTS

Indian Institute of Science (IISc)

Prof. Govindan Ranagarajan has been appointed as the next Director of the Institute with effect from on August 2020. Prof.Govindan Rangarajan is a Professor at the Department of Mathematics and currently the Chair of the Division of Interdisciplinary research. He is the current in charge chairman of the Development and Alumni Affairs (ODAA).

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ARTICLE

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Remote Identification: An Essential Technology for Safe Integration of Drones into Airspace

The Ministry of Civil Aviation recently notified the Draft UAS Rules 2020 and invited public comments on the proposed rules. This was necessitated due to increasing commercial and civilian use of drones in the country as also evidenced by current Covid-19 and anti-locust drone applications. The draft rules aims at creating a robust regulatory framework for the UAV industry to address the safety and security concerns of drone operations and providing a clear pathway for operationalizing the various aspects of the regulations while improving compliance of the drone eco-system players. Many widely quoted research studies predict that Indian Unmanned Aerial Vehicle (UAV) market will touch over $ 1 billion dollar by 2025 with drones' operations becoming commonplace. However, this is concomitant on the existence of conducive and consumer friendly regulatory environment that will allow seamless integration of drones into the airspace.

Globally aligned system necessary

Registration of drones is just the first step in the entire complex regulatory system. To enable safe and secure drone operations, it is necessary to implement an Unmanned Traffic Management (UTM) system that is integrated into the Air Traffic Management (ATM) system. However, India's unique one-stop national Unmanned Traffic Management (UTM) system called the "Digital Sky Platform" which will also implement the No Permission-No Takeoff clause, has been delayed continuously since its launch affecting legal drone operations in the country. Perhaps it is time to look at ways to simplify the system and take a cue from global developments in the field of UTM. Remote Identification technology has emerged as a frontrunner in such discussions as major western nations representing key drone markets are moving towards introducing this technology as a core component of their UTMs.

What is Remote Identification?

The Federal Aviation Administration (FAA) of the USA defines the remote identification (or Remote ID) as the ability of an unmanned aircraft in flight to provide identification and location information that people on the ground and other airspace users can receive. The FAA is currently working with industry players to develop technology requirements for its implementation of remote ID based on ASTM standards while simultaneously framing the final Remote ID rules. It is considered as a major step towards further integration of drones into the U.S. National Airspace (NAS) and for developing a robust unmanned traffic management (UTM) system. European Union Aviation Safety Agency (EASA) defines 'direct remote identification' as a system that ensures the local broadcast of information about an unmanned aircraft in operation, including the marking of the unmanned aircraft, so that this information can be obtained without physical access to the unmanned aircraft. EASA's new UAS rules adopted mid-June 2020, to be applicable from 31st December 2020, has made direct remote identification a necessary condition for operations. According to American Society of for Testing and Materials (ASTM), that has published standard ASTM F3411 - 19 on "Standard Specification for Remote ID and Tracking", Remote ID allows governmental and civil identification of UAS using an assigned ID for safety, security, and compliance purposes. ASTM standards is being adopted by global regulators such as FAA and EASA.

Types of Remote ID

Remote ID is broadly categorized into two types: Broadcast Remote ID and Network Remote ID. Broadcast Remote ID is based on the transmission of radio signals directly from an airborne UAS to ground receivers in the UAS's vicinity

using one of the transmit protocols for Wi-Fi or Bluetooth. Broadcast Remote ID is particularly useful in areas where network coverage is unreliable, disrupted, or not available. Network Remote ID is based on communication through internet from a Network Remote ID service provider (Net-RID SP) that interfaces directly or indirectly with the UAS, equipped with a sim card. Thus, Network Service Providers act as the middlemen between the operators and the end users such as ATC or law enforcement agencies. Under Remote ID protocols, drones will electronically share their drone's serial number; longitude and latitude of the drone and ground control stations; barometric pressure altitude of the drone and control station along with time stamp.

Advantages of Remote ID

Remote ID which is commonly referred to as a 'digital license plate' for drones increases Remote Pilot accountability by removing anonymity while preserving privacy of the operator's personal identifiable information. It helps in addressing the safety and security concerns associated with drones to a large extent by addressing the 'who' factor thereby building public confidence in the technology. It improves situational awareness during flight by providing critical locational information. This can enable the expansion of commercial and emergency drone operations such as beyond visual line of sight (BVLOS) operations, over people and nighttime operations essential for introducing drone delivery services, inspections, surveys, and search & rescue etc. Remote ID also makes it easy for law enforcement agencies to identify the non-compliant operators contributing to better enforcement of existing rules and regulations. Another often-cited advantage of the technology is that it will provide law enforcement agencies with actionable data for informed policymaking which will benefit the drone industry and the consumers.

Conclusion

In Indian context, where network connectivity is still a big challenge in remote areas and in certain urban pockets, Broadcast Remote ID is the obvious choice for VLOS operations that will make uniform implementation possible. Drones with Wi-Fi capabilities can easily become compliant to broadcast Remote ID by a quick firmware update requiring no additional hardware component to be fitted. Additionally, unlike Network Remote ID, Broadcast Remote ID does not have a user fee or subscription cost collected by third party network service providers, which will encourage greater acceptance of the technology by users. It is high time that we take a cue from global developments around the technology and look at ways to build our own Remote ID system. To this end, the government may like to work with the industry to develop the technical requirements for Remote Identification modeled on ASTM standards along with defining applicability threshold for ID and tracking requirements for various categories of drones. The government may also develop a data transmission industry standard to ensure interoperability between the Remote ID devices and the receivers on ground, which will reduce implementation costs.

Website : www.atfi.in