



EGNOS, it's there. Use it.

EGNOS BULLETIN

Issue 30, Q2 2019

Credits: MTES-Terra, Laurent Mignaux



European
Global Navigation
Satellite Systems
Agency



NAVIGATION
MADE IN
EUROPE

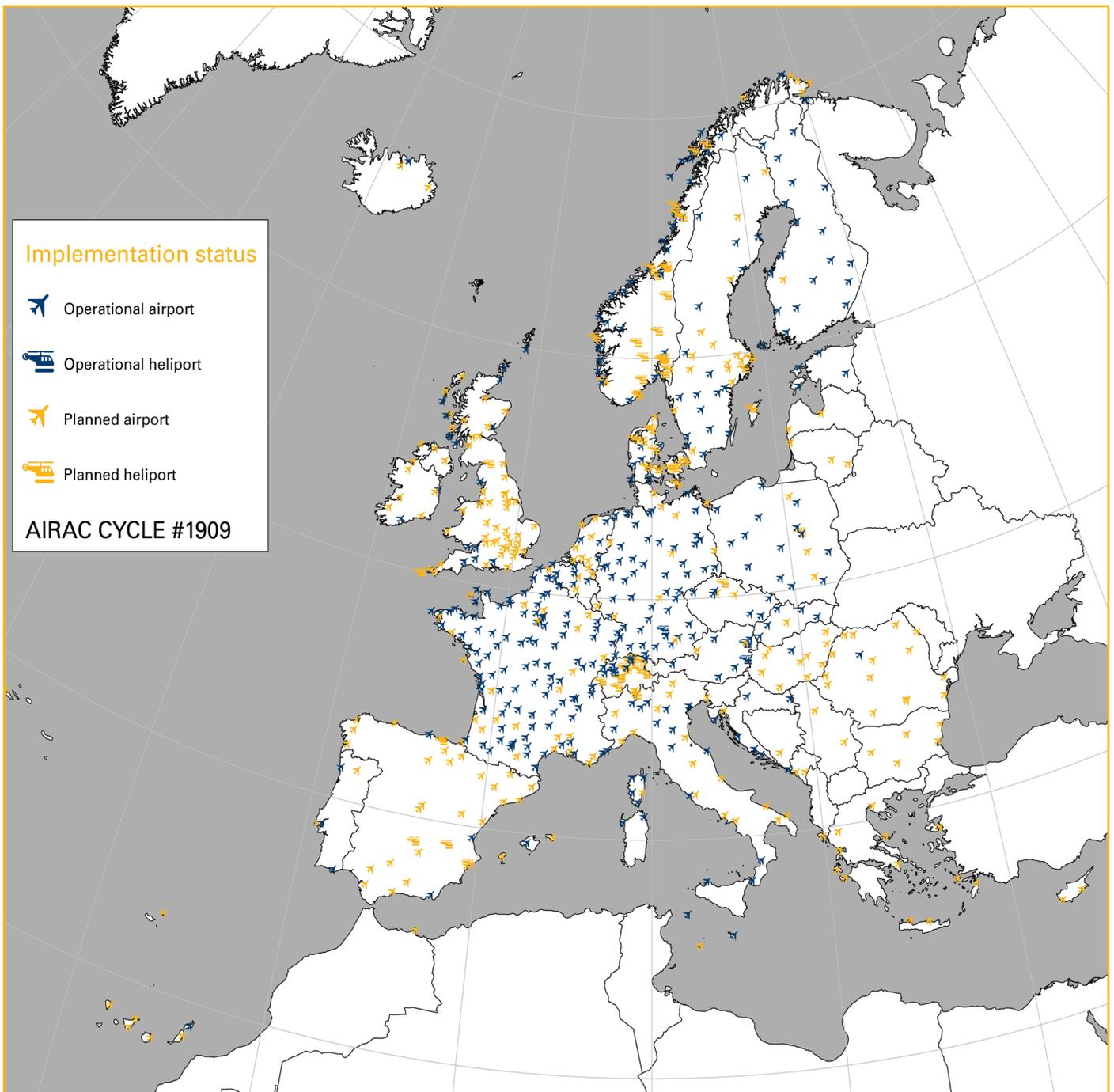
<https://egnos-user-support.essp-sas.eu/>



