

Iridium Makes Strategic Investment in DDK Positioning for Enhanced GNSS Accuracy

Iridium Communications has made a strategic investment in DDK Positioning (DDK), an Aberdeen, Scotland based provider of enhanced Global Navigation Satellite System (GNSS) accuracy solutions.

DDK uses the Iridium network to provide global precision positioning services that can augment GNSS constellations, including GPS and Galileo, to significantly enhance their accuracy for critical industrial applications. DDK is also developing similar services for other GNSS constellations, such as GLONASS and BeiDou. Terms of the investment are not being disclosed.

Standard positioning accuracy through a system like GPS is typically within 10 meters; however, by using the Iridium network, DDK's enhanced GPS accuracy service brings incredibly precise positioning of five centimetres or less.

Read more in *Space Daily* article.

https://www.spacedaily.com/reports/Iridium_makes_strategic_investment_in_DDK_Positioning_for_enhanced_GNSS_accuracy_999.html

2021-05-25



SpacePNT to Develop GPS/Galileo Receiver for Lunar Pathfinder Spacecraft

The European Space Agency (ESA) has selected SpacePNT to develop an advanced spaceborne GPS/Galileo receiver to demonstrate the use of terrestrial satellite navigation signals or real-time and autonomous orbit determination and positioning, navigation and timing (PNT).

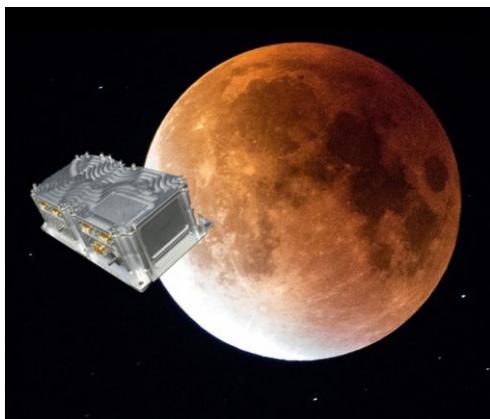
The receiver will be carried aboard the ESA-SSTL Lunar Pathfinder spacecraft, which will be placed in orbit around the Moon.

The contract includes the development, qualification and delivery of one proto-flight model (PFM) and two engineering models of the NAVIMOON receiver. NAVIMOON is the high-sensitivity version of SpacePNT's NAVILEO high-performance GNSS spaceborne receiver.

The NAVIMOON receiver implements high-sensitivity algorithms able to receive and process signals extremely attenuated coming from the spillover (side lobes) around the Earth of signals transmitted by satellite navigation systems. It combines these signals' measurements with advanced on-board orbital filters to achieve onboard the spacecraft in real time an unprecedented target orbit determination accuracy of 100 metres root-mean-square (rms) at Moon altitude, which is well above the typical accuracy that can be achieved with terrestrial radio ranging that involves the use of costly deep-space-station ground infrastructures.

Read more in *GPS World* article. https://www.gpsworld.com/spacepnt-to-develop-gps-galileo-receiver-for-lunar-pathfinder-spacecraft/?utm_source=Navigate%21+Weekly+GNSS+News&utm_medium=Newsletter&utm_campaign=NCMCD210519003&oly_enc_id=1784A2382467C6V

2021-05-19



DARPA Plans to Put PNT in LEO

The Defense Advanced Research Projects Agency (DARPA) has awarded Northrop Grumman a \$13.3 million contract Phase 2 of the Blackjack program to “advance its Position, Navigation, and Timing (PNT) payload through emulation and Critical Design Review, and build PNT payload units destined for space flight.”

DARPA's Blackjack program develops and demonstrates the critical elements for a global high-speed network in low Earth orbit (LEO) that provides the Department of Defense with highly connected, resilient, and persistent coverage. Blackjack seeks to incorporate commercial sector advances in LEO, including design of LEO constellations intended for broadband internet service, of which the design and manufacturing could offer economies of scale previously unavailable. DARPA is interested in capitalising on these advances to demonstrate military utility, emphasizing a commoditized bus and low-cost interchangeable payloads with short design cycles and frequent technology upgrades.

