Suborbital flight demonstrates interoperability of GNSS receivers

At sunrise on Oct. 1, 2024, SL-15 launched into a perfectly clear blue sky over the desert from Spaceport America, in Las Cruces, New Mexico. The flight — conducted by UP Aerospace with support from NASA's Flight Opportunities program — carried aloft the payloads and hopes of researchers from three countries — Italy, Germany and the United States — and ten organizations.

Spaceport America, the first commercial spaceport in the world, is an FAA-licensed launch complex. Situated on 18,000 acres adjacent to the U.S. Army White Sands Missile Range in southern New Mexico, it has a rocket-friendly environment of 6,000 square miles of restricted airspace, low population density, a 12,000 ft by 200 ft runway, vertical launch complexes and about 340 days of sunshine and low humidity.

UP Aerospace, a Denver-based company created in 1998, conducted its first suborbital flight from Spaceport America in 2006, which was also the inaugural flight from the spaceport. UP Aerospace maintains a launch complex, a payload processing center and a space propulsion center at the spaceport. Its launch operations and SpaceLoft suborbital launch vehicle were designed and built as a reliable, low-cost Reusable Launch Vehicle (RLV) system

Read more in *Inside GNSS* article. https://www.gpsworld.com/suborbital-flight-demonstrates-interoperability-of-gnss-receivers/?utm_source=Navigate%21+Weekly+News&utm_medium=Newsletter&utm_campaign=NCMCD250115002&oly_enc_id=1784A2382467C6V

2025-01-17

NASA and Italian Space Agency demonstrate lunar GNSS payload

NASA and the Italian Space Agency (ASI) are collaborating on the Lunar GNSS Receiver Experiment (LuGRE), which seeks to demonstrate the viability of providing positioning, navigation and timing capabilities on the moon using GPS and Galileo signals.

LuGRE's payload consists of a weak-signal GNSS receiver, a high-gain L-band patch antenna, a low-noise amplifier and an RF filter. The receiver is designed to track GPS L1 C/A and L5 signals, as well as Galileo E1 and E5a signals. It will collect pseudorange, carrier phase and Doppler measurements, calculate onboard navigation solutions, and have the capability to record raw I/Q baseband samples for ground processing.

NASA's Space Communications and Navigation (SCaN) Program office funded and oversaw the experiment. It was selected as one of ten research and technology demonstrations for lunar surface delivery by Firefly Aerospace, under NASA's Commercial Lunar Payload Services (CLPS) initiative.

Read more in *GPS World* article. https://www.gpsworld.com/nasa-and-italian-space-agency-demonstrate-lunar-gnss-payload/?utm_source=Navigate%21+Weekly+News&utm_medium=Newsletter&utm_campaign=NCMCD250115002&oly_enc_id=1784A2382467C6V

2025-01-16

Skykraft has unveiled the list of partners it will collaborate with on its government-backed plan to create an alternative to GPS

The Canberra-based firm, which hopes to launch a space-based air traffic control system, will collaborate with institutions such as RMIT, Curtin and UNSW on the positioning, navigation and timing (PNT) system.

It comes after the federal government announced last year the project would be one of three to share an $18 million grant intended to foster collaboration between the Australian and Indian space sectors.

“The global reliance on GPS makes entire regions vulnerable to losing positioning, navigation and timing data if the system fails,” RMIT’s Professor Suelynn Choy said.

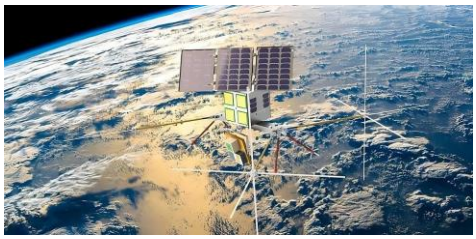
“Australia and India have some very specific challenges and opportunities – particularly our large land mass, vast borders and primary industries relying on positioning, navigation and timing data – GPS may not be the right technology for all of these needs.