<https://www.essp-sas.eu/>

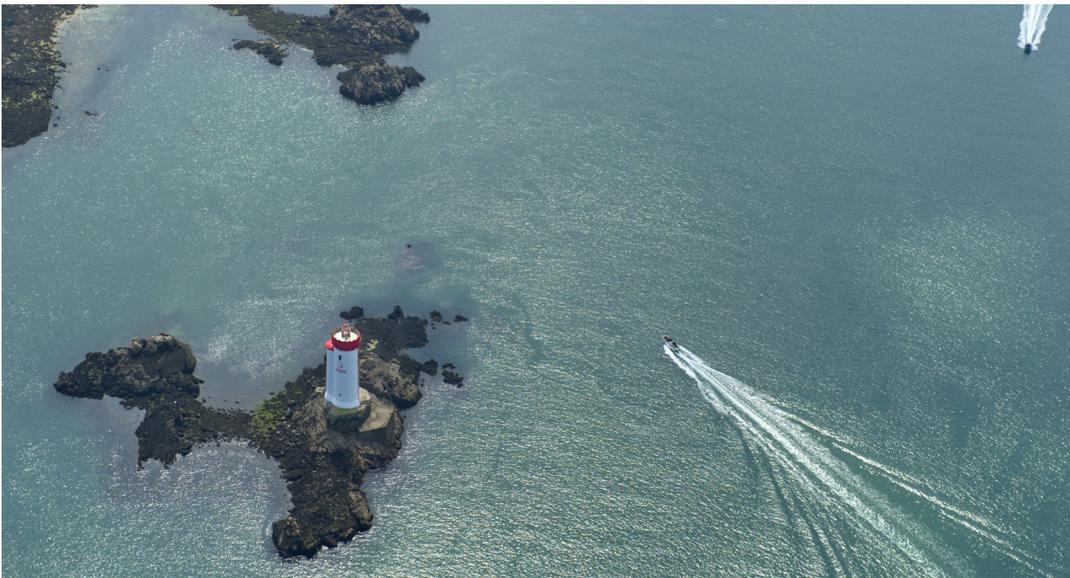
EGNOS

implementation



Maritime navigation: France chooses EGNOS to improve services for sea users

Satellite-based systems have greatly changed maritime navigation. Most vessels, from sail boats to merchant ships or tankers, now have systems on board that rely on satellites for positioning. In France, DGPS stations are distributed along the coastline to enhance radio navigation for seafarers. In a context of new investment decisions, French maritime authorities chose EGNOS to upgrade their satellite-based services for radio navigation. This is a first for the maritime sector.



Credits: MTES-Terra, Laurent Mignaux

For 15 years, six DGPS stations have been deployed all along the French coastline, providing sailors and merchant shippers with enhanced satellite-based radio navigation services. The stations have made it possible to provide vessels equipped with GPS systems with precise positioning, especially in narrow waterways, as well as indications of signal quality. But those stations have become outdated, suffering from frequent breakdowns due to ageing equipment.

Cutting-edge technology, at a low cost

To upgrade and improve the system's efficiency, the French authorities have chosen EGNOS. The aim was to find a solution enabling them to maintain high standards of quality while

responding to the criteria set by the International Maritime Organisation (IMO).

A cost-benefit analysis, led by the Cerema (The French centre for expertise and studies on risks, environment, mobility and urban development) showed that replacing the existing DGPS stations would have been much more expensive and less effective compared to the EGNOS solution, which appeared to be

“ Satellite-based augmentation systems make navigation more accurate, reliable and available, thus contributing to a safer, more efficient and sustainable maritime sector ”



Credits: MTES-Terra, Laurent Mignaux

an innovative solution with limited costs. The first station to be equipped with an EGNOS-based solution was Olonne on the Atlantic coast. Launched in June 2017, the experiment showed significant results complying with the international standards and in particular with the IMO A.1046(27) resolution.

Today, four EGNOS-based stations are in service (Olonne and Point de Buis in Brittany; Héauville on the channel coast and Porquerolles in the Mediterranean region). Two additional stations are expected to become operational in 2020 (Béar in the Mediterranean region and Cap-Ferret in the Atlantic region).

Operating costs total some €500,000 over three years; a financial transaction that ensures service quality (in particular in terms of hardware quality), while minimising risks (jamming or cyberattacks for instance). Further evolutions are expected with upcoming versions of EGNOS.

Enhanced radio navigation service with limited impact on the users

EGNOS uses geostationary satellites and a network of ground stations to increase the accuracy of existing GPS satellite positioning signals, while providing an "integrity message" that informs users in the event of signal problems. The constellation of these geostationary satellites

provides differential correction data, which are then converted via a specific application based and centralised in Saint-Malo, Brittany. The data are then transmitted to the users via the Medium Frequency (MF) antennas of the existing DGPS stations.