Read more in *Inside GNSS* article.

<https://insidegnss.com/darpa-plans-to-put-pnt-in-leo/>

2021-05-25



The PNT T.A.P. (Toughening, Augmenting, Protecting) Dance

Reports indicate that the Department of Transportation (DOT)'s new Acting Assistant Secretary for Research and Technology (OST-R), Dr. Robert Hampshire, an electrical engineer, is a quick study who "gets" it. Hampshire will also serve as the co-chair of the Executive Steering Group of the National Executive Committee for Space-Based PNT. Now that he's been educated on the current issues, what's next?

The Trump-era Space Policy Directive-7 directs the DOT to "authenticate" GPS, potentially meaning both data and signals. According to Karen Van Dyke, Director of DOT OST-R's Office of PNT & Spectrum Management, toughening receivers remains a key priority. Widespread GPS jamming, spoofing and interference creates

vulnerabilities for critical infrastructure in the homeland and for troops on the battlefield.

Russia recently stepped up its electronic signature in contested areas in east Ukraine, jamming coalition equipment. This problem is not new for the military, but the fix remains years away, according to a January 2021 Government Accountability Office (GAO) report (think: 2028).

For almost twenty years, the Department of Defense (DOD) has engaged in a multi-billion dollar GPS modernization and sustainment effort, the keystone of which is to add a more powerful and encrypted anti-jam, anti-spoof cybersecure military (M)-code GPS capability.

Read more in *Inside GNSS* article.

<https://insidegnss.com/the-pnt-t-a-p-toughening-augmenting-protecting-dance/>

2021-05-20



Officially Underway and Open to Users for Testing: Galileo's High Accuracy Service

Official broadcast for testing of the Galileo High Accuracy Service (HAS) has begun. Users equipped with a receiver that is capable of acquiring this signal and extracting its data content can start observing and testing specific aspects of the HAS service and consequent modifications to the E6-B data component (without any impact on compliance with the published OS SIS ICD) .

The test campaign is an essential step towards the development of the HAS operational service. HAS Initial service declaration is planned for 2022. Involvement

of key stakeholders and interested parties is planned, enabling pioneer users to experiment with HAS-like products. During this phase, feedback gathered from users will be used to consolidate the service.

An Information Note on the HAS provides an overview of the main characteristics of the service, along with information on features such as service levels, target performance, an implementation roadmap, and an overview of the target markets for the service.

Read more in *Inside GNSS* article. <https://insidegnss.com/186374-2/>
2021-05-19



Increased Rail Role Urged for Galileo and EGNOS; GNSS Important for Europe’s Green New Deal and Mobility Makeover

“Trains were born in Europe,” opens a recent report on European energy policy from the Jacques Delors Institute in Paris. So also, in some senses, were the Green movement and increased awareness of personal mobility options and potential. For the continent and the European Union community to maintain their world leadership in these two areas, the rail sector must play a greater role than it does presently,

argues report author Matthias Ruete. He sees Galileo and EGNOS, the two European GNSS, as essential to this strategy.

“This European Year of the Railways should be an opportunity to make rail transport the major player in clean European mobility, even though its overall share of the various modes of transport has become relatively low,” states the report, [Challenges for European Rail: Getting Solutions on Track.](#)

Galileo and the European Geostationary Navigation Overlay Service (EGNOS) play key roles in an ambitious Digital Rail agenda that the report supports. Freight and passenger transport already rely on the two European satnav systems. To date, more than 150,000 rail freight cars in Europe have been outfitted with GNSS-based localisation sensors. Precise location is used for asset and fleet management efficient supply chain operations, and supplying customers with estimated time of goods arrival.

