GNSS disruption at sea level: An interference study in the Baltic Sea

For years, aviation safety organisations and maritime authorities have relied on ADS-B-based reports to assess GNSS interference. Services such as gpsjam.org, spoofing.skai-data-services.com and flightradar24 have provided valuable insights into interference patterns at high altitudes. However, this data tells only part of the story. Ground-based infrastructure — ports, telecommunications networks, and precision navigation systems — operate in a vastly different signal environment. High-altitude detections cannot reliably indicate the presence or impact of interference at sea level.

To address this critical knowledge gap, GPSPATRON and Gdynia Maritime University have conducted a six-month study on GNSS interference in the Baltic Sea. Using terrestrial GNSS monitoring technology, the project examined the frequency, duration and characteristics of interference events affecting maritime navigation and other critical applications.

Read more in *GPS World* article. https://www.gpsworld.com/gnss-disruption-at-sea-level-an-interference-study-in-the-baltic-sea/?utm_source=Navigate%21+Weekly+News&utm_medium=Newsletter&utm_campaign=NCMCD250212002&oly_enc_id=1784A2382467C6V

2025-02-18

Advanced Navigation to develop INS for Gilmour Space rocket launches

Advanced Navigation has secured grant funding from the Australian Space Agency through the Moon to Mars Initiative Grant. This funding will expedite the development of a space-grade high-shock inertial navigation system (INS) designed to endure extreme conditions during rocket launches.

The INS will support Gilmour Space Technologies, an Australian launch services company, in the development and launch of Eris Rockets and Elara Satellite platforms to low-Earth orbits (LEO). This collaboration aims to enhance Australia's sovereign aerospace capabilities and contribute to the growing space industry.

The development of this advanced INS presents significant engineering challenges due to the harsh conditions experienced during rocket launches. From lift-off to payload deployment, every phase of a rocket's journey requires precise engineering and seamless coordination. All electronic and fibre-optic components must be capable of withstanding intense shock, vibration, shifting gravity, payload impact and extreme temperature fluctuations.

Read more in *GPS World*. https://www.gpsworld.com/advanced-navigation-to-develop-ins-for-gilmour-space-rocket-launches/?utm_source=Navigate%21+Weekly+News&utm_medium=Newsletter&utm_campaign=NCMCD250212002&oly_enc_id=1784A2382467C6V
2025-02-12

Europe's JRC Makes Resilient Timing a Priority

The European Commission wants to establish a 'timing backbone', based on a sturdy blend of GNSS capabilities and terrestrial services, designed to bolster resilience when satellite signals fail. A recent market consultation report from the EC's Joint Research Center (JRC) underscores the urgent need for such a system, calling it essential for EU autonomy, economic resilience, and global standing.

The JRC is now inviting stakeholder input towards shaping the initiative.

Timing has long played third fiddle to positioning and navigation in the PNT triumvirate, in spite of the fact that it underpins every PNT function. Without accurate timing, satellites can't deliver precise locations, power grids and other critical

infrastructure falter, stocks can't be traded and financial transactions lose sync. Call accurate timing the glue holding all these functions together. At a time when GNSS vulnerability is in the spotlight, resilient timing services via terrestrial networks, fibre, or alternative signals would provide a much-needed safety net.

Read more in *Inside GNSS* article. https://insidegnss.com/europes-jrc-makes-resilient-timing-a-priority/

2025-02-10

Iridium considers small satellites for advanced PNT capabilities

Iridium Communications is exploring the potential use of small satellites to demonstrate advanced positioning, navigation and timing (PNT) capabilities.

Iridium CEO Matt Desch discussed this initiative during the Smallsat Symposium in Silicon Valley, where he suggested the company might venture into the smallsat business, even if only for experimental purposes.

Desch said small satellites could also support the development of a very-high frequency (VHF) radio system aimed at enhancing pilot communications with Aireon, a provider of aircraft surveillance services using hosted payloads on Iridium's satellites.

Iridium operates a constellation of 66 Iridium Next spacecraft in low-Earth orbit (LEO) for L-band connectivity services, along with additional spare satellites. Following an engineering assessment in 2024, the company expects this constellation to remain operational until at least 2035.

Read more in *GPS World* article. https://www.gpsworld.com/iridium-explores-small-satellites-for-advanced-pnt-capabilities/?utm_source=Navigate%21+Weekly+News&utm_medium=Newsletter&utm_campaign=NCMCD250205004&oly_enc_id=1784A2382467C6V

2025-02-10

Galileo ground stations undergo systemwide migration

In a significant technological milestone, ESA has commenced the large-scale migration of Galileo's Control Centres, a complex endeavour that engaged over 200 experts from ESA, industry partners, and the EU Agency for the Space Programme (EUSPA). This marks the start of a comprehensive modernisation effort aimed at upgrading Galileo's Ground Segment, a globally dispersed network of operational sites.