With this new service, there is no need for the ships to change their GPS receivers: the enhanced signal is received via the existing material. Ensuring service continuity is thus crucial with total transparency for the users, while offering equivalent, if not better, performance.

Trusted precision and availability: a user-oriented service

All sea users, whether professionals or amateur sailors equipped with GPS, are targeted by this service. They benefit from a positioning determination service that is accurate, reliable and homogeneous, based on recent technology that was historically used in the aeronautical sector, and all along the French metropolitan coastline.

The entire continental shelf included in the French economic exclusive zone should be covered, with optimal accuracy of 5 meters, thus meeting the most recent international standards (latest IMO resolution).

Today, France is the only country to use the EGNOS technology in the maritime sector on such a scale.

“ France is the first country to use the EGNOS technology in the maritime sector on such a scale ”

Talking about EGNOS benefits with... ENAIRE

As a public business entity reporting to the Ministry of Public Works, ENAIRE manages the Spanish airspace over a territory of 2.19 million square kilometres and handles more than 2 million flights per year from their 21 control towers and 5 control centres. It is the fourth-largest air navigation services provider in Europe by number of movements, and it actively participates in all of the European Union's projects related to the implementation of the Single European Sky project. In this issue of the EGNOS Bulletin, we interview ENAIRE's Head of GNSS Department, Ms Ana Bodero



Credits: ENAIRE

Hola, Ana. First of all, could you please tell us about the tasks of Enaire's GNSS department, and yours in particular?

ENAIRE's GNSS department is responsible for coordinating the implementation of GNSS-based approach procedures, deployment of GBAS CAT I / II / III systems and hosting, deployment and support for the operation of EGNOS elements located in Spanish territory. We participate in

GNSS research and development projects, mainly within the framework of SESAR 2020, but also through various initiatives in EC / GSA projects. We lead the Galileo program, part of the Innovation Plan at the Spanish Ministry of Public Works, together with other bodies that are part of the Ministry (in other transport sectors such as rail and maritime transport) and in collaboration with Spanish industry. We represent Spain in several



Credits: ENAIRE

international GNSS forums from EUROCAE, ICAO, Eurocontrol, CANSO, ESA, European Commission, GSA, etc., supporting our colleagues from the Ministry of Public Works who direct the GNSS Program at the national level. Finally, we deploy and maintain a network of GNSS receivers and interference detectors distributed throughout Spain, for GNSS performance analysis, PBN/GBAS implementation support and critical infrastructure protection.

I feel fortunate that ENAIRE has given me the

opportunity to coordinate a team like this, made up of great professionals, in this field of work that I am enthusiastic about, to ensure the successful execution of all these tasks and the achievement of the department's objectives.

Please give us a quick overview of the current implementation status of EGNOS-based operations in Spain.

Our first approach procedures based on GNSS were implemented at Santander airport in 2013. They already included PBN approach procedures

Did you know...?

...that a new LPV procedure was published for Lanzarote airport (GCRR) in May 2019? Lanzarote is part of the Spanish Canary Islands, in the Atlantic Ocean, 100 kilometres west of Morocco. The new LPV is, in fact, the southernmost of all EGNOS-based approaches currently in service. Check this one and others on the [LPV Map](#).

based on EGNOS (LPV). Since then, ENAIRE, in close coordination with our authorities and users, has been working very hard to implement LPV approaches at all Spanish airports.

Currently, ENAIRE provides LPV procedures in Almeria, Valencia, Palma de Mallorca and Lanzarote (the first procedure based on EGNOS in the Canary Islands published in May 2019). Vigo will also be ready very soon. And there is more to come. Around ten more each year until covering all the instrument runways before 2024.

You are surely familiar with Commission Implementing Regulation (EU) 2018/1048 of 18 July 2018, or the PBN Implementing Rule (IR) as it is known to most. How is Enaire facing its obligations deriving from this regulation?

