Europe Reluctantly Chooses SpaceX to Launch Its GPS Satellites

SpaceX has reached a deal to launch four Galileo satellites next year in coordination with the European Space Agency, according to a *Wall Street Journal* report. Two launches on Elon Musk's Falcon 9 rockets will add to the 28 satellites currently orbiting Earth in Europe's global navigation system.

The deal still must reach a final approval by the European Union's executive branch, which is likely to happen before the end of 2025. A spokesperson for the European Commission told the *WSJ* they are "taking all necessary steps to ensure that the Galileo constellation continues to provide outstanding services in the coming months and years."

Read more in *article*…
https://gizmodo.com/europe-spacex-contract-launch-galileo-gps-satellites-1850949500
2023-10-24

UK Government PNT Plan Focuses on Policy, Timing Centre, eLoran, Defence Time and SBAS

The United Kingdom's Minister for Science, Research, Innovation announced in Parliament today a 10 point "policy framework" for advancing positioning, navigation, and timing (PNT). The announcement addressed improvements to both PNT technology and policy.

Six technology efforts were listed:

- “National Timing Centre
- “MOD Time:
- “eLORAN
- “UK SBAS
- “Next Generation PNT
- “Infrastructure Resilience:

Read more in *GPS World* article. https://www.gpsworld.com/uk-government-pnt-plan-focuses-on-policy-timing-center-eloran-defense-time-and-sbas/?utm_source=Navigate%21+Weekly+GNSS+News&utm_medium=Newsletter&utm_campaign=NCMCD231018003&oly_enc_id=1784A2382467C6V

2023-10-18

GPS: A Celebration of the First 50 Years

This year marks 50 years since the U.S. Department of Defense approved the design for GPS and first funded the program. It is also the 30-year anniversary of an important milestone – initial operational capability of GPS. Please don’t let its longevity fool you into thinking it is past its prime! GPS is, and will remain, one of the most innovative systems ever designed, funded and operated by the U.S. government.

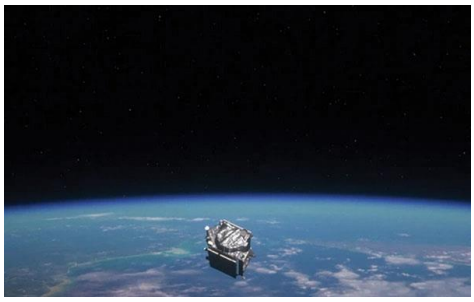
Today, GPS represents a highly successful public and private partnership, one in which diverse stakeholders continue to coordinate through fora such as the National Executive Committee for PNT and its Advisory Board. and the Civil GPS Service Interface Committee. How did this system become a military, public safety, critical infrastructure, and economic success? The world-class GPS community is made up of the teams and individuals who design, develop and operate these critical technologies as well as the people and organisations that benefit from its applications. From pioneers, scientists, engineers, and guardians to civil servants,

lawmakers, and entrepreneurs, the GPS community has transformed, is transforming, and will continue to transform lives across the globe, and soon, the moon.

GPS World highlighted the important roles played by many early GPS pioneers in a two-part series aptly titled, “Heroes” in the May and June 2010 issues.

Read more in *GPS World* article. https://www.gpsworld.com/gps-a-celebration-of-the-first-50-years/?utm_source=Navigate%21+Weekly+GNSS+News&utm_medium=Newsletter&utm_campaign=NCMCD231018003&oly_enc_id=1784A2382467C6V

2023-10-23



Satnav Test on Remote Island Lab

ESA's navigation testbed vehicle participated in a campaign organised by Norwegian governmental authorities to assess the impact of jamming and spoofing on satnav systems and test innovative technologies for detection and mitigation.

Satellite navigation has become indispensable in our daily lives and is used in a myriad of applications, from guiding aircraft and driverless cars to monitoring water supplies and responding to emergencies. But satnav systems are potentially vulnerable to jamming and spoofing as their signal power on the ground is weak and most of their specifications are publicly available.

