China's BeiDou Challenges US GPS Dominance

Fifty years since it was designed and approved by the U.S. Department of Defense (DOD), the GPS is at risk of losing its status as the world's gold-standard location service, reported *The Wall Street Journal*.

In a recent paper published by Harvard's Belfer Center for Science and International Affairs, "China's BeiDou: New Dimensions of Great Power Competition," Sarah Sewall, executive vice president for strategic issues at IQT and co-authors Tyler Vandenburg and Kaj Malden outline their finding that China's version of GPS is part of the country's longstanding effort to join the technological ranks of leading nations and use its capabilities to achieve geopolitical advantage across the globe.

Sewall's assessment of BeiDou's technical superiority received some unexpected support from a government advisory board on GPS, which stated that "GPS's capabilities are now substantially inferior to those of China's BeiDou," and urged the administration to regain U.S. leadership in the field.

Read more in *GPS World* article. https://www.gpsworld.com/chinas-beidou-challenges-u-s-gps-dominance/?utm_source=Navigate%21+Weekly+GNSS+News&utm_medium=Newsletter&utm_campaign=NCMCD231115002&oly_enc_id=1784A2382467C6V

2023-11-26

Trimble Partners with HALO Trust for Landmine Clearance in Ukraine

Trimble has partnered with HALO Trust, a landmine-clearing non-profit organisation, to help expand its demining operations across Ukraine.

The grant from the Trimble Foundation Fund will focus on strengthening the HALO Trust's ability to locate and remove landmines, unexploded ordnance and other explosive hazards from civilian areas to create safer communities. In addition, it will allow HALO to support the Ukrainian national authorities in planning and coordinating landmine clearance activities by streamlining the mapping and data flow from the operational teams in the field to the national database.

The Russian invasion of Ukraine has left areas of the country contaminated with landmines, unexploded ordnance and improvised explosive devices. These hazards block access to farmland, impede reconstruction efforts, prevent displaced persons from returning to their homes and continue to hinder the safety of Ukrainian civilians. The Ukrainian government estimates that 174,000km2 of the country's land may be contaminated.

More than a thousand HALO staff members are active daily, both to clear explosives in critical priority areas and to recruit and train hundreds of new staff members to help keep communities safe from dangerous weapons left behind.

Read more in *GPS World* article. https://www.gpsworld.com/trimble-partners-with-halo-trust-for-landmine-clearance-in-ukraine/?utm_source=Navigate%21+Weekly+GNSS+News&utm_medium=Newsletter&utm_campaign=NCMCD231115002&oly_enc_id=1784A2382467C6V

2023-11-16

EU, SpaceX Finalising Plan to Launch Galileo Satellites

The European Union is in the final stages of completing a deal with SpaceX to launch four Galileo navigation satellites in 2024, reported *SpaceNews*.

In press briefings during the European Space Summit in Seville, Spain, Thierry Breton, the European Commission's commissioner for the internal market, said that

he was “finalising the discussions” for a pair of Falcon 9 launches, each carrying two Galileo satellites, tentatively scheduled for April and July of 2024.

Read more in *GPS World* article. https://www.gpsworld.com/eu-spacex-finalizing-plan-to-launch-galileo-satellites/?utm_source=Navigate%21+Weekly+GNSS+News&utm_medium=Newsletter&utm_campaign=NCMCD231108004&oly_enc_id=1784A2382467C6V

2023-11-14

Galileo: An Exciting Road Ahead Toward New Capabilities

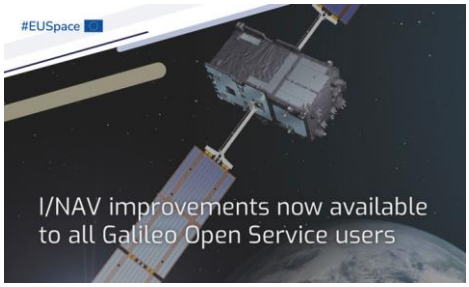
In 2023, Galileo continues to provide the world’s most precise satellite navigation information, to more than four billion users worldwide. Galileo services have expanded with many new capabilities that are unique with respect to other GNSS.

EUSPA and ESA continue to enjoy an effective collaboration on the many development, deployment and evolution activities of the Galileo Program, each according to its responsibilities for service provision and system development with the European Commission acting as the program manager.

The service delivery operations, and the maintenance of the operational systems, are managed by EUSPA, who supervises several contracts that carry-out the day-to-day activities from dedicated control and monitoring centres throughout Europe. The Galileo timing, navigation and SAR/Galileo services provided in 2023 have been delivered with excellent performances that continue to exceed the formal declarations for minimum performance levels (MPL), both in terms of absolute accuracy and overall service availability.

