

PIVOT :



Shaping Perspective in Space and Science

WEDNESDAY, 20 NOVEMBER 2024



ISRO's GSAT-N2: Transforming India's Broadband Connectivity

ISRO to launch GSAT-N2, its most advanced communications satellite, to boost broadband connectivity nationwide, including remote areas and in-flight internet.

Launch Details

Rocket: SpaceX's Falcon 9, chosen due to the satellite's heavy weight of 4,700 kg, which exceeds the capacity of Indian rockets.

Launch Timing: The launch is scheduled for midnight on Tuesday, with the countdown beginning at 11:46 PM on Monday. The mission is expected to last 34 minutes and will be streamed live on SpaceX's X account.

Broadband Connectivity:

The satellite aims to bridge the digital divide by offering broadband services to a large subscriber base, particularly in regions with limited internet access. It will provide broadband connectivity via small user terminals.

Satellite Features

Capacity & Coverage: GSAT-N2 features a combination of narrow and wide spot beams, including eight dedicated beams for India's northeastern states. This design allows for efficient frequency reuse, enhancing the satellite's coverage and performance.

Significance:

The GSAT-N2 launch is part of India's broader initiative to improve national connectivity and is seen as a major step forward in India's space and telecommunications efforts. It follows on the heels of SpaceX's own plans to roll out Starlink internet services in India, marking a new era of international cooperation

Collaboration with SpaceX

ISRO Chairman S. Somanath confirmed the partnership with SpaceX in August 2024, with the satellite already en route to the US for launch preparations.

The mission highlights the growing collaboration between ISRO and SpaceX, both in space exploration and the expanding telecommunications sector.

services in India, marking a new era of international cooperation and technological advancements in space exploration.

Donald Trump, Elon Musk, and the Future of NASA's Space Strategy

Under a potential second term for President Donald Trump, NASA's space strategy could see significant changes, particularly with Elon Musk playing a pivotal role. The two are known for their bold, disruptive approaches, and their collaboration could reshape U.S. space policy in profound ways.



A Shift Toward Mars?

One of the most notable changes could be a reevaluation of NASA's Artemis program, which aims to return humans to the Moon as part of a broader plan to eventually reach Mars. While Trump launched Artemis during his first term, he has consistently expressed skepticism about the Moon, preferring a more direct focus on Mars. "We want to reach Mars before the end of my term," Trump declared during his first term, he has consistently expressed skepticism about the Moon, preferring a more direct focus on Mars. "We want to reach Mars before the end of my term," Trump declared during his 2024 campaign—an ambitious goal that aligns with Musk's longstanding vision for humanity's future on the Red Planet. This could lead to a reevaluation of the Artemis program, with some speculating that the Moon mission may be accelerated or even skipped entirely.

China's Lunar Ambitions

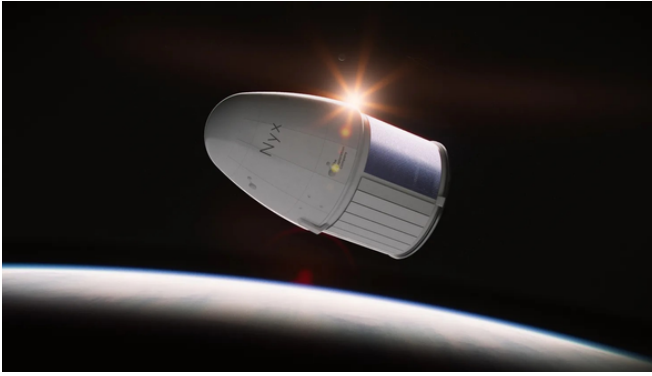
However, any shift away from the Moon could be complicated by China's growing ambitions in space. Beijing has set its sights on the lunar south pole, the same region targeted by the Artemis program. Trump, known for his competitive stance toward China, is unlikely to allow the Chinese to plant a flag on the Moon unchallenged, which could keep the U.S. focused on lunar exploration despite the push toward Mars.

The Road Ahead

With both Trump and Musk at the helm, the future of NASA's space exploration could be marked by a new era of speed, cost-efficiency, and ambitious goals. As George Nield, president of Commercial Space Technologies, put it, "It's going to be a wild ride." The U.S. space program is on the brink of a potential transformation that could redefine humanity's reach into the cosmos.

SpaceX vs. NASA's Space Launch System (SLS)

Another area where Musk's influence could be felt is in NASA's choice of rocket technology. NASA's Space Launch System (SLS), which is designed to power Artemis missions, has faced significant criticism for its high costs and lack of reusability. By contrast, Musk's SpaceX has developed the Starship rocket, which is fully reusable and could potentially revolutionize space travel. Musk's Starship has already garnered praise from Trump, who highlighted SpaceX's success in catching the rocket's booster stage with its "chopstick" arms during his election victory speech. Many in the space industry are now questioning whether Starship could replace SLS as NASA's primary vehicle for deep-space missions.



European SpaceX Rival Raises \$160 Million for Reusable Capsule

The Exploration Company (TEC), a European space startup, has secured \$160 million in funding to develop its Nyx capsule, designed to carry astronauts and cargo to space stations. The investment round was led by Balderton Capital and Plural, with support from French and German government-backed funds.

TEC's Nyx is a reusable spacecraft that can transport passengers and cargo into space and return to Earth for future missions. With growing global demand for space travel, TEC aims to offer Europe its own alternative to SpaceX's Dragon capsule.