From 18 to 22 September, a team from ESA joined one of the world's largest jamming testing campaigns, Norway's Jammertest, together with dozens of participants from governmental agencies, industry and academia. An ESA telecommunications and navigation testbed vehicle usually based at ESTEC, in Noordwijk, the Netherlands, was driven to Norway for its first mission beyond Dutch borders.

Read more in *article*…

https://www.spacedaily.com/reports/Satnav_test_on_remote_island_lab_999.html

2023-10-18

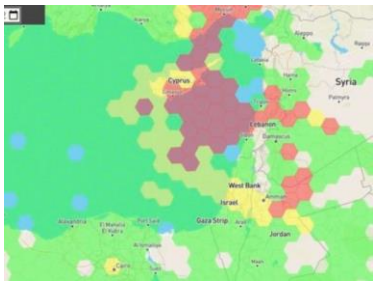
GPS Jamming In Israel

Just as I was beginning to write this article, war broke out between Israel and terrorist forces in Gaza. It would seem that the rockets used by Gaza were aimed rather than carrying on-board guidance, while Israeli airforce bomb/rocket attacks have been carried out with some degree of precision. Nevertheless, jamming in Israel may still be relevant to the ongoing conflict and any on-going commercial aircraft activity. However, it seems from the diagram of jamming below, that the Gaza strip is virtually interference free.

One of the things you can be sure of in the Ukraine-Russia war is that one side or the other is jamming the other's communications and sat-nav guidance systems. An apparent consequence is that there is likely some "spill-over" to adjacent areas. For Israel, however, it looks like it's more directed jamming rather than incidental.

Read more in *GPS World* article. https://www.gpsworld.com/gps-jamming-in-israel/?utm_source=Autonomous+Arena&utm_medium=Newsletter&utm_campaign=NCMCD231012003&oly_enc_id=1784A2382467C6V

2023-10-18



International GNSS Day

In recognition of the indispensable role that Global Navigation Satellite Systems (GNSS) play in shaping the modern world, and the fundamental GPS frequency that forms the foundation for all GNSS, the Institute of Navigation (ION) proudly proclaims the establishment of "International GNSS Day" on the 23rd of October annually.

This date, written as “10/23” in U.S. date format, captures the frequency of 10.23 MHz, the original heartbeat of all GPS satellites, signals, and receivers. This frequency was later adopted by all other GNSS service providers, serving as the basis of L-band signals for over 100 navigation satellites today.
Read more in *article*…
https://www.facebook.com/photo/?fbid=799931865468821&set=a.493175412811136
2023-10-04

RTCA Publishes Dual Frequency SBAS MOPs Document
The Radio Technical Commission for Aeronautics (RTCA) has released a six-file document titled “DO-401 Minimum Operational Performance Standards (MOPS) for Dual-Frequency Multi-Constellation Satellite-Based Augmentation System Airborne Equipment.”

The document is designed to support validation of airborne requirements when using dual-frequency GPS, Galileo and satellite-based augmentation system (SBAS) signals as defined by International Civil Aviation Organization Standards and Recommended Practices (Annex 10, Volume I, Amendment 93), as well as the development of dual-frequency multi-constellation SBAS services.

Read more in *GPS World* article. https://www.gpsworld.com/rtca-publishes-dual-frequency-sbas-mops-

document/?utm_source=Navigate%21+Weekly+GNSS+News&utm_medium=Newsletter&utm_campaign=NCMCD231004004&oly_enc_id=1784A2382467C6V
2023-10-05

IGNSS2024 Conference — Call for Papers

The organisers of the IGNSS2024 Conference, to be held in Sydney from 7 to 9 February 2024, are seeking abstract submissions from government, industry and academia.
The Organising Committee is inviting and encouraging presentations that highlight new technologies and provide R&D insight, as well as presentations that discuss interesting methodologies or applications.