Read more in *GPS World* article. https://www.gpsworld.com/galileo-an-exciting-road-ahead-toward-new-capabilities/?utm_source=Navigate%21+Weekly+GNSS+News&utm_medium=Newsletter&utm_campaign=NCMCD231108004&oly_enc_id=1784A2382467C6V

2023-11-10



Space Command Officer Got His Start With GPS

Orbiting hundreds of kilometres above the Earth is a tiny electronics chip designed by Australian Defence Force Lieutenant, Jason Wang.
Wang, an engineering officer, tested an experimental GPS unit for his thesis while studying electrical engineering, sparking his interest in space and eventually leading to a job working at Defence Space Command.

“It was one of the first Australian satellites to be put into orbit for decades,” Lieutenant Wang said. “Now there are satellites going up all the time but back then it was a pretty big deal.”

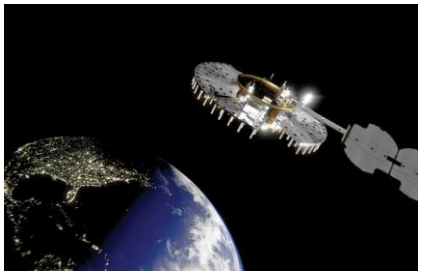
QB50 is a string of small, cube satellites in low-earth orbit designed to monitor the atmosphere. Each one has an experimental GPS unit for in-orbit navigation and remote sensing tests. Lieutenant Wang and his team were responsible for evaluating its in-space performance.

Read more in *Spatial Source* article. https://www.spatialsource.com.au/space-command-officer-got-his-start-with-gps/?utm_campaign=SS%20-%20Overall%20Publication%20-%20Master&utm_medium=email&_hsmi=282593722&_hsenc=p2ANqtz-82kbKD0GIB7TVuj7Al3-dmuc_kwmlve8cpoK301L9tapofQLvToSgvHnqo6Hn0GczTAnECTCm3a4FhkMouyIPgLO2l8Q&utm_content=282593722&utm_source=hs_email
2023-11-14

Making GPS More Resilient

Nearly 50 years ago, there were no smart phones, no GPS-guided weapons, no turn-by-turn direction systems in automobiles. That's when the U.S. Air Force launched the first two Navigation Technology Satellites, NTS-1 and NTS-2, to expand and improve the nascent positioning capability provided by GPS forerunner programs such as Transit and Timation. NTS-1, launched in 1974, and NTS-2, launched in 1977, weren't part of the original GPS constellation but were instead orbiting testbeds for various technology systems such as clocks and solar cells.

After this multi-decade burst of positioning activity, the U.S. Air Force is preparing to launch the third in the NTS series, NTS-3, next year, after several years of launch delays. Like its predecessors, it's aimed to improve the GPS system.
Read more in *Inside GNSS* article. https://insidegnss.com/washington-view-making-gps-more-resilient/
2023-11-13



Deploying and Demonstrating Navigation Aids on the Lunar Surface

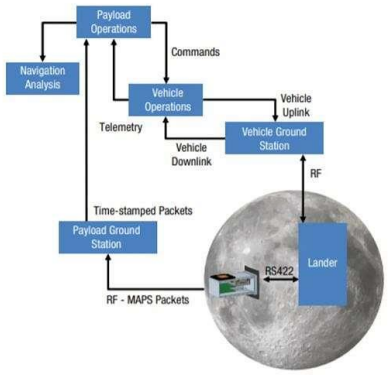
NASA is developing lunar navigation beacons to be deployed on spacecraft or the lunar surface to aid in localisation and help future space vehicles determine position, velocity, and

time to high accuracy. "Are we there yet?" is a constant question on any journey. As humanity expands its presence on, near, and around the Moon, new systems are needed to provide navigation signals similar those provided by the Global Positioning System (GPS) on Earth. To enable this capability, NASA is supporting research on a range of sensors, architectures, and techniques for providing reference signals to help spacecraft and humans find their way.

Lunar Node 1 (LN-1) is an S-band navigation beacon for lunar applications that was recently designed and built at Marshall Space Flight Center (MSFC). As part of NASA's Commercial Lunar Payload Services (CLPS) initiative, this beacon is scheduled to be delivered to the Moon's surface on Intuitive Machine's NOVA-C lunar lander on the IM-1 mission in early 2024.

During this mission, LN-1's goal will be to demonstrate navigation technologies that can support local surface and orbital operations around the Moon, enabling autonomy and decreasing dependence on heavily utilised Earth-based communication assets like NASA's Deep Space Network. To demonstrate these capabilities, LN-1's design leverages CubeSat components as well as the Multi-spacecraft Autonomous Positioning System (MAPS) algorithms, which enable autonomous spacecraft positioning using navigation measurements.

Read more in *Space Daily* article.
https://www.spacedaily.com/reports/Deploying_and_demonstrating_navigation_aids_on_the_lunar_surface_999.html
2023-11-08



The UK's New Plan For PNT Resilience

While the Australian geospatial sector still awaits the publication of the nation's official positioning, navigation and timing (PNT) roadmap, the United Kingdom Government is showing the way by releasing a strategy for ensuring the continuity of PNT services in the UK.

The ten-point plan includes establishing a National PNT Office and a National Timing Centre, having back-up plans in the event of disruption to the GNSS, along with various other initiatives such as terrestrial timing networks and precision clock research to boost resilience and reduce risk.