Read more in *Inside GNSS* article. <https://insidegnss.com/increased-rail-role-urged-for-galileo-and-egnos-important-for-europes-green-new-deal-and-mobility-makeover/>
2021-05-13



Europe Unveils Plans to Bring 'GPS' and Skype to the Moon with Satellites

The European Space Agency (ESA) has kicked off the development of a future satellite constellation that will orbit the moon and provide navigation and telecommunication services to lunar explorers.

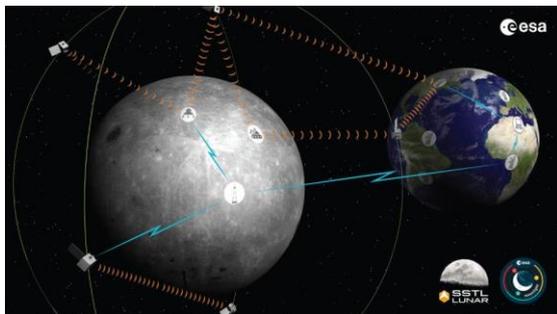
If all goes according to plan, the new system could be in place in the late 2020s, only a few years after the expected landing of NASA's crewed [Artemis 3 mission](#) near the

lunar south pole. ESA believes that Earth's celestial companion is set to become a busy destination in the coming years, with commercial companies and nations from across the world all wanting a slice of the "eighth continent." The new constellation, called Moonlight, will make it easier and cheaper for a fledgling lunar economy to blossom, ESA officials suggested in a news conference on Thursday (May 20). "Having a navigation and telecommunication network to relay what we learn on the moon back to Earth will be key for sustainability of future missions," Elodie Viau, ESA's director of telecommunications and integrated applications, said in the news conference. "You can imagine astronomers setting up observatories on the far side of the moon. And as we have all now become accustomed to virtual meetings, who knows? We could be doing Skype on the moon."

Read more in *article...*

<https://www.space.com/europe-plans-lunar-navigation-constellation>

2021-05-21



Defence Formally Establishes New Space Division

Defence has confirmed that a Space Division headquarters will be established within the Royal Australian Air Force in early 2022.

Earlier this month, Defence revealed that the division would be led by Air Vice-Marshal Catherine Roberts, AM, CSC, who will take the reins in January.

Chief of Air Force, Air Marshal Mel Hupfeld, AO, DSC, said the new domain would play a critical role in supporting Defence's multi-domain operations.

"We use Space daily for understanding the weather, navigating, access to geospatial information and sharing information across Australia or across the world," AIRMSHL Hupfeld said.

"Defence is delivering capabilities including space domain awareness, sovereign controlled satellite communications and space-based Earth observation, and navigation."

Read more in *article...*

<https://www.spaceconnectonline.com.au/launch/4890-defence-formally-establishes-new-space-division>

2021-05-19



\$13.3M Boost for the Australian Space Agency

The federal government has announced an additional \$13.3 million for the **Australian Space Agency** to boost its capacity to deliver regulatory services and support the growth of the industry.

“Space is the new frontier for modern manufacturing and is one of the Government’s six National Manufacturing Priorities,” said the Minister for Industry, Science and Technology, Christian Porter.

“Roadmaps developed with industry have recently been released by the Morrison Government to inform the long-term strategy in each of these priority industries, including space, and to help capture exciting new opportunities to grow these sectors and create jobs.

“Innovation in the space sector also supports advancement in other essential industries, including agriculture and transport.”