Early career researchers, in particular, are encouraged to submit proposals to present their work.

The closing date for abstract submissions is 5:00pm AEDT on Wednesday, 1 November 2023.
IGNSS2024 will bring together experts, policy makers and emerging leaders from across the globe to examine the latest advances in positioning, navigation and timing; present cutting edge research; and discuss policy, market development and infrastructure.
Read more in *Spatial Source* article. https://www.spatialsource.com.au/ignss2024-conference-call-for-papers/?utm_campaign=SS%20-%20Overall%20Publication%20-%20Master&utm_medium=email&_hsmi=276857248&_hsenc=p2ANqtz--MdtJAQ8ojauzzeBbbp-AjVtpCSZ-e6ZE1n6-WZBPGzL1iK1qTQJzlb4EQllHM-oTqQRe1Iitd9Uf9s7IrnLn9PQO8BQ&utm_content=276857248&utm_source=hs_email
2023-10-04

ESA Wants New Moon Missions to Use Moonlight PNT Services

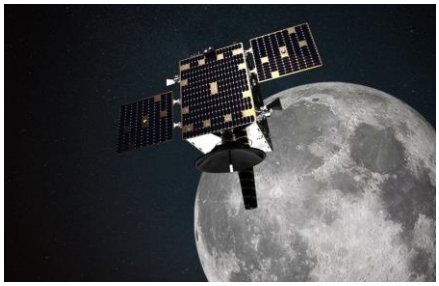
The European Space Agency (ESA) is calling for proposals for missions to the Moon that can leverage existing resources such as Moonlight program lunar communications and navigation services.

Issuing the new call for proposals is ESA's Terrae Novae exploration program. The Terrae Novae 2030+ strategy has three overarching goals: establishing a sustained European presence in low-Earth orbit, sending the first European astronaut to explore the Moon's surface by 2030, and participating in the first human mission to Mars.

Small exploratory missions are intended to support the implementation of the Terrae Novae roadmap, through the use of robots as precursors and scouts. Mission objectives should include closing technology gaps and expanding scientific knowledge of both the Moon and Mars.

The new call for proposals is broad and represents an excellent opportunity for small and medium-sized companies to claim a role in the field of space exploration. Proposals can come from individual companies as well as from consortia, including research institutions.

Read more in *Inside GNSS* article. https://insidegnss.com/esa-wants-new-moon-missions-to-use-moonlight-pnt-services/
2023-10-04



Milestone for Novel Atomic Clock

An international research team has taken a decisive step toward a new generation of atomic clocks. At the European XFEL X-ray laser, the researchers have created a much more precise pulse generator based on the element scandium, which enables an accuracy of one second in 300 billion years - that is about a thousand times more precise than the current standard atomic clock based on caesium. The team presents its success in the journal Nature.

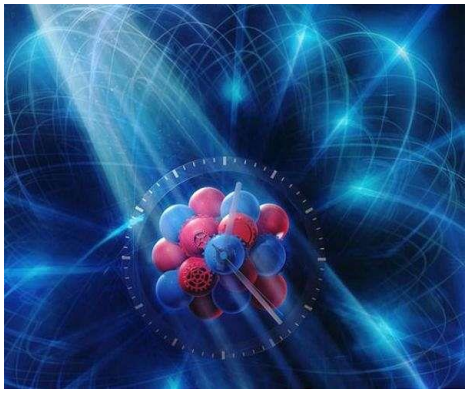
Atomic clocks are currently the world's most accurate timekeepers. These clocks have used electrons in the atomic shell of chemical elements, such as caesium, as a pulse generator in order to define the time. These electrons can be raised to a higher energy level with microwaves of a known frequency. In the process, they absorb the microwave radiation.

An atomic clock shines microwaves at caesium atoms and regulates the frequency of the radiation such that the absorption of the microwaves is maximised; experts call this a resonance. The quartz oscillator that generates the microwaves can be kept so stable with the help of resonance that caesium clocks will be accurate to within one second within 300 million years.