ENAIRE developed its first PBN Implementation Plan in 2013, in line with the National PBN Strategy published by the DGAC (the Spanish Civil Aviation Authority) and developed by DGAC, AESA (Spanish National Supervisory Authority) and ENAIRE within the framework of the PBN National Working Group. The pillars of that implementation plan and national strategy were the PBN specifications RNAV 5 (for en-route), RNAV 1 (for TMA) and RNP APCH (including the three minima, LNAV, LNAV/VNAV and LPV, for the approach phase of flight). Regulation (EU) 2018/1048 is completely aligned with the objectives of the Spanish PBN Strategy. According to this regulation, and regarding EGNOS, all instrument runway ends without precision approach will have LPV approaches in the short term (2020) and, in those runway ends that currently have ILS / GBAS procedures, ENAIRE must provide LPV procedures before 2024.

ENAIRE is focused on the compliance of the new PBN regulation and the entire organization is working hard to achieve this common goal, which is also part of our 2020 Flight Plan.

In the past, DFS (the German ANSP) said in the EGNOS Bulletin that “to make the most of [PBN] services, there had to be close cooperation between the ANSPs and the airspace users”. Do you share this view?

Definitely. In Spain, our users, through their participation in the PBN National Working Group and the formal user consultation process, determine the priorities when implementing PBN. Their needs are always taken into account. At this time, with the PBN regulation already in force, users are at the forefront more than ever.

The development of a Transition Plan, and sharing it with all involved stakeholders, is part of the regulation and must be completed before 2020. Currently, Spain is closing the first draft of the PBN Transition Plan that will be shared with all our users and the rest of the stakeholders in order to collect their comments and incorporate them into the next version of the plan. This first Transition Plan will be distributed in the last quarter of 2019.

What is the role of EGNOS within the Transition Plan you are developing?

Since we started PBN implementation, EGNOS has always been in the picture. All of our PBN implementations in the approach phase of flight include LPV procedures.

Moreover, whenever the characteristics of the runway allow, we design LPV 200 manoeuvres to take full advantage of the benefits of EGNOS and provide procedures with the highest level of safety and efficiency to our users, being a cost-effective alternative to ILS CAT I.

You regularly participate in the Spanish PBN working groups. What is the feedback you receive from airlines with respect to EGNOS and LPV approaches in particular?

Users who are equipped and are capable of performing LPV approaches often comment that they prefer these rather than others available because their execution is simpler and more stable.

However, the percentage of capable aircraft is still not within the figures that we would like to have at our airports. There is an urgent need in Europe to increase the number of EGNOS-capable users in order to take full advantage of the benefits of the service and leverage the implementation effort devoted to complying with the PBN regulation.

And, in closing, is there any final message you would like to share with our readers?

I would like to thank GSA and ESSP for the opportunity to share the status of our implementation of EGNOS in Spain and for the support we have received during these years of PBN implementation.

ENAIRE, as co-founder of ESSP, has supported the adoption of EGNOS in aviation since the beginning, and now we look with optimism to a future where we will have a new EGNOS version, based on dual constellation and dual frequency, which will provide extra robustness and continuity to Europe's air operations.

EGNOS

Success Stories

DANISH AIR TRANSPORT LPV CAPABILITIES



Credits: Danish Air Transport

DAT LT is an airline established over 15 years ago in Lithuania which currently provides a mix of services including scheduled flights, ACMI (charter and leasing) and cargo.

Operating a fleet of x18 ATR turboprops of various sizes and generations (including the latest 600 variant), the time has come for the company to modernise 13 units, from a cockpit perspective and in response to the requirements posed by the ADS-B Out mandate.

This opportunity for modernisation will also enable the harmonisation of the different types of avionics architectures currently present in the fleet, transitioning from a mix of up to 4 FMS types to just 1. The central piece of the overall solution is the EGNOS-capable Universal UNS-1Lw SBAS-FMS.

"Once the program is completed, our pilots will not have to spend time learning and keeping up to

date with 4 different boxes. There are cases today, such as unscheduled aircraft changes, where pilots need to reset their minds within minutes if the new aircraft has a different FMS than the one they were supposed to fly. This situation will end in the coming months," says Paulius Jakas, DAT LT CAMO Manager.

But the number of benefits does not end there. "When analysing the options available on the market to add ADS-B Out capability, we realised that, with just a bit more investment, we would also benefit from LPV approaches. LPV comes as a bonus over the ADS-B Out baseline and, as a result, we decided to go for it. We are confident this will increase our competitiveness on the market," adds Jakas. The FMS will be supported by x2 Collins TDR-94D transponders and Universal's LPV Monitor. An STC will be developed by Texas-based company Aircraft Systems and Manufacturing, Inc.

