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SPADEX MISSION



The Indian Space Research Organisation (ISRO) has successfully completed the undocking of two satellites, part of the Space Docking Experiment (SpaDeX) mission, marking a significant milestone in India's space exploration journey.

- SpaDeX mission is a **cost-effective technology demonstrator mission** for the demonstration of in-space docking using two small spacecraft launched by **PSLV**.
- The **primary objective of the SpaDeX** mission is to develop and demonstrate the technology needed for rendezvous, docking, and undocking of two small spacecraft (**SDX01**, which is the Chaser, and **SDX02**, the Target, nominally) in a low-Earth circular orbit.
- The secondary objectives include:
 - Demonstration of the transfer of electric power between the docked spacecraft, which is essential for future applications such as in-space robotics,
 - Composite spacecraft control, and
 - Payload operations after undocking.
- The SpaDeX mission consists of two small spacecraft (about 220 kg each) launched by PSLV-C60.
- **Recent Developments:**
 - The SPADEX satellites were successfully docked recently. ISRO has now accomplished the pivotal operation of undocking of SPADEX satellites in the very first attempt on 13th March, 2025.
 - The undocking of the satellites took place in **460 km circular orbit with 45-degree inclination**.
 - The satellites are now orbiting independently and their health is normal.

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- With this, ISRO has now successfully demonstrated all the capabilities required for rendezvous, docking and undocking operations in a circular orbit.
- **Significance:**
 - This accomplishment made India the **fourth country after USA, Russia and China** in the world to achieve the feat.
 - SpaDEX mission is expected to be a stepping stone for India's future endeavours in space exploration which include getting rocks and soil from the moon on Earth, the proposed Bharatiya Antariksha Station and landing an astronaut on the lunar surface.

What is ISRO?

- Founded in 1969, the Indian Space Research Organisation (ISRO) is the **space agency of India**, responsible for the planning and execution of space-related activities in the country.
- ISRO is one of the most prominent and successful space agencies in the world, known for its cost-effective and efficient space missions.
- ISRO operates under the **Department of Space**, which reports directly to the Prime Minister of India. The department primarily executes the Indian Space Programme through various ISRO Centres.

AUTOMATED PERMANENT ACADEMIC ACCOUNT REGISTRY (APAAR) ID



Parents and activists worry that the Ministry of Education's Automated Permanent Academic Account Registry (APAAR) ID for school students could become near impossible to opt out from, even though the programme is supposed to be voluntary.

- It is a specialized **identification system** designed for **all students in India**.
- This initiative is part of the '**One Nation, One Student ID**' program launched by the Union government, aligning with the new **National Education Policy of 2020**.

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- The APAAR ID serves as a **lifelong academic passport**, consolidating all achievements and credentials of a student in one place.
- APAAR assigns a **unique and permanent 12-digit ID** to every student, offering a **comprehensive record of their academic achievements**, including degrees, scholarships, awards, and other credits.
- This identifier **remains with the student throughout their educational career**, fostering a seamless transition from one level of education to another.
- **How APAAR Works:**
 - **Schools:** Record and **manage students' academic data**, achievements, and activities in APAAR.
 - **Higher Education Institutions (HEIs) and Skill Institutes:** Access students' **academic history** and records for admission and recruitment purposes.
 - **Students:** Digitally **store and retrieve** comprehensive **academic records**, achievements, and co-curricular accomplishments.
- **Benefits to Students:**
 - **Unified Academic Identity:** A single platform to consolidate and showcase academic records.
 - **Streamlining Student Records:** Simplifying record-keeping for students, parents, and educators.
 - **Digital Repository:** Securely storing academic data and achievements.
 - **Seamless Academic Mobility:** Facilitating smooth transitions between educational levels.
- **Data Security and Confidentiality:**
 - APAAR prioritizes data security and confidentiality, **sharing information only with necessary government agencies** for privacy and security.
 - **Consent-based document sharing** ensures that students have control over the information shared through APAAR.
- **Academic Progress Tracking:**

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- Students can effortlessly monitor their academic journey, enabling personalized study plans and **real-time performance analytics**.
- The system aids in skill gap analysis and provides industry-relevant content for up skilling programs.
- **Enrolment process:**
 - The enrollment process will be **carried out by the school with the consent of their parents**, who will also be able to withdraw their consent at any given point of time.
 - The government assured that the data will be shared only with concerned government agencies if and when required.
 - The **data** collected on each student by the schools will be **stored in centrally functioning District Information for Education portal**.

