



# E-NEWS

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Current Affairs

Technology

Business

Events

Advertisements

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**Explained: How Bird Strikes Take Planes Down**

**Finance Minister Interacts with HAL CEO at Impressive AKAM Exhibition in Gandhinagar**



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## 1.2m trisonic wind tunnel at NAL completes 55 glorious years



The National Aerospace Laboratories (NAL) commemorated the 55 years of the 1.2 metre trisonic wind tunnel which is the only industrial wind tunnel in the country providing high-speed aerodynamics data for the national aerospace programmes in both civil and military sectors. The facility, which was built in Bengaluru between 1963 and 67 by the Council of Scientific and Industrial Research (CSIR), has been a test facility for many missiles, launch vehicles and aircraft developed by the Defence Research and Development Organisation (DRDO) and Indian Space Research Organisation (ISRO). The DRDO's missiles such as Agni, Akash, Prithvi, Pralay, SRSAM, LRSAM, ASTRA, NAG, LRAShM, BrahMos, Nirbhay and Unmanned Aerial Vehicles were characterised in this facility. That apart, India's first Light Combat Aircraft (LCA-TEJAS) was conceived at this facility and many weapon integration programmes on LCA, Mirage-2000, Sukhoi-30, Jaguar, and MiG aircraft were also successfully carried out here. "This facility has completed 55 years of glorious service to the nation and has crossed the milestone of 55,000 blowdowns which is a very commendable achievement indeed. The facility shall continue to meet the experimental aerodynamic data requirement of future programmes," the NAL said in a statement.

<https://www.deccanherald.com>

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For more information about Journal of Aerospace Sciences and Technologies Log on to our Website : [www.aerjournalindia.com](http://www.aerjournalindia.com)

## CURRENT AFFAIRS

### **Jyotiraditya Scindia Awards The First Type Certificate Under Drone Rules, 2021 To Gurugram-Based IoTechWorld**

Under Drone Rules, 2021, the first Type Certificate (TC) is awarded in just 34 days after submission of online application. Drone certification scheme has been notified on 26th January 2022, making it easier to obtain type certificate by drone manufacturers. The drone certification scheme is likely to create an eco-system for world class drones to be manufactured in India. Shri Jyotiraditya M. Scindia, Union Minister of Civil Aviation, today awarded the first Type Certificate (TC) under Drone Rules, 2021 to IoTechWorld Avigation Pvt Ltd. The Gurugram based company was established in April 2017 and is one of India's leading manufacturers of kisan drones. IoTech has received the Type Certificate in barely 34 days after submission of its online application on the DGCA's DigitalSky Platform on 11 May 2022. This is despite the fact that the Drone Rules, 2021, allow 60 days to Quality Council of India (QCI) or the Certification Bodies (CB) and 15 days to DGCA for issuing the Type Certificate (i.e 75 days in total), provided all the necessary documents and test reports are as per specifications. The Drone Rules, 2021 were notified on 25 Aug 2021 and the 'Certification Scheme for Unmanned Aircraft Systems (CSUAS)' for obtaining Type Certificate (TC) for drones was notified on 26 Jan 2022. There are three globally-renowned Certification Bodies (CB) approved by QCI namely – TQ Cert, UL India and Bureau Veritas. Drone manufacturers are free to approach any Certification Body for testing their drone prototype. The drone certification scheme of January 2022 was developed by the Quality Council of India in consultation with drone startups, industry, academia and defence experts. The Government played the role of that of a facilitator and problem solver. The drone certification scheme is likely to create an eco-system for world class drones to be manufactured in India and sold all across the world. There are 14 drone prototypes that are currently undergoing the certification tests. The number of Type Certified prototypes may exceed 100 over the next three years. Speaking on this occasion, Shri Jyotiraditya M. Scindia congratulated IoTechWorld Avigation Pvt Ltd for the first Type Certificate (TC) under Drone Rules, 2021. He said that Ministry of Civil Aviation is working in the direction of Hon'ble Prime Minister's vision "Minimum Government, Maximum Governance". India has set a target to become a drone hub by 2030 and issuing of type certificate in record 34 days is a step in that direction. The other drone prototypes shall also be awarded certification soon, he added.