The aim is the ensure critical sectors such as finance, defence, transportation, telecommunications and emergency services, as well as everyday services such as banking and the stock market, are protected from failure in the event of major problems with the current PNT system.

The new strategy — which the UK Government is describing as a “framework” — was released on 18 October by the UK’s Science Minister, George Freeman.

Read more in *Spatial Source* article. https://www.spatialsource.com.au/the-uks-new-plan-for-pnt-resilience/?utm_campaign=SS%20-%20Overall%20Publication%20-%20Master&utm_medium=email&_hsmi=281638079&_hsenc=p2ANqtz-9ffZ2jm4KHi-7Z7guEXjO_ZZxBOQyh_XnpSNExT8Z5cApILF6i0m5EmM512GG7E3lgSIgBgc_U-8e9Kz9UguSJ-Pp6Xg&utm_content=281638079&utm_source=hs_email

2023-11-06

Brad Parkinson to Speak at IGNSS 2024

Dr Bradford Parkinson, renowned as the ‘Chief Architect of GPS,’ will present the opening keynote address at the International Global Navigation Satellite Systems Association (IGNSS) 2024 conference in Sydney in February.

As the theme for IGNSS 2024 is ‘Celebrating 50 years of GNSS: Navigating the next 50,’ it is fitting that delegates will be able to hear from the first Director of the GPS Joint Program Office on the developments that led to the system we now take for granted.

In the 50 years since Parkinson and his team were given the go-ahead to design and build the GPS, it has become an essential part of daily life for most people on the

planet, whether they realise it or not. And it has since been joined by three other global systems (GLONASS, Galileo and BeiDou) and two regional systems (QZSS and IRNSS).

Parkinson will speak via video link from his home in California, about the technical and organisational issues that he and his team faced in the early days of GPS.

IGNSS 2024 will run from 7 to 9 February 2024 at the University of New South Wales, Sydney, Australia. Early bird registrations are now open.
Read more in *Spatial Source* article. https://www.spatialsource.com.au/brad-parkinson-to-speak-at-ignss-2024/?utm_campaign=SS%20-%20Overall%20Publication%20-%20Master&utm_medium=email&_hsmi=281638079&_hsenc=p2ANqtz--d83BoMcc0fk8lH-cBCgscRcF9twlgTP4oqLsXXPuCve0uumPvq0Pkd4Y4b5L-_SpzF60jE6Zlf54DAvixfjcgy66BMA&utm_content=281638079&utm_source=hs_email
2023-11-07

All Jammed Up, DOT Urgently Seeks Complementary PNT

For years, the U.S. Department of Transportation (DOT) has been exploring the technologies and systems necessary to provide positioning, navigation, and timing (PNT) services to complement the Global Positioning System (GPS) so that these critical services remain available even when GPS signals are disrupted. In the past few months, the department has ramped up these Complementary PNT (CPNT) efforts, from its issuance of a CPNT Action Plan in September to a related Request for Information (RFI) seeking industry input on CPNT technologies. What are these efforts, how are they going and why the sense of urgency now? The DOT's CPNT Action Plan, issued this September, provides a comprehensive roadmap to ensure the safety, security, and efficiency of critical infrastructure in the face of potential GPS disruptions through the adoption of CPNT technologies.

Stakeholder engagement across the PNT enterprise, including providers of PNT services and critical infrastructure owners and operators, ranks high among the plan's key strategies and actions. So does the development of CPNT solutions specifications and standards. The plan further includes a goal of establishing field trials and test ranges to evaluate the performance and resilience of domain-specific (e.g., maritime, rail, and surface applications) CPNT technologies, based on quantitative performance metrics.

Read more in *Inside GNSS* article. https://insidegnss.com/all-jammed-up-dot-urgently-seeks-complementary-pnt/

2023-10-29

Ligado Sues US Government for Using its Licensed 5G Spectrum

Ligado Networks has sued the U.S. federal government for $39 billion, alleging officials at the U.S. Department of Defense (DoD) misappropriated Ligado's exclusively licensed L-band spectrum to support secret DoD systems without permission or compensation.

"The lawsuit, filed in the U.S. Court of Federal Claims against the United States, the Defense Department, the Commerce Department and NTIA, seeks just compensation for the government's physical, categorical, regulatory and legislative takings of Ligado's property," the company said in a press release.

According to the company's lawsuit, the DoD embarked on a "misinformation and disparagement campaign" against Ligado starting shortly after the company received its FCC approvals in 2020. That campaign, according to the lawsuit, sought to revive concerns that Ligado's 5G plans would interfere with GPS services.

Read more in *GPS World* article. https://www.gpsworld.com/ligado-sues-u-s-government-for-using-its-licensed-5g-spectrum/?utm_source=Navigate%21+Weekly+GNSS+News&utm_medium=Newsletter&utm_campaign=NCMCD231025002&oly_enc_id=1784A2382467C6V

2023-10-25