Read more in *Spatial Source* article. https://www.spatialsource.com.au/space/13-3m-boost-for-the-australian-space-agency?utm_medium=email&utm_campaign=SS%20Newsletter%2019052021&utm_content=SS%20Newsletter%2019052021+CID_325f44375450262a980d83e71c0415c5&utm_source=Campaign%20Monitor&utm_term=READ%20MORE

2021-05-13



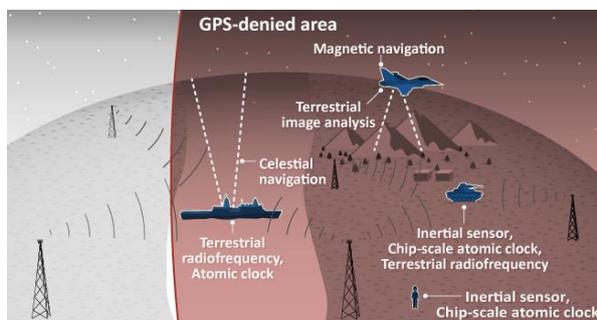
DOD is Developing Positioning, Navigation, and Timing Technologies to Complement GPS

The Department of Defense (DOD) plans to keep the Global Positioning System (GPS) at the core of its positioning, navigation, and timing (PNT) solution, using other PNT technology to complement GPS or as an alternative for when GPS is degraded or unavailable. DOD's alternative PNT science and technology portfolio explores two approaches: improved sensors to provide relative PNT information, and external sources to provide absolute positioning and navigation. Relative PNT technologies include inertial sensors and clocks to allow a platform to track its position and keep track of time without an external signal like GPS. However, relative PNT technologies require another PNT technology to correct errors that can accumulate with such systems. Absolute PNT technologies allow a platform to use external sources of information to determine its position but rely on the availability of those external sources. Absolute PNT technologies include celestial and magnetic navigation as well as the use of very low radiofrequencies or low Earth orbit satellites to transmit information.

Read more in *article...*

<https://www.gao.gov/products/gao-21-320sp>

2021-05-10



Canberra Outlines its Vision for Drones

Deputy Prime Minister and Minister for Infrastructure, Transport and Regional Development Michael McCormack, said the government wants to help Australia remain at the forefront of development and adoption of emerging aviation technologies.

“Growth in the use of drones and eVTOL in Australia is estimated to support more than 5,000 jobs and a \$14.5 billion increase in GDP over the next 20 years — of which \$4.4 billion would be in regional areas across New South Wales, Queensland and Victoria,” the Deputy Prime Minister said.

“As part of the NEAT Policy Statement, the Government is investing \$35.7 million to establish the Emerging Aviation Technology Partnerships program, including a Drone Rule Management System and Drone Detection Network.”

The Deputy Prime Minister said the program “will establish strategic partnerships with industry to support aviation manufacturing jobs and encourage adoption of emerging aviation technologies to address community needs, particularly in regional Australia”.

Read more in *Spatial Source* article. https://www.spatialsource.com.au/latest-news/canberra-outlines-its-vision-for-drones?utm_medium=email&utm_campaign=SS%20Newsletter%2005052021&utm_content=SS%20Newsletter%2005052021+CID_dc4f4b679c4d33b253db060ec78038c2&utm_source=Campaign%20Monitor&utm_term=Canberra%20outlines%20its%20vision%20for%20drones

2021-05-12



GPS OCX 3F Contract Awarded to Raytheon Intelligence and Space

The United States Space Force's Space and Missile Systems Center (SMC) awarded a \$228 million contract to Raytheon Intelligence and Space for the GPS Next-Generation Operational Control System (OCX) Follow-On (OCX 3F). The contract award was made on April 30.

OCX 3F upgrades the OCX Blocks 1 and 2 system to use the enhanced capabilities of the new GPS III-F space vehicles being developed by Lockheed Martin. The OCX 3F program — in combination with the GPS III-F space vehicle program — ensures positioning, navigation and timing (PNT) will continue to be available for future generations, said the Los Angeles Air Force Base in a press release.