#### **Other drone reforms**

1. The Central Government has carried out a series of reform measures, as follows:
1. Liberalised Drone Rules, 2021 has been notified on 25th August 2021
2. Drone Airspace Map has been published on 24th September 2021, opening up nearly 90% of Indian airspace as a green zone for drone flying up to 400 feet
3. Production-Linked Incentive (PLI) scheme for drones has been notified on 30th September 2021
4. UAS Traffic Management (UTM) Policy Framework has been published on 24th October 2021
5. Monetary grant program for purchase of agricultural drones was announced by the Union Agriculture Ministry on 22nd January 2022.
6. All five application forms under Drone Rules, 2021 have been made online on the DigitalSky Platform on 26th January 2022
7. Drone certification scheme has been notified on 26th January 2022, making it easier to obtain type certificate by drone manufacturers.
8. Mission 'Drone Shakti' has been announced for supporting drone startups and promoting Drone-as-a-Service (DrAAS) as part of the Union Budget on 1st February 2022.
9. Drone import policy has been notified on 9th February 2022, banning import of foreign drones and freeing up import of drone components
1. Drone (Amendment) Rules, 2022 has been notified on 11th February 2022, abolishing the requirement of a drone pilot licence.

2. Applications from manufacturers for PLI scheme for drones and drone components were invited during 10-31 March 2022. The first provisional list of beneficiaries was released on 20th April 2022.

### **Global drone hub by 2030**

Drones offer tremendous benefits to almost all sectors of the economy. These include- agriculture, mining, infrastructure, surveillance, emergency response, transportation, geo-spatial mapping, defence, and law enforcement to name a few. Drones can be significant creators of employment and economic growth due to their reach, versatility, and ease of use, especially in India's remote and inaccessible areas.

Given its traditional strengths in innovation, information technology, frugal engineering; supportive policies, monetary incentives and a huge domestic demand base, India has the potential of becoming a global drone hub by 2030.

**Source:** <https://www.globalgreenews.com/>

### **IISc top Indian institute in QS world varsity rankings**

The Indian Institute of Science (IISc) in Bangalore emerged as the best higher education institution in India, ranking 155th globally in the latest edition of the Quacquarelli Symonds (QS) World University Rankings (WUR). IISc has witnessed a massive jump of 31 positions in its rank in comparison to last year. According to a statement issued by QS analysts, the 19th edition of the ranking featured a total of 41 Indian Universities. Of them, 27 were featured in the top 1000. Last year, 22 Indian institutes were placed among the top 1000. As many as six of these 27 universities found place within 300 but only three made it to the top 200, like last year.

**Source:** <https://www.hindustantimes.com/>

### **ISRO Offers Free Online Course on Geospatial Applications for Students; Apply Now**

The Indian Space Research Organisation (ISRO) is inviting applications for 'Geospatial Applications for Forest Ecosystem Analysis' from students and scientific staff. The course aims to offer an understanding of geospatial technology as an effective tool for assessment, monitoring and management of forest ecosystems and is conducted by the Indian Institute of Remote Sensing (IIRS).

#### **Things to know:**

- Only Indian nationals can apply.
- The applicants must be postgraduates or final year postgraduate students of environmental science or life science.
- The scientific staff of the central/ state government, faculty/ researcher at university/ other institutions and members of NGOs can apply too.
- Course study materials like lecture slides and video-recorded lectures will be made available through e-class.
- Desktop computer with web camera, microphone and output speakers or laptop with microphone camera and output speakers or large display screen/ projector/ TV with high-speed internet connection is necessary to attend the course.
- There are a limited number of seats and registration will be done on a first-come, first-serve basis.
- The coordinator will need to approve participants for the course.
- For more information, go through the official brochure.

#### **How to apply:**

- To get enrolled in this programme, the interested organisations/ universities/ departments/ institutes have to identify a coordinator at their end.
- It is the coordinator who should conduct the institution registration on the official website.

- Participants can make separate registration on the official website by selecting their organisation as the nodal centre.
- Study materials will be available here, after registration.
- Course updates will be available on the official website of IIRS.