TRACKING RAIL FREIGHT POWERED BY EGNOS



Credits: GSA

Real time has become a common demand. In every aspect of our lives we are more and more used to requesting immediate and accurate information, and this is of special interest in rail freight. Outdated, unprecise or unreliable information related to shipment location and progress is not acceptable to freight operators or customers.

In line with other stakeholders in rail industry, freight operators are moving towards the modernisation of processes and operations. Tracking freight is a current trend and rail freight operators are fitting locomotives, wagons and even containers with systems that enable constant monitoring and maintenance planning, to improve efficiency and productivity. Companies including [DB Cargo](#) and [SNCF Logistics](#), for instance, are investing in new monitoring technologies that provide real-time updates on the status of wagons

and containers. According to the figures provided in different press releases by freight operators and device manufactures; by 2022 there could be already more than 170,000 wagons equipped with GNSS devices in Europe. EGNSS, and EGNOS in particular, have a lot to do with reinforcing these goals. [SAVVY® Telematic Systems](#) is a clear example of a success story in tracking rail freight using EGNOS. They have already equipped more than 6,000 wagons for the European freight wagon rental company [TRANSWAGGON](#) with the [SAVVY® CargoTrac device](#) and will equip 1,500 more until end of 2019 (for more information, read [here](#) and [here](#)). This stand-alone telematics device enables quick installation on rail cars and containers. With location technology based on GNSS positioning, the device is configured to use EGNOS capabilities to determine positions with the end goal of improving rail logistics.

RENEWAL OF ESTONIAN DGNSS STATIONS POWERED BY EDAS



Credits: EMA

The **Estonian Maritime Administration (EMA)** is a governmental agency responsible for navigation safety in Estonian waters. The EMA deals with navigational information (hydrographic surveying, chart production and operative information) and maintenance of Aids to Navigation (AtoN).

In the area of navigational aids, EMA is conducting a project for the renovation of their DGNSS maritime service consisting of two IALA DGNSS stations in Ristna and Narva-Jõesuu that provide accuracy and integrity corrections to marine vessels in the central Baltic and the Gulf of Finland. As part of this renovation project, EMA has taken advantage of the **EDAS Ntrip DGNSS corrections** generated at Laapeenranta EGNOS stations (in the south of Finland) to feed the recently upgraded Narva-Jõesuu station.

In this renewal process, EMA has chosen

to replace the obsolete HW devices by with SW components capable of taking the role of the Reference Station (RS) and the Integrity Monitoring, thus, switching from the traditional HW-Local approach to a SW-Hybrid (remotely and locally generated corrections) concept.

The EDAS Ntrip DGNSS messages (provided by Laapeenranta EGNOS station) are the primary source of corrections and, only in case of failure, the IM SW (running in parallel on two servers) switches to the corrections generated by the local RS. This means that from now on, marine vessels on the Gulf of Finland using DGNSS on-board benefit from EGNOS by means of the EDAS Ntrip DGNSS corrections to increase their position accuracy and, therefore, increase their safety as well.

AEROTAXI PROFITS FROM KING AIR OPERATIONAL UPGRADE



AeroTaxi s.r.o., a private airline specialising in passenger and cargo charter flights, has recently joined the list of European airlines that benefit from EGNOS-based LPV approaches. The airline, which started commercial operations in 2001, has operated several aircraft types since then.

Following an upgrade to their King Air 350's Pro Line 21™ avionics, AeroTaxi s.r.o. has been making the most of their new operational capabilities. Although they originally intended to install ADS-B Out and other minor upgrades to their flight deck, they went with a comprehensive upgrade after learning about the availability of LPV and its potential for operational improvement.

One of their base airports, Karlovy-Vary in the Czech Republic, has LPV approaches available for both runway ends, making use of LPV to return home more consistently and efficiently during Instrument Meteorological Conditions (IMC).

Away from home, they now take advantage of LPV approaches at many destinations where

they fly their customers. The Supplemental Type Certificate for this upgrade, available from the **Collins Aerospace** dealer network, is EASA validated. Similar STCs are also available for many other Pro Line 21- equipped aircraft, including the Hawker 750, 800XP, 850XP, and 950XP, as well as the Premier I and IA, Falcon 2000, and Falcon 50EX.

The STCs also include ADS-B Out using EGNOS for position reporting, RNP-RF leg capabilities and "Excessive Downward Deviation From Glideslope" alerting for TAWS, enabling LPV approaches to CAT I minima.