CEO H         emphasized the increasing need for space vehicles as more countries, including the U.S., China, and India, expand their space programs. TEC has already secured \$800 million in contracts with companies like Starlab and Axiom Space. The company plans to launch the second version of Nyx in 2025, with a final version by 2028, partially funded by the European Space Agency.



SpaceX Launches Optus-X Telecom Satellite in Stunning Sunset Liftoff

SpaceX successfully launched the Optus-X telecom satellite on November 17 from Florida, with the Falcon 9 rocket's upper stage delivering it to geosynchronous transfer orbit (GTO). From there, Optus-X will travel on its own to its final geostationary orbit, positioned 22,236 miles (35,786 km) above Earth.

The launch was part of a busy three-day stretch for SpaceX, with upcoming missions planned for November 18, including a Starlink batch and an Indian telecom satellite. The company also aims to conduct the sixth-ever test flight of its Starship megarocket on November 19.

The launch took place against a beautiful sunset backdrop, and SpaceX's Falcon 9 successfully landed after completing the mission, marking another milestone for the company.



FUN FACT

Space is completely silent! There's no air in the vacuum of space, so sound has no medium to travel through. Astronauts in space can communicate with each other using radios, but if you were to be out there without a spacesuit, you'd hear absolutely nothing! It's one of the most eerie things about the cosmos.



NASA and Roscosmos at Odds Over Growing Leak in ISS's Russian Module, Raising Safety Concerns

Space Station Leak Threatens Safety: NASA and Roscosmos at Odds.

A growing leak in the Zvezda module of the International Space Station (ISS), controlled by Russia, has become a major safety concern for NASA. First identified in 2019, the leak has worsened in recent months, raising alarms about potential risks to crew safety and the station's integrity.

NASA and Roscosmos Disagree on Severity: NASA is worried that the leak, which is causing air to escape, could lead to catastrophic failure of the Russian module. Bob Cabana, former NASA astronaut, stated that while Roscosmos believes operations are still safe, they have not provided sufficient evidence to satisfy NASA's concerns. The two space agencies remain at odds over the severity of the problem, with NASA pushing for an independent assessment of the leak's cause and impact.

Leak Challenges and Safety Measures:

The leak's source is difficult to pinpoint, as the cracks are small and located in hard-to-reach areas. Despite efforts to seal the leak, air is still being lost at a rate of 2 to 2.5 pounds per day, above the station's baseline. To protect astronauts, NASA has sealed off the leaking section whenever it's not in use and has implemented emergency measures,

including providing a pallet seat on SpaceX Crew Dragon capsules for astronauts to return to Earth in case of emergency.

Operational Impact and Future of the ISS:

If the hatch to the leaking section is sealed permanently, it could reduce cargo capacity and require more fuel to maintain the station's orbit. The leak problem comes at a critical time, with NASA planning to operate the ISS through 2030, while Roscosmos has not committed to continuing beyond 2028. NASA is also preparing for the future by encouraging private sector involvement in developing new space stations.

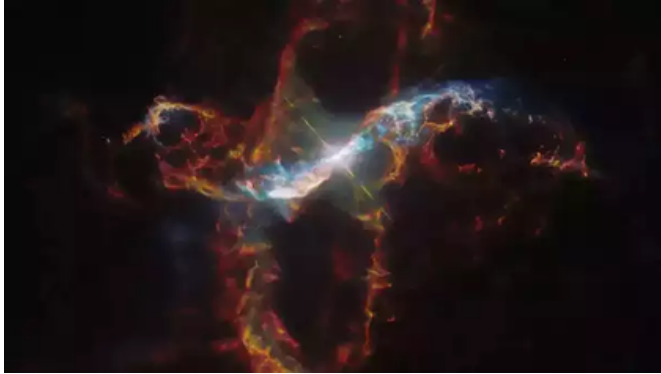
As the ISS continues to age, NASA faces increasing challenges in maintaining its operations while also preparing for its eventual replacement.

LINK:-

[As the ISS continues to age, NASA faces increasing challenges in maintaining its operations while also preparing for its eventual replacement.](#)

Image Gallery

James Webb Space Telescope



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Symbiotic Binary Star System



L1527
Protostar



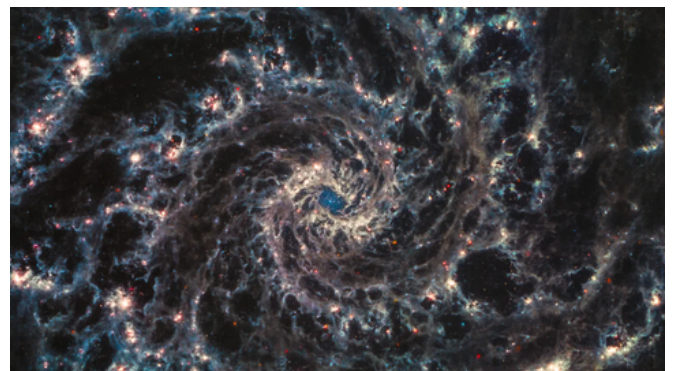
NGC 1672
Barred Spiral Galaxy
Constellation Dorado



Nebula



NGC 3810
Spiral Galaxy
Constellation Leo



Phantom Galaxy