Read more in *GPS World* article. https://www.gpsworld.com/gps-ocx-3f-contract-awarded-to-raytheon-intelligence-and-space/?utm_source=Navigate%21+Weekly+GNSS+News&utm_medium=Newsletter&utm_campaign=NCMCD210428002&oly_enc_id=1784A2382467C6V

2021-04-30



Japan's Plans to Expand CLAS Coverage and to Launch Early Warning Service Overseas

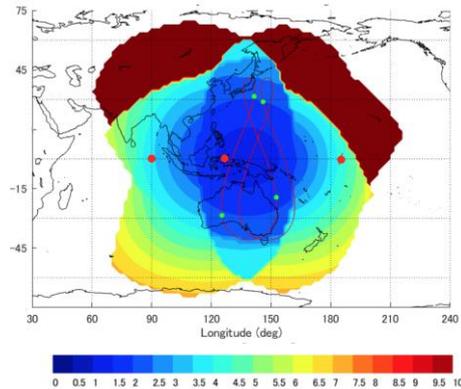
The Japanese government has started preparation for the expansion of its centimetre class accuracy augmentation system into the broader Asia-Oceania region as they expand from 4 to 7 satellites. The Japanese Cabinet Office presented the plan at the QBIC (Quasi-Zenith Satellite System Business Innovation Council) overseas business development working group meeting held on 4 February 2021. Additionally, the green light was given to start the preparations for the launch of an EWS (Early Warning Service) providing timely information about natural hazards in the region. Three more satellites, which are to be launched until 2023, will make the service reliable over the Asia-Oceania region, whilst expanding the

coverage area eastward and westward. Michibiki is expected to contribute greatly to the sustainable development goals (SDGs) in the region.

Read more in *article...*

<https://gnss.asia/blog/japan-clas-ews/>

2021-04-27



GPS III SV05 Arrives in Florida for June Launch

The U.S. Space Force's Space and Missile Systems Center successfully delivered the fifth GPS III satellite to Cape Canaveral Space Force Station, Florida, on April 6.

GPS III Space Vehicle (SV) 05 was transported from the Lockheed Martin facility in Waterton, Colorado, to the Space Coast Regional Airport in Titusville, Florida, by a C-17 Globemaster III crew from Joint Base Lewis-McChord, Washington. Lockheed Martin is the contractor for construction of the GPS III satellites.

Now that the satellite has arrived at the Astrotech Space Operations facility, the latest addition to the GPS constellation modernisation effort will begin final testing and checkout before the launch. While at Astrotech, it will undergo final post-ship functional testing, be fuelled with onboard propellant, and then be encapsulated for launch.

Read more in *GPS World* article. https://www.gpsworld.com/gps-iii-sv05-arrives-in-florida-for-june-launch/?utm_source=Navigate%21+Weekly+GNSS+News&utm_medium=Newsletter&utm_campaign=NCMCD210421003&oly_enc_id=1784A2382467C6V

2021-04-22



President Biden, Congress Urged to Void Ligado Go-ahead Order

In letters sent 22 April to the White House and U.S. Congress, more than 90 organisations representing a broad range of industries urged President Biden and members of Congress to set aside the Ligado Order approved during the previous administration.

The industries urged the president and lawmakers to work with the Federal Communications Commission (FCC) to “stay and ultimately set aside the Ligado Order,” saying that it “poses significant threats to the reliability of GPS for millions of Americans.”

“The risk to American lives and to the American economy are simply too great,” the group wrote in the letters.

“A year ago today, the FCC made the dangerous and misguided decision to allow Ligado Networks to operate a terrestrial network on frequencies adjacent to GPS despite threats to GPS reliability and the concerns of Congress and virtually all federal agencies that rely on GPS to protect our national and economic security,” said Dale Leibach, spokesman for the Keep GPS Working Coalition.

Read more in *GPS World* article. https://www.gpsworld.com/president-biden-congress-urged-to-void-ligado-go-ahead-order/?utm_source=Navigate%21+Weekly+GNSS+News&utm_medium=Newsletter&utm_campaign=NCMCD210421003&oly_enc_id=1784A2382467C6V

2021-04-22