### Important dates:

- Course dates – 20 June to 25 June 2022.
- Registration is open till the date the course begins.

Source: <https://www.thebetterindia.com/>

### ISRO - NASA Space Apps 2022 Challenge

NASA international space app challenge is the largest annual global hackathon that began in the year 2012. Space Apps is managed by the Earth Science Division, Science Mission Directorate, at NASA Headquarters in Washington, DC. The two-day event inspires collaboration, creativity, and critical thinking that fosters interest in Earth and space science and exploration. The goal of the event is to raise awareness about the NASA's/ ISRO open data, foster interest in earth and space science technology, and encourage and nurture the interest in STEAM in the young generation. This year the Space App Challenge is scheduled for October 1-2, 2022. ISRO joined the NASA space app challenge team to organise this event in India. ISRO is inviting coders, entrepreneurs, scientists, designers, storytellers, makers, builders, artists, and technologists to participate in the 11th annual hackathon. During a 2 day hackathon, participants from around the world will create teams and use Earth observation data to develop solutions to issues our world is facing. The interested Leads can register for organising the event and young enthusiasts can avail the opportunity to participate in the hackathon.



Source: <https://www.isro.gov.in/>

### Indian Defence Firms Announce Submarine-Launched UAV Project

Two private-sector Indian defence firms have announced that they will co-operate in the research and development of a submarine-launched unmanned aerial system (UAS). According to an industry source, the UAS will comprise the unmanned aerial vehicle (UAV) plus a specialised underwater launch canister. The project was unveiled during Bharat Drone Mahotsav 2022 in New Delhi on 27 May by the Bangalore-based UAS developer NewSpace Research and Technologies (NRT) and Larsen & Toubro (L&T) Defence. The companies have signed a memorandum of understanding

(MOU) to co-develop the platform. "Research for the project is starting immediately. The initial goal is to develop an underwater-launched UAV for the Indian Navy and for the global market, "This is the first private-sector undertaking of this important realm of submarine military technologies in India, and therefore, there are challenges. We are starting with one specific UAS [development] in the days ahead," the source added.

**Source:** <http://www.indiandefensenews.in/2022/06/indian-defence-firms-announce-submarine.html?m=1>

## **Explained: How Bird Strikes Take Planes Down**

The Delhi-bound Spicejet aircraft from Patna had to make an emergency landing after a bird struck the engine and damaged three blades. Bird strikes, unfortunately, pose a real threat to passenger planes. Let's look at the statistics around birds that strike aircraft. A 2006 study on bird collisions conducted by the University of Nebraska showed that most strikes happen at an altitude lower than 500 feet. Almost 70 per cent of collisions happened during the initial stages of take-off or the final phase of landing and affected mostly the frontal aircraft regions like wings, jet engines and windshields. Collisions keep increasing. The number of bird collisions with aircraft has substantially increased. According to UK Civil Aviation Authority data on bird strikes, 1,835 confirmed hits were reported in 2016. In India, this number was 839, a DGCA report showed. Both these numbers were the highest in the five years from 2012 to 2016. DRDO data has been gathered on bird strikes (for IAF from 2010-2018) and has been categorised as per the locations where the hits occurred. The strikes in the sanitised zone, where dedicated personnel are deployed to observe, report and scare away birds (runway area and approach path) were observed to be 25.46 per cent and hits outside the sanitised zone were found to be 13.97 per cent. The most strikes were revealed to be in unknown locations with 60.55 per cent. Most collisions take place during daylight when bird movement is particularly strong. Why do collisions occur? An International Civil Aviation Organization-backed 2014 study lists several reasons for bird strikes. Habitat features like open grass areas, water, etc. and the presence of shrubs and trees can act as bird attractants. Many airports have considerable grass areas within their perimeters. Landfills and waste disposal sites near airports can increase the influx of birds. Airport locations can also influence increased bird movement. Airports in coastal regions have much more uncontrolled bird activity than inland airports. What happens in a bird strike? Certain bird strikes pose a serious threat to aircraft. Flight deck windshields are made of three layers of glass-faced acrylic. Between them, there is a thin urethane layer and each panel has an anti-fog and anti-ice system. While small birds are not a serious problem, the outer layers can suffer cracks if a heavy bird hits the aircraft. The presence of multiple layers ensures that the aircraft remains pressurised during bird collisions. The pilots are also trained to turn on window heating before takeoff, which makes windows softer and less fragile. Plane engines, however, are vulnerable to disruption in the movement of the rotatory blades when a bird hits the turbine and gets caught in the engine. This can damage blades and cause a partial or total engine failure. The good news is that plane engines are generally robust and can withstand some bird strikes. In case one engine is lost, the thrust from the remaining engines can be increased to limit the problem. Most aircraft can continue to fly even if one engine ceases to function. As of today, there is no solution to the problem of bird strikes. More research and analysis are required to come up with practical and cost-effective ways to tackle the challenge.