“These satellites are easier and less expensive to launch, and they allow for more flexibility by being deployed where coverage is needed most, providing a back-up to other global navigation satellite systems.”

Read more in *article*…

https://www.spaceconnectonline.com.au/industry/6442-skykraft-unveils-partners-for-gps-alternative?utm_source=SpaceConnect&utm_campaign=23_01_2025&utm_medium=email&utm_content=Daily&utm_emailID=7b4c7db616168fe865f3a2f96500fa1904548b5145c6ae1709d81f43459c19a2

2025-01-22



Australia’s need for a Resilient PNT CRC

Positioning, navigation and timing (PNT) vulnerabilities have been the most critical challenge facing many geospatial professionals for some time now. With our modern world daily becoming more reliant on PNT for the provision of essential services, the need for ensured, reliable and resilient PNT is growing ever stronger.
Yet both the global and domestic PNT ecosystem is facing increasing strains and threats, from denial of service (as any pilot flying in certain parts of the Middle East and Eastern Europe will tell you), to the sovereign risk of relying on foreign-owned PNT assets, to a lack of suitably qualified individuals in geodesy, which is the backbone of PNT.

PNT is especially vital for the operation of many of Australia's critical infrastructure sectors, such as telecommunications, defence, health and many others. According to the federal government's Cyber and Infrastructure Security Centre, "… a substantive loss of or loss of access to, or deliberate or accidental manipulation of, PNT services that would affect the functioning of a critical infrastructure asset, is a material risk."
That's why a group of leading Australian geospatial professionals are now pushing for the establishment of an Australian Co-operative Research Centre for PNT, which would be known as the Secure, Hardened, Integrity-Enhanced, Location and Timing Defence (SHIELD) PNT CRC.

Read more in *Spatial Source* article. https://www.spatialsource.com.au/australias-need-for-a-resilient-pnt-crc/?utm_campaign=SS%20-%20Overall%20Publication%20-%20Master&utm_medium=email&_hsenc=p2ANqtz--w4pkbNsu6Owm-R0m3Zj1ebfUKtA1tZMhHFoae9BA-ov0RDjfu7GdgC7EoY6iSyWWT9Tk0pkuAAYhQIL6RJiiTjrT-MQ&_hsmi=342533520&utm_content=342533520&utm_source=hs_email
2025-01-14

GMV-led Project Develops AI-based Jamming and Spoofing Mitigation

The European Space Agency (ESA)-funded BREGO project ('Block-box for an optimised GNSS spectrum monitoring network using AI'), carried out by Spanish technology company GMV, has developed a new system for real-time jamming and spoofing detection, classification and mitigation.

The system employs optimized signal processing techniques driven by artificial intelligence (AI) and machine learning (ML) algorithms.

The vulnerability of GNSS technologies is well known. A relatively low-power signal means GNSS signals can be nullified by jamming, while the openness of the signal structures, specifically GPS L1 and E1, make the technology vulnerable to spoofing, wherein false signals are substituted for genuine ones.

Speaking at a recent presentation hosted by ESA, GMV GNSS Engineer Wahyudin Syam explained the rationale behind the BREGO project: “GNSS receivers are deployed around the world and in many domains, providing position, velocity and time information for safety-critical, liability-critical, commercial and other applications. Our aim is to provide resilient navigation in environments dominated by GNSS threats.

Read more in *Inside GNSS* article. https://insidegnss.com/gmv-led-project-develops-ai-based-jamming-and-spoofing-mitigation/
2024-12-24

Is Russia behind new GPS interference in Bulgaria?

On Dec. 12, 2024, the European Union decided to include Bulgaria and Romania in the Schengen visa-free zone. On the same day, Bulgaria’s capital, Sofia, began experiencing interference with GPS signals. The interference, as reflected in aviation ADS-B systems and reported on GPSJam.org, continued through the new year and is ongoing as of this writing.