SUPERSOLID



In an exciting scientific breakthrough, researchers have successfully turned light into a "supersolid" for the first time ever.

- Supersolids are a strange state of matter defined by **quantum mechanics** where particles condense into an orderly, crystalline solid but also move like a liquid that has **no viscosity**.
- Usually, solids don't move on their own, but supersolids change direction and density depending on particle interactions while maintaining an organized lattice structure.

Why Are Supersolids So Cold?

- Supersolids require **extremely low temperatures to form** — usually very close to absolute zero (minus 459.67 degrees Fahrenheit, or minus 273.15 degrees Celsius).
- Most of the particles have to occupy the **lowest energy state available**, and heat makes particles jump up and down like excitable toddlers in a ball pit.

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- If a material is cold enough, the temperature no longer obscures how the particles interact with each other. Instead, the tiny effects of quantum mechanics become the defining factors in how the material behaves.

Significance of the Discovery:

- Supersolids have traditionally been observed in **Bose-Einstein condensates (BECs)** of ultracold atoms near absolute zero.
- However, this new development expands the scope by **coupling light and matter**, enabling researchers to study condensed-matter physics **under extreme quantum conditions**.
- The discovery has profound implications for quantum computing, where supersolid-based systems could enhance **qubit stability**.
- It also opens pathways for advancements in optical circuits, photonic devices, and fundamental physics research.

MISSION AMRIT SAROVAR



The Indian Railways will dig ponds as part of the Union government's Mission Amrit Sarovar that aims to address the critical issue of water scarcity in the country.

- It was launched in 2022 to **construct or rejuvenate 75 Amrit Sarovars (ponds) in each district**, totaling 50,000 across the country.
- It helps to **overcome the water crisis in rural areas** of the country.
- **Every Amrit Sarovar** will have a **pondage area of at least 1 acre** with a water holding capacity of about 10,000 cubic metre.
- The **site of Amrit Sarovars** will be approved by special Gram Sabha, which will also name **Panchayat Partinidhi**, who will on its behalf supervise the development of Amrit Sarovar.

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- It focuses on water conservation, people's participation, and proper **utilization of soil excavated** from the water bodies to boost infrastructure projects.
- It is based on the “**Whole of Government**” **approach** with the participation from the Ministry of Rural Development, Ministry of Jal Shakti, Ministry of Culture, Ministry of Panchayati Raj, Ministry of Environment, Forest & Climate Change, and technical organizations.
- There is **no separate financial allocation** for Mission Amrit Sarovar.
- **Bhaskar Acharya National Institute for Space Application and Geo-informatics (BISAG-N)** has been engaged as a **technical partner** for the Mission.
 - **Amrit Sarovar Portal and Mobile App** developed by BISAG-N is used for tracking the progress/ performance of Mission Amrit Sarovar in districts.

ASHWINI RADAR



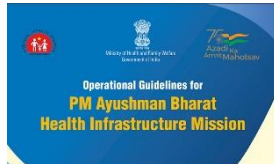
The Union Ministry of Defence (MoD) recently signed a ₹2,906 crore contract with Bharat Electronics Limited (BEL), Ghaziabad for the procurement of Low-level Transportable Radar, LLTR (Ashwini).

LLTR (Ashwini) is active **electronically scanned phased array radar** based on state-of-the-art **solid-state technology**.

- It is capable of **tracking aerial targets** from high-speed fighter aircraft to slow-moving targets such as Unmanned Aerial Vehicles and helicopters.
- The fully indigenous Ashwini radars have been jointly developed by the **Defence Research and Development Organisation (DRDO)** and BEL.
- These radars feature **integrated Identification Friend or Foe (IFF)** systems with electronic scanning in azimuth and elevation, enabling 4D surveillance.
- Designed for mobility, the radars come with advanced **Electronic Counter-Countermeasures (ECCM)** capabilities and can operate across various terrains.