The upgrade was performed by Collins Aerospace dealer **CLS**. They hold approvals that enable operators to install LPV on the King Air and many other aircraft types. AeroTaxi is a long-time CLS customer and the upgrade was completed in close cooperation with Collins Aerospace.

Check the [video](#) of this success story if you want to learn more.

EGNOS services highlights

NEW AVIATION DASHBOARD



We are pleased to announce the new [Aviation Dashboard](#), available under the Aviation Portal section of the [EGNOS User Support website](#).

This brand-new dashboard, designed in coordination with European Air Navigation Service Providers (ANSPs) to display EGNOS integrated information relevant to the Aviation community, can be accessed by all users.

The dashboard shows on a single page the status of the EGNOS operational GEO satellites, information about planned and active EGNOS outages and service degradations, as well as real-time performance at those airports with published EGNOS-based procedures. In addition, it provides easy access to documentation relevant to EGNOS aviation users.

If your organization is implementing EGNOS-based procedures and has not yet signed an EGNOS Working Agreement with ESSP, please contact egnos-working-agreement@essp-sas.eu and we will gladly assist you with this process.

For additional questions related to EGNOS, please contact the egnos-helpdesk@essp-sas.eu or dial +34 911 236 555 (H24/7).

Did you know...?

...that Airbus has unveiled new plans for LPV developments? The latest family that has been confirmed to be receiving the "SLS (SBAS Landing System)" option is the A380. SLS will be offered to A380 customers by 2021, thus completing the offer for all Airbus models. Today, LPV is standard in the A220 and an option in the A350. By late 2020, LPV will also be available for the A320 and A330 families. If you would like to know more about Airbus plans, please join us during the next [EGNOS workshop](#), scheduled on 24 - 25 September 2019 in Rome, Italy.

USER SATISFACTION SURVEY REPORT 2018



USER SATISFACTION SURVEY 2018

The questionnaire has been filled by

140
177
respondents

25 41
Non-EGNOS
Users

+

115 136
EGNOS Users

42 (*) 64 **Safety of Life (SoL)**

18 (*) 26 **EDAS**

54 (*) 82 **Open Service (OS)**

(*) Each respondent can use more than one service.

Legend 2017 results



8.3

Global Satisfaction

8.1

Grading scale of 10 points

SATISFACTION PER MARKET SEGMENT

<p>30 respondents</p>  <p>7.9 ▲ Agriculture</p> <div style="border: 1px solid gray; padding: 2px; width: 40px; margin: 5px auto;">7.6</div>	<p>62 respondents</p>  <p>8.5 ▲ Aviation</p> <div style="border: 1px solid gray; padding: 2px; width: 40px; margin: 5px auto;">8.4</div>
<p>4 respondents</p>  <p>7.9 ▲ Rail</p> <div style="border: 1px solid gray; padding: 2px; width: 40px; margin: 5px auto;">7.1</div>	<p>6 respondents</p>  <p>8.7 ▲ Maritime</p> <div style="border: 1px solid gray; padding: 2px; width: 40px; margin: 5px auto;">7.9</div>
<p>1 respondent</p>  <p>9.4 ▲ Road</p> <div style="border: 1px solid gray; padding: 2px; width: 40px; margin: 5px auto;">6.8</div>	<p>9 respondents</p>  <p>7.2 ▼ Sur. & Map.</p> <div style="border: 1px solid gray; padding: 2px; width: 40px; margin: 5px auto;">7.3</div>

EGNOS TIME SERVICE

4 respondents are using EGNOS Time Service

15

7.0 ▼ 8.6

18% could be interested in using this service

22%

EGNOS SUPPORT



7.9

8.0 ▲

Support Website



8.3

8.3 ↔

Documentation



8.3

8.7 ▲

Helpdesk

Your SATISFACTION is our reason for being!

(*) Each respondent can use more than one service.