The Ground Segment plays a crucial role in ensuring Galileo's accuracy and reliability, managing satellite synchronization, monitoring system integrity, and processing essential navigational data. Each station within this network is now set to receive new hardware and software enhancements to bolster system resilience, reinforce cybersecurity, and prepare for the implementation of the Public Regulated Service (PRS), which will deliver secure, high-precision encrypted signals for authorised government users.

Read more in *this* article…

https://www.spacedaily.com/reports/Galileo_ground_stations_undergo_systemwide_migration_999.html

2025-02-06

ESA advances optical technology for next-generation navigation

The European Space Agency (ESA) is taking a significant step towards integrating optical technology into positioning, navigation, and timing (PNT) systems. To advance this effort,

ESA has entered into a contract with a European industry consortium to conduct a definition study (Phase A/B1) and initiate critical technology predevelopment.

This initiative is a precursor to a proposed in-orbit demonstrator, known as Optical Time Synchronisation and Ranging (OpSTAR), which will be presented at the ESA Council at Ministerial Level in November 2025. The project aims to validate intersatellite optical links, a crucial step before potential implementation in operational satellite navigation networks.

Europe remains at the forefront of satellite navigation, and ESA continues to explore and refine new technologies through its FutureNAV program. This initiative fosters innovation in space-based PNT solutions, reinforcing European leadership in this pivotal sector. Central to FutureNAV is the in-orbit demonstrator element, which functions as a continuous incubator for emerging navigation technologies.

Read more in *Space Daily* article.
https://www.spacedaily.com/reports/ESA_advances_optical_technology_for_next_generation_navigation_999.html

2025-02-12

PNT Advisory Board hears reports on GPS, Galileo, QZSS and KPS

The National Space-Based Positioning, Navigation, and Timing Advisory Board continued its discussions on how best to protect, toughen and augment GPS at its 31st meeting, which took place Dec. 4-5 at the Sonesta Redondo Beach and Marina in Redondo Beach, California. The meeting was convened by James J. Miller, of NASA, who is the board's executive director, and chaired by retired Adm. Thad Allen of the U.S. Coast Guard.

Read more in *GPS World* article. https://www.gpsworld.com/pnt-advisory-board-hears-reports-on-gps-galileo-qzss-and-kps/?utm_source=Navigate%21+Weekly+News&utm_medium=Newsletter&utm_campaign=NCMCD250129002&oly_enc_id=1784A2382467C6V

2025-02-03

ION 2024 Annual Awards Announced at ITM/PTTI 2025

The Institute of Navigation (ION) proudly presented its 2024 Annual Awards during the co-located International Technical Meeting (ITM) and Precise Time and Time Interval (PTTI) Systems and Applications Meeting in Long Beach, California, from January 27-30, 2025.

The ION Annual Awards Program is sponsored by the Institute of Navigation (ION) to recognize individuals making significant contributions or demonstrating outstanding performance advancing the art and science of positioning, navigation, and timing.

Among the awards was an Australian recipient. Dr. Andrew Dempster received the Captain P. V. H. Weems Award for his fundamental contributions to GNSS receiver architectures and signal processing, and interference detection, characterisation, and mitigation. The Captain P. V. H. Weems Award is presented to individuals for continuing contributions to the art and science of navigation.

Read more in *Inside GNSS*. https://insidegnss.com/ion-2024-annual-awards-announced-at-itm-ptti-2025/

2025-01-30

Ariane 6 to deliver inaugural Galileo 2nd Gen satellites as European industry backs Arianespace

Arianespace has confirmed at the 17th European Space Conference the signing of a launch services agreement with the European Commission and the European Union Agency for the

Space Programme (EUSPA). Under this contract, Ariane 6 will deploy the first pair of second-generation Galileo navigation satellites (L17). Each satellite, weighing between 2,200 kg and 2,400 kg and outfitted with electrical propulsion, is slated to reach a 23,222 km orbital altitude a few months after liftoff. This signing formalizes a commitment initially granted to Arianespace in April 2024.

Before this mission, three launches (L14, L15, L16) are already set for Ariane 6 to reinforce Europe's high-performance Galileo satellite navigation network. Each of those flights will ferry two satellites, completing the constellation's first-generation segment.