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PRADHAN MANTRI AYUSHMAN BHARAT HEALTH INFRASTRUCTURE MISSION



(PM-ABHIM)

- It is a **Centrally Sponsored Scheme (CSS)** with certain Central Sector Components which has total outlay of Rs. 64,180 Crores for the scheme period (2021-22 to 2025-26).
- The scheme envisages a new generation of reforms **to integrate and strengthen health service delivery and public health action.**
- The measures under the scheme are aimed at strengthening health systems and institutions in order to provide **a continuum of care at all levels, namely primary, secondary, and tertiary**, as well as preparing health systems to respond effectively to current and future pandemics and disasters.
- The following are the components under CS Component of the scheme:
 - Construction of 17,788 Building less Sub-Centres as Ayushman Bharat- Health & Wellness centres, now known as Ayushman Arogya Mandir (AAM).
 - Establishment of 11,024 Health & Wellness Centres, now AAM in Urban areas with a focus on slum and slum-like areas.
 - Establishment of 3382 Block Public Health Units (BPHUs) at the block level.
 - Establishment of 730 District Integrated Public Health Labs (IPHL) in the country, wherein each district will have one such lab.
- **Public Health and Hospital are State subjects**, implementation of the scheme lies under the purview of State Government. However, MoHFW provides technical and financial support to the States/Union Territories (UTs) for effective implementation of the scheme.
- The scheme is **implemented by the State government** and awareness generation activities including IEC for the scheme is periodically conducted by the State health department along with other public health programs under the National Health Mission.

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UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT (UNCTAD)



- Headquartered in Geneva, Switzerland, UNCTAD is a permanent intergovernmental body established by the **United Nations General Assembly** in 1964.
- It supports developing countries **to access the benefits of a globalized economy more fairly and effectively.**
- It provides economic and trade analysis, facilitates consensus-building and offers technical assistance to help developing countries use trade, investment, finance and technology for inclusive and sustainable development.
- It is part of the **UN Secretariat**. It reports to the UN General Assembly and the Economic and Social Council but has its own membership, leadership, and budget. It is also part of the **United Nations Development Group.**
- **Key Developments:**
 - The first United Nations Conference on Trade and Development (UNCTAD) was held in **Geneva in 1964.**
 - In 1989, the Agreement on the **Global System of Trade Preferences among Developing Countries (GSTP)** came into force. It provided for the granting of tariff as well as non-tariff preferences among its members. To date, the Agreement has been ratified by 44 countries.
 - The conclusion of the **Uruguay Round of trade negotiations under the GATT** resulted in the establishment of the World Trade Organization in 1995, which led to a strengthening of the legal framework governing international trade.
- **Reports published by UNCTAD:**
 - Trade and Development Report
 - World Investment Report
 - The Least Developed Countries Report

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PILIBHIT TIGER RESERVE



- It is situated in the Pilibhit district of **Uttar Pradesh**, forming part of the Terai Arc Landscape, in the **upper Gangetic Plain Biogeographic**

Province.

- It lies along the **India-Nepal border** in the **foothills of the Himalayas**.
- The **river Gomati** originates from the PTR, which is also the catchment of several others like **Sharda, Chuka, and Mala Khannot**.
- The habitat is characterized by **sal forests, tall grasslands, and swamps**, maintained by **periodic flooding from rivers**.
- The **Sharda Sagar Dam** extending up to a length of 22 km. is on the boundary of the reserve.
- It has a **dry and hot climate**, which brings a combination of **dry teak forest and Vindhya Mountain soils**.
- **Vegetation: North Indian moist deciduous type.**
- **Flora:**
 - The **sal woodland** is very dense with good natural regeneration, amounting to almost 76% of the reserve area.
 - The forest patches are **interspersed with grass meadows** with several species like **Sacchrum, Sclerostachya, Imperata, Themeda, Bothriochloa, Vetiveria, Apluda, Dichanthium, Digitaria, and Cyperus**.
- **Fauna:**
 - It is home to a myriad of wild animals, including the **tiger, swamp deer, Bengal florican, hog deer, leopard, e**
 - The rich bird life in Pilibhit includes species like **Swamp Francolin, Great Hornbill, Bengal Florican, Lesser Florican, Black Francolin, Jungle Bush Quail, Red Junglefowl, Asian Openbill, etc.**