Read more in *article*…

https://www.spacedaily.com/reports/Milestone_for_novel_atomic_clock_999.html

2023-10-02



DHS Plans GPS Spoof Testing Event for 2024

The Department of Homeland Security (DHS) Science and Technology Directorate (S&T) has announced plans for a new testing program to evaluate how well GPS systems perform against spoofing and disruption exploits.

DHS S&T's 2024 GPS Testing for Critical Infrastructure (GET-CI) event is scheduled for Fall 2024. It will allow critical infrastructure owners and operators (CI O&O) and GPS equipment manufacturers to identify any weaknesses in their equipment.

"Accurate and precise positioning, navigation and timing (PNT) information is vital to the nation's critical infrastructure," said Dimitri Kusnezov, DHS under secretary for science and technology. "The GET-CI test series are part of the S&T PNT Program's collaborative efforts designed to help industry partners test and evaluate their technologies to become more resilient against PNT disruptions."

Read more in *GPS World* article. https://www.gpsworld.com/dhs-plans-gps-spoof-testing-event-for-2024/?utm_source=Navigate%21+Weekly+GNSS+News&utm_medium=Newsletter&utm_campaign=NCMCD230927002&oly_enc_id=1784A2382467C6V

2023-09-28

Advanced Navigation Opens NSW Robotics Facility

Advanced Navigation has formally opened its new robotics facility for autonomous systems based at UTS in Botany Bay, NSW.

The business said the building would help scale up the manufacturing of its AI navigation technology, which will eventually help lunar landers touch down on the moon's surface.

"There is a seismic shift across the landscape of sovereign manufacturing, driven by advanced technologies like AI, automation, and precision engineering," said the business in a statement.

"In the context of autonomous systems, the importance of precision and reliability is non-negotiable.

“Adopting a vertical integration framework, the facility houses equipment and processes for automated manufacturing utilising machine learning. This guarantees the delivery of reliable, durable, and high-quality navigation systems.”

In addition to the manufacturing capability, Advanced Navigation hopes the facility will speed up the development of a number of “socially impactful technologies”, including light detection, altimetry and velocimetry (LiDAV) systems.

“LiDAV delivers precise three-dimensional velocity and altitude information relative to the lunar surface, enabling complex autonomous landing procedures and confident exploration on the moon,” it added.

Read more in *article*…
https://www.spaceconnectonline.com.au/industry/6005-advanced-navigation-opens-nsw-robotics-facility?utm_source=SpaceConnect&utm_campaign=27_09_23&utm_medium=email&utm_content=1&utm_emailID=7b4c7db616168fe865f3a2f96500fa1904548b5145c6ae1709d81f43459c19a2
2023-09-26

Dr. Todd E. Humphreys Honoured with ION’s Johannes Kepler Award

Todd E. Humphreys, known for his fundamental contributions to secure, precise and robust PNT and GNSS software-defined receivers (SDR), received this year’s Johannes Kepler Award. The Institute of Navigation’s (ION) Satellite Division recognized Dr. Humphreys with this prestigious honour, the highest it bestows, during the ION GNSS+ 2023 conference in Denver.

Dr. Humphreys, who holds the Ashley H. Priddy Centennial Professorship in Engineering in Aerospace Engineering and Engineering Mechanics at the University of Texas at Austin, was honoured for his “sustained contributions to the art and

science of navigation signal processing” and “increasing the public awareness of the vulnerability of GNSS,” according to a news release.

He developed the first GNSS SDR on a small general-purpose processor that can continually track dozens of signals in real time. This C++-based receiver is a highly optimised science-grade multicore GNSS SDR—and the first of its kind to demonstrate centimetre-accurate GNSS positioning with a smartphone antenna.

Read more in *Inside GNSS* article. https://insidegnss.com/dr-todd-e-humphreys-honored-with-ions-johannes-kepler-award/
2023-09-21