EGNOS SERVICES

<p>37% EGNOS Users (*)</p> <p>SoL</p> <p>8.7 ▲</p> <div style="border: 1px solid gray; padding: 2px; width: 40px; margin: 5px auto;">8.5</div>	<p>47% EGNOS Users (*)</p> <p>OS</p> <p>8.1 ▲</p> <div style="border: 1px solid gray; padding: 2px; width: 40px; margin: 5px auto;">7.8</div>	<p>16% EGNOS Users (*)</p> <p>EDAS</p> <p>8.2 ▲</p> <div style="border: 1px solid gray; padding: 2px; width: 40px; margin: 5px auto;">8.0</div>
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Performance

<p>9.1 ▲</p> <p>EGNOS SoL accuracy</p> <div style="border: 1px solid gray; padding: 2px; width: 40px; margin: 5px auto;">8.9</div>	<p>9.0 ▲</p> <p>EGNOS SoL availability</p> <div style="border: 1px solid gray; padding: 2px; width: 40px; margin: 5px auto;">8.6</div>	<p>8.5 ▲</p> <p>EGNOS SoL continuity</p> <div style="border: 1px solid gray; padding: 2px; width: 40px; margin: 5px auto;">8.4</div>	<p>8.2 ▲</p> <p>EGNOS SoL coverage</p> <div style="border: 1px solid gray; padding: 2px; width: 40px; margin: 5px auto;">7.9</div>
<p>7.9 ▲</p> <p>EGNOS OS accuracy</p> <div style="border: 1px solid gray; padding: 2px; width: 40px; margin: 5px auto;">7.6</div>	<p>8.3 ▲</p> <p>EGNOS OS availability</p> <div style="border: 1px solid gray; padding: 2px; width: 40px; margin: 5px auto;">7.9</div>	<p>8.0 ▲</p> <p>EGNOS OS coverage</p> <div style="border: 1px solid gray; padding: 2px; width: 40px; margin: 5px auto;">7.7</div>	

NEW EGNOS DEMONSTRATOR FOR AGRICULTURE: GEAR.



The new eGnos dEmonstrator for AgRriculture (GEAR) has just been released through the EGNOS User Support Website. **GEAR** is an interactive virtual demonstrator that allows everyone to discover the benefits of EGNOS for machinery guidance in a user-friendly and entertaining way. If you have ever wondered how to drive a tractor efficiently, this is your chance, thanks to EGNOS!

GEAR enables you to drive a virtual tractor equipped with EGNOS and to simulate the performance of several farming tasks, such as ploughing, sowing, spreading and spraying, under different weather conditions. Let's prove your driving skills with the assistance of EGNOS, avoiding both gaps and overlaps between passes in order to optimize costs!

Once the agricultural job is completed, GEAR provides a report showing the economic savings and other benefits offered by EGNOS. In addition, farmers requiring a more complete economic assessment on the adoption of EGNOS can also run a quick cost-benefit analysis (CBA) with our **EASE (Egnos sAvingS in agriculturE)** tool.

EGNOS, the free European positioning service, plays a key role in agriculture, helping farmers improve the accuracy of their farming activities. GEAR is the perfect tool to experience it. With GEAR you can ride an EGNOS-equipped tractor. Download and try GEAR on your computer following this [link](#). Enjoy!

NEW EDAS SDD

A new release of the Service Definition Document (SDD) for the EGNOS Data Access Service (EDAS) was published on 3 June 2019!

EDAS is the EGNOS data service accessible on the Internet that offers EGNOS data in real time, the EGNOS data historical archive and value-added products such as DGPS and RTK. In addition, application providers are able to connect to the EGNOS Data Server and leverage the EGNOS data, offering high-precision services to end customers.

With this, EDAS provides an opportunity to deliver EGNOS information to users who cannot always keep a line of sight with EGNOS satellites, while supporting a variety of other services, applications and research programmes.

In this new version, the SDD content has been updated to consider the latest changes in the EGNOS system. The document provides not only the current observed performances but also state-



of-the-art innovations, such as the application of EDAS benefits in the Maritime sector.

Remember that EDAS is freely accessible to EU users upon [registration](#).

Check out the new [EDAS SDD](#), and do not hesitate to [contact the helpdesk](#) if you have any questions!

NEW SERVICE IMPLEMENTATION ROADMAPS.

The new version of the [EGNOS Service Implementation Roadmaps](#) (v4.2) has been released and is now available on the EGNOS User Support Website!

The EGNOS Service Implementation Roadmaps provide a high-level overview of the expected evolution for the upcoming years on each of the EGNOS Services: [Safety of Life \(SoL\)](#), [Open Service \(OS\)](#) and [EGNOS Data Access Service \(EDAS\)](#).

Some of the relevant EGNOS milestones detailed within the new release include the following:

- The upcoming temporary changes in the EGNOS Geostationary satellite constellation during the first quarter of 2020.
- Next EGNOS Releases to be deployed.
- For Safety of Life service users, the publication of a new Service Definition Document improving



the committed areas for APV-I and LPV-200 Service Levels in the southeast of Europe, taking advantage of the recently deployed RIMS in Haifa (Israel).