David Cavailloles, CEO of Arianespace, commented: "This signature with the European Commission and EUSPA reaffirms Arianespace's commitment to guaranteeing sovereign access to space for Europe. We are extremely proud to contribute to the flagship Galileo global navigation satellite system, providing high-precision positionings and services to European governments, institutions, and citizens." David Cavailloles added: "This is the fourth launch booked on Ariane 6 for Galileo and the first for the second-generation Galileo satellites.

I thank our partners for their continued trust in Arianespace: a long-standing commitment we have together towards the Galileo programme, reinforcing both Ariane 6 and Europe's space autonomy."

Read more in *this* article…

https://www.spacedaily.com/reports/Ariane_6_to_deliver_inaugural_Galileo_second_generation_satellites_999.html

2025-02-04

Google Maps changed the way we get around. It all began in a spare bedroom in Sydney

Stephen Ma has every right to claim bragging rights for helping to hatch the world's most popular online mapping platform. Instead, for the past two decades Ma, one of the four co-founders of Google Maps, has buried himself in a big black hole of

anonymity. But not because of any shame or regret – it's just that he isn't one to blow his own trumpet.

"I tend to be a very private person," Ma says in a rare interview. "I find the limelight uncomfortable."

In the years since launching on 8 February 2005, Google Maps has wormed its way into our daily lives, becoming – like water or electricity – an essential service. It's a pocket atlas, compass, restaurant guide, bus timetable and the go-to search and recommendation engine for all our geospatial queries.

Google Maps has become an online juggernaut boasting more than 2 billion monthly users worldwide that remains on a trajectory of relentless expansion in scope and scale. It also powers countless third-party platforms including Airbnb, Uber, real estate portals and food delivery and e-commerce platforms that rely on Google Maps' locational and navigational prowess.

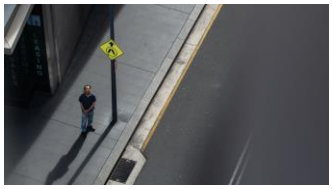
The technology is now a key pillar of the Google/Alphabet technology complex, a company the author and philosopher Yuval Noah Harari describes as one of our "unfathomable, algorithmic overlords".

Now, on the eve of Google Maps' 20th anniversary, the 54-year-old Australian software engineer has had a change of heart. He wants to write himself back into the foundation story – as well as acknowledge others whose contributions have been overlooked or undersold.

Read more in *article*…

https://www.theguardian.com/technology/2025/feb/09/google-maps-turns-20-anniversary-feature

2025-02-09



EUSPA unveils integrated GNSS and secure SATCOM user technology update

The European Union Agency for the Space Programme (EUSPA) has released the very first GNSS and Secure SATCOM User Technology Report, offering a unified resource that addresses two central space-based capabilities.

This new publication builds upon earlier GNSS User Technology and Secure SATCOM Market and User Technology studies, presenting an extensive review of the most recent innovations and trends in Global Navigation Satellite Systems (GNSS) and secure Satellite Communications (SATCOM).

"'With these two pivotal technologies, having tangible user technology - terminals and receivers, we decided to combine our GNSS and secure SATCOM technology reports and present them in a single publication that also includes insights into their synergies.' said Rodrigo da Costa, EUSPA Executive Director."

The GNSS and Secure SATCOM User Technology Report can be downloaded here.

Read more in *article*…

https://www.spacedaily.com/reports/EUSPA_unveils_integrated_GNSS_and_secure_SATCOM_user_technology_update_999.html

2025-02-04

GPS III SV-07 receives operational acceptance

The U.S. Space Force transferred Satellite Control Authority of the GPS III Space Vehicle 07 (SV-07) to the 2nd Navigation Warfare Squadron, Mission Delta 31, at Schriever Space Force Base, Colorado. The satellite became operational and available to global users on Jan. 22, 2025 — expanding the GPS constellation to 31 active vehicles. The transfer is the first instance in which the Satellite Control Authority moved from the acquisition program to the operations squadron within a single Delta, reflecting the new mission delta structure.

The space vehicle was launched on Dec. 16, 2024, from Cape Canaveral Space Force Station, Florida, aboard a SpaceX Falcon 9 rocket as part of a Rapid Response Trailblazer mission. The operation involved retrieving an existing GPS III satellite from storage, expediting integration and launch vehicle preparation, and swiftly processing the satellite for launch.

Read more in *GPS World* article. https://www.gpsworld.com/gps-iii-sv-07-receives-operational-

acceptance/?utm_source=Navigate%21+Weekly+News&utm_medium=Newsletter&utm_campaign=NCMCD250122002&oly_enc_id=1784A2382467C6V

2025-01-27

FrontierSI releases LEO PNT state of the market report

FrontierSI has released its Low-Earth Orbit (LEO) Positioning, Navigation, and Timing (PNT) 2024 State of the Market Report. This report offers a comprehensive overview of the emerging LEO PNT market, showcasing its transformative potential in satellite navigation, the challenges it addresses and the key players shaping its evolution.