**Source:** <https://www.deccanherald.com/specials/explained-how-bird-strikes-take-planes-down1119800.html>

## TECHNOLOGY

### **Ready with NISAR payload integration: Nasa officials**

Eight years after striking a deal with the Indian Space Research Organisation (ISRO), the National Aeronautics and Space Administration (Nasa) is ready with the payload integration of the NASA-ISRO Synthetic Aperture Radar (NISAR) mission, gearing up for a 2023 launch. NISAR, a joint earth-observing mission between Nasa and ISRO, is aimed at making global measurements of the causes and consequences of land surface changes using advanced radar imaging. The payload integration, completed in the United States, is to be shipped to India during the later part of this year. This will then be integrated with the satellite and the launch vehicles, a top Nasa official told a gathering of researchers at the Indian Institute of Science (IISc) here. The mission had faced Covid-related delays, but now much progress has been made, Mr Thomas Zurbuchen, associate administrator, NASA science mission directorate on future space exploration, said. The mission, he said, is extremely complex. Nasa officials, he informed, have already met the ISRO Scientific Secretary. The mission will measure earth's changing ecosystems, dynamic surfaces, and ice masses providing information about biomass, natural hazards, sea-level rise, and groundwater. In her presentation, Karen M St Germain, earth science division director, Nasa, said the payload integration was complete at JPL (Jet Propulsion Lab). "We are going into testing. First, the launch integration tests and then the functional tests, after which the whole thing will be shifted back to India for integration with the satellite and for integration with the launch vehicle." The Indian and American space agencies, she said, had also jointly built an air-borne test bed for the radars. Calling space as incredible marketplace, Mr Zurbuchen said it was fuelled by incredible investment that has the potential to touch close to a trillion dollars. "The space industry will go up by a factor of three. Nasa is driven by 30% tech and and 70% team," he said.

**Source:** <https://www.deccanherald.com/>

### **Space startups to get support to build rockets, says ISRO head Dr Somanath**

On a steady growth trajectory, the country's space start-ups will get hand-holding support from the Indian National Space Promotion and Authorisation Centre (IN-SPACe) while allowing free-thinking and entrepreneurship. This is critical for youngsters to be part of the space ecosystem, riding on what the Indian Space Research Organisation (ISRO) has achieved. This was the message from ISRO Chairman and Secretary, Department of Space, S Somanath at the Development of Space Start-up Ecosystem in India (DeSSEI) conference here. India is a leading space-faring nation today, which has built its own launch vehicles, satellites, and several applications, he said. "We have built a lot of indigenous content in all of them. Now we have to find markets for what we do here and also provide opportunities for youngsters to come in and be part of the space ecosystem. We have been seeing the growth of space start-ups in India, and they are trying to look at problems and solutions in a different manner," said Dr Somanath. The space start-ups, he said, will offer unique solutions to address the country's problems. "It will not come just by building fantastic rockets but by creating solutions that the world can look forward to. For instance, there could be solutions that can help make the internet available to everybody, how IoT and 5G can merge with space technology and how day-to-day life of an individual can be connected to the information highway," he pointed out. Sounding a note of caution, IN-SPACe Chairman Pawan Kumar Goenka reminded that Space was not an easy business. "No one should think they can come into this sector and make large strides just like that. A lot of blood, sweat and tears will be required to succeed in space. Everyone coming in must have the humility to consult experts, use them as mentors, treat them as hand-holders to learn what they don't know to succeed in this sector," he said. Earlier, Union Minister of State for Skill Development and Entrepreneurship Rajeev Chandrasekhar inaugurated the conference and said space start-ups could find huge opportunities in launch vehicles and other technologies in the space ecosystem. These require innovation and entrepreneurship in the years to come.