While these two events may be entirely unrelated, Vladimir Putin has a history of using GPS jamming and spoofing to show his displeasure with his neighbours growing closer to the West.

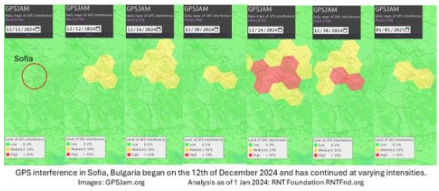
- In 2022, after he warned Finland against trying to join NATO, the Finnish president met with U.S. president Biden. Russian jamming interfered with Finnish air traffic immediately thereafter.

- On Dec. 15, 2023, Poland activated a U.S. Aegis anti-missile system near its border with Kaliningrad, Russia. On the same day, Russia began jamming and spoofing GPS signals in northern Poland and parts of the Baltic. That interference persists to this day.

The interference in Sofia may be contributing to a prolonged Bulgarian political crisis.

Read more in *GPS World* article. https://www.gpsworld.com/is-russia-behind-new-gps-interference-in-bulgaria/?utm_source=Navigate%21+Weekly+News&utm_medium=Newsletter&utm_campaign=NCMCD250101002&oly_enc_id=1784A2382467C6V

2025-01-03



GPS interference in Sofia, Bulgaria began on the 12th of December 2024 and has continued at varying intensities.
Images: GPSJam.org Analysis as of 1 Jan 2024: RNT Foundation RNTFnd.org

ESA Announces FutureNAV Industry Day 2025

The first FutureNAV Industry Day, on 18 February 2025, will bring together European stakeholders in satellite navigation to explore the future of positioning, navigation and timing (PNT) technologies. This gathering will spotlight emerging opportunities and foster a network of European companies in the PNT and GNSS sector.

As new PNT-powered applications emerge, the demand for more robust, reliable, accurate and available satellite navigation continues to grow. As system development prime and design authority of Galileo and EGNOS, ESA is a leading player in today's satellite navigation landscape and is committed to remaining at the forefront of innovation for the benefit of European citizens.

Through market intelligence, identifying R&D priorities, exploring and maturing novel concepts and technologies and cultivating industrial capacity, ESA is shaping the future of navigation, hand in hand with European industry and the European Union.

In 2022, the new programme FutureNAV was launched to consolidate these efforts.

Read more in *Inside GNSS* article. https://insidegnss.com/esa-announces-futurenav-industry-day-2025/

2024-12-23

Rediscovering the uses of barometric levelling

Barometric altimeters, once primarily linked with aviation, parachuting and mountaineering, have now expanded into a wide range of applications due to the increased availability and affordability of advanced atmospheric pressure sensors. These altimeters are now integrated into various electronic devices alongside Global Navigation Satellite Systems (GNSS), enabling the recording of vertical profiles along with latitude and longitude data. Consequently, barometric altimeters are embedded in a vast array of consumer electronics, including smart phones, watches, fitness bands, bicycle computers, GNSS-enabled handheld devices, and vehicle tracking systems.

In drone systems and aviation modelling, barometric altimeters are extensively used, with barometry often serving as a primary method for altitude measurement. Drones, in particular, use multiple altitude-measuring systems and switch between them as needed (e.g., radio, GNSS, infrared or laser altimeters). The barometer in a drone can measure both relative and absolute altitude, and provide readings in mean sea level (MSL) and above ground level (AGL) units, depending on the application.

Read more in *Spatial Source* article. https://www.spatialsource.com.au/rediscovering-the-uses-of-barometric-levelling/?utm_campaign=SS%20-%20Overall%20Publication%20-%20Master&utm_medium=email&_hsenc=p2ANqtz-9wXhwbeCAfxfWjHDFxPmn3PzdIojJtXWf7M9DAFpXi4Zx9am6Zs7jccSLgoq3xT5CuuO-wB9xO4vOszovEyPxCShw4NA&_hsmi=341514724&utm_content=341514724&utm_source=hs_email

2025-01-06