PNT services are integral to industries worldwide, from logistics and telecommunications to critical infrastructure. The rise of LEO satellites is set to revolutionize this space, overcoming limitations of traditional GNSS, such as vulnerability to interference and limited urban coverage, according to FrontierSI.

Read more in *GPS World* article. https://www.gpsworld.com/frontiersi-releases-leo-pnt-state-of-the-market-report/?utm_source=Navigate%21+Weekly+News&utm_medium=Newsletter&utm_campaign=NCMCD250122002&oly_enc_id=1784A2382467C6V

2025-01-23

CRPAs to be Removed from ITAR List, Opening Market for U.S. Manufacturers

Beginning in September, Controlled Reception Pattern Antennas (CRPA), a highly effective anti-jam technique, will no longer fall under stringent International Traffic in Arms Regulations (ITAR)—finally opening the market to U.S. manufacturers and expanding use of the technology.

CRPAs for PNT will instead fall under the less restrictive Export Administration Regulations (EAR) list that's under the jurisdiction of the Department of Commerce, what GNSS/GPS expert Logan Scott describes as a significant change and a huge step in the right direction. Items on the ITAR list include defence articles, services and technical data, while EAR covers dual-use commercial items, what CRPAs for PNT are now considered.

The Department of State announced amendments to the ITAR list last week. The rule, in part, removes items from the U.S. Munitions List (USML) "that no longer warrant inclusion." According to the amendment, "certain anti-jam antennas no longer provide a critical military advantage, with increasing commercial utilization applicable to civil GPS resiliency." By removing CRPAs for PNT, "the Department intends to facilitate civil global navigation system resiliency.

Read more in *Inside GNSS* article. https://insidegnss.com/crpas-to-be-removed-from-itar-list-opening-market-for-u-s-manufacturers/

2025-01-27

IGNSS, Australian Institute of Navigation merger

The Australia-based International Global Navigation Satellite Systems (IGNSS) Association and the Australian Institute of Navigation (AIN) have announced plans to merge.

The IGNSS has long run a series of conferences focusing on positioning, navigation and timing (PNT) technologies and satellite navigation systems, attracting hundreds of delegates from around the world.

The AIN has been around for 76 years, and is a part of the International Institutes of Navigation (including the US Institute of Navigation and the Royal Institute of Navigation), which have taken a leading role in PNT research, developments and practice.

“This merger marks a new chapter for the community, including the transformation of the internationally renowned IGNSS Conference into PNT2026, which will now be conducted as an official AIN event,” said Professor Kealy.

“This partnership strengthens our ability to advance PNT research, innovation, and collaboration across Australia and globally.”

Read more in *Spatial Source* article. https://www.spatialsource.com.au/ignss-australian-institute-of-navigation-merger/?utm_campaign=SS%20-%20Overall%20Publication%20-%20Master&utm_medium=email&_hsenc=p2ANqtz--r9f2T23v9ZzTwnIvg8evIsLNXKSpM7beZcxPJN1UhWAH-mwgddZcst7e0ETi5kEkNRGyRIb-Cn_a_hdlgeanEHEBkYw&_hsmi=344612366&utm_content=344612366&utm_source=hs_email

2025-01-29

Locata: Time Flies…Breakthrough Timing, Over the Air

Global Navigation Satellite Systems (GNSS) form the foundation of modern Positioning, Navigation and Timing (PNT) systems, continuously delivering accurate

time and position data worldwide. This service is indispensable across numerous economic sectors, including transport, telecommunications, energy, finance, agriculture, security and defence.

Although highly advanced and technologically sophisticated, GNSS is extremely vulnerable to deliberate jamming, accidental interference, space weather events, and system malfunctions. The press reporting failure of GNSS systems, especially for aviation, automation and military systems (both positioning and timing), have multiplied exponentially in recent years. Moreover, GNSS cannot reliably provide service in areas with limited sky visibility, such as indoor environments, urban canyons or dense forests. Given its predominant role as the primary source of PNT for almost every nation, it has become crucial to explore alternative platforms or complementary systems that can serve as backups to GNSS services or improve and extend PNT capabilities for emerging and future applications.

Because of this, nations around the world are starting to plan and construct new terrestrial time distribution networks, including extremely high-accuracy, sovereign-controlled National Timing Backbones that reduce their nation’s single-point-of-failure dependency on time obtained via GNSS systems.

Read more in *Inside GNSS* article. https://insidegnss.com/locata-time-fliesbreakthrough-timing-over-the-air/

2025-01-27