**Source:** <https://www.deccanherald.com/>

## BUSINESS

### **Ambassador of Dominican Republic to India met Chairman, ISRO/ Secretary, DOS**

H. E. Mr. David Puig, Ambassador of Dominican Republic to India called on Shri S. Somanath, Chairman, Indian Space Research Organisation (ISRO)/ Secretary, Department of Space at ISRO Headquarters on June 07, 2022. Ambassador expressed strong desire to learn from India's vast experience in harnessing the benefits of space technology for national development through access to satellite data, training and capacity building in space technology applications. ISRO/DOS assured all possible support in capacity building in Dominican Republic through training programmes, joint activities such small satellites and remote sensing applications.



Source: <https://www.isro.gov.in/>

### **Finance Minister Interacts with HAL CEO at Impressive AKAM Exhibition in Gandhinagar**

Mrs Nirmala Sitharaman, Union Minister for Finance and Corporate Affairs and Mr Bhupendrabhai Patel, Chief Minister of Gujarat interacted with HAL CEO (MiG Complex), Mr D. Maiti, at the AKAM (India@75) Exhibition of PSUs being held at Gandhinagar from June 9 to 12, 2022. HAL is showcasing its contributions for progress of the nation by putting up a stall. Models of HAL aircraft, products and films on several themes such as HAL's capabilities, Make-in-India, CSR etc are drawing the crowd. Mr Ali Rizvi, Secretary, DPE, delivered the key-note address at the Round Table of CEOs of CPSUs on the theme 'Role of CPSEs for Self- Reliant India'



Source: <https://hal-india.co.in/>

### **Space Policy 2022 in the offing, but industry has concerns on insurance**

Even as the Department of Space is set to come out with a new policy to facilitate greater entry of private firms in the space sector, there are industry concerns on how the private satellites or launch vehicles would be insured and whether the government would have any involvement in insuring the space assets created by private firms. The Space Policy 2022, prepared after extensive consultation with the stakeholders from the industry is in the final stage. Once out, it will spell the role of the private sector in satellite communication, remote sensing and technology transfer. "The space policy is in the works. Though we have not been using it much, the new technology of low earth orbit (LEO) satellites is a low-cost game. There are a huge number of satellites in LEO. This will change the space sector," Principal Scientific Advisor Mr Ajay Kumar Sood said last week. The government, Mr Sood said, would encourage the manufacturing of satellites in the private sector for a range of applications from health care, agriculture to urban

development and property tax estimation. “We will need more deliberation on the aspect of insurance. The cost of launch vehicles and satellites will increase significantly rendering them economically non-viable if they are to be insured by the private companies” Lt Gen AK Bhatt (retired) director-general, Indian Space association told DH. Prime Minister Narendra Modi is likely to share the government’s views on the space sector when he inaugurates the IN-SPACe headquarters in Ahmedabad. Creation of IN-SPACe (Indian National Space Promotion and Authorisation Centre) to act as a promoter of space activities by the non-governmental and private entities along with New Space India Limited – the public sector undertaking of the Department of Space – to ‘own’ the operational launch vehicle and space assets of ISRO are part of the reforms that the Centre had undertaken in the space sector. According to the Economic Survey, 2021-22, there are currently 101 start-up companies, of which 47 entered into the field in 2021 and 21 in 2020. “With the private sector participation, the Indian space sector is expected to capture a larger share of the global space economy, which is close to \$447 billion in 2020.

**Source:** <https://www.deccanherald.com>

### **Space startups begin supply of critical parts for Gaganyaan**

The Gaganyaan manned space mission of ISRO moved a step ahead in the development phase, with a Bengaluru-based company supplying the crew module fairing (CMF) structure designed to protect the astronaut module during the launch. Built by Design Technology Limited (ADTL), the protective CMF is required to prevent the module from the impact of dynamic pressure and aerodynamic heating, when it is launched through the atmosphere. In another space-related development, the Indian Space Promotion and Authorisation Centre (IN-SPACEe) has commenced the process of authorising space start-ups to launch payloads. The first of these start-ups are the Hyderabad-based Dhruva Space Pvt. Ltd. and Bengaluru-based Digantara research & technologies Pvt. Ltd. According to a statement by IN-SPACE, Dhruva Space’s Dhruva Space Satellite Orbital Deployer (DSOD 1U) is a technology demonstration payload. Digantara’s ROBust Integrating Proton Fluence Meter (ROBI) is a Proton dosimeter payload. The two payloads are scheduled to be taken onboard the PSLV Orbital Experimental Module of PSLV-C53 scheduled to be launched on June 30. “The first two launch authorisations issued by IN-SPACE is an important milestone and marks the beginning of private space sector launches in India,” IN-SPACE chairman Mr Pawan Kumar Goenka said in a statement.

**Source:** <https://www.deccanherald.com>

### **Defence Ministry Signs 2,971-Crore Deal for Indigenous Astra Beyond Visual Range Missiles**

The Defence Ministry signed a contract with defence public sector undertaking Bharat Dynamics Limited (BDL) for supply of the indigenously developed Astra Mk-I Beyond Visual Range (BVR) air to air missiles and associated equipment for the Indian Air Force (IAF) and the Navy at a cost of 2,971 Crore. “Astra Mk-I missile and all associated systems for its launch, ground handling and testing has been developed by Defence Research and Development Organisation (DRDO) in coordination with the IAF,” a Ministry statement said. The missile, for which successful trials have already been undertaken by the IAF, is fully integrated on the Su-30 MK-I fighter aircraft and will be integrated with other fighter aircraft in a phased manner, including the Light Combat Aircraft, the statement said. “The Navy will integrate the missile on the MiG-29K fighter aircraft,” it stated. Astra has a range of over 100 kms with modern guidance and navigation techniques and has midcourse guidance and RF seeker based terminal guidance to achieve target destruction with pin point accuracy, the DRDO had stated earlier. In July 2020, the Defence Acquisition Council (DAC) headed by Union Defence Minister Rajnath Singh had approved the purchase of 248 Astra-MK1 missiles, of which 200 are meant for the IAF and 48 for the Navy. Air to Air missile with BVR capability provides large stand off ranges to fighter aircraft which can neutralise the adversary aircraft without exposing itself to adversary air defence measures, thereby gaining and sustaining superiority of the air space. “This missile is technologically and economically superior to many such imported missile systems,” the Ministry said. As per the statement, Transfer of Technology from DRDO to BDL for production of Astra-Mk1 missile and all associated systems has been completed and production at BDL is in progress. 2 “This project will act as a catalyst for development of infrastructure and testing facilities at BDL. It will also create opportunities for several Micro, Small and Medium Enterprises (MSME) in aerospace technology

for a period of at least 25 years," it added. A longer range and more sophisticated Astra-Mk2 is under development by DRDO and once it is inducted will free up dependency on imports in the BVR segment.

**Source:** <https://www.thehindu.com/news/national/defence-ministry-signs-2971-cr-deal-for-indigenoustra-beyond-visual-range-missiles/article65480432.ece>

## EVENTS

### **22nd International Federation of Automatic Control (IFAC) Symposium on Automatic Control in Aerospace (ACA) 2022**

**Venue:** Indian Institute of Technology (IIT) Bombay, Mumbai

**Date:** November 21-25, 2022

More details can be found on the symposium website: <https://aca2022.com/>  
For any query/question, please feel free to reach us (Email: [contact.aca2022@aero.iitb.ac.in](mailto:contact.aca2022@aero.iitb.ac.in)).

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### **Thirty-fifth National Convention of Aerospace Engineers and National Seminar on SMART MATERIALS AND THEIR APPLICATIONS IN AEROSPACE STRUCTURES**

**Venue:** Engineers Bhawan, Punjab and Chandigarh State Centre,  
The Institution of Engineers (India), Chandigarh

**Date:** 25-26 November, 2022

#### **Organized By**

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