We invite you to explore the upcoming evolutions described in the Service Implementation Roadmaps, which are available both in PDF1 and in interactive view formats. Do not hesitate to [contact us](#) if you have any question.

What's new?

Since last bulletin...

EGNOS WORKING AGREEMENTS SIGNED (EWA)

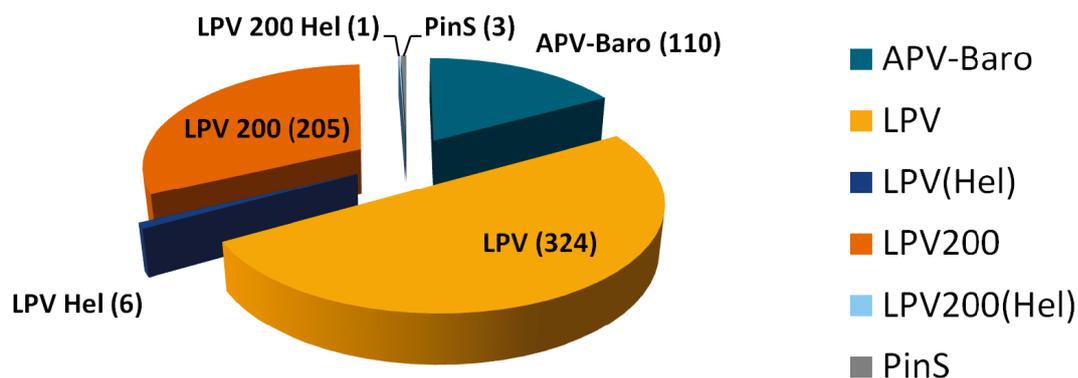
The following EWAs have been signed in the last quarter:

	Saerco	Spain
	Torsby, ESKM ATS and Lycksele Airport	Sweden
	Ireland West Airport	Ireland
	Tréner Kft	Hungary
	ANA Luxembourg	Luxembourg
	LGS	Latvia
	Seinäjoki Airport	Finland
	Norsk Luftambulanse AS	Norway

LPV, LPV-200, PinS & APV Baro procedures published

(including AIRAC cycle 2019 #09– 15/08/2019)

The following graph shows the number of LPV, LPV-200, PinS, APV-Baro, LPV-Hel and LPV200-Hel procedures. The total number is **649**.

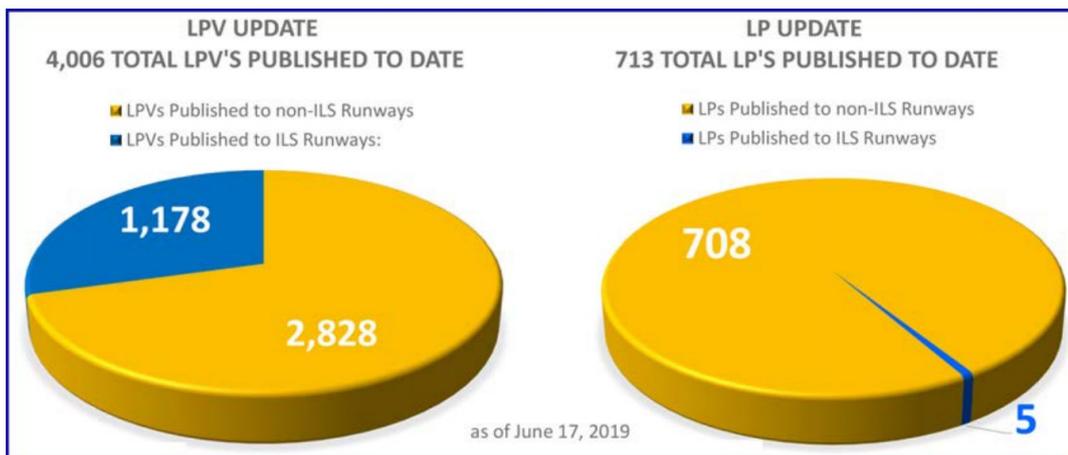


SBAS in the world

WAAS

The chart below shows the WAAS list of satellite-based approach procedures. You can find further information on [SatNavNews](#).

Courtesy of the FAA WAAS Team



Did you know...?

...that a new and updated version of the training package covering the theoretical knowledge syllabus for RNP APCH to LPV minima is available in the Training Material section of the EGNOS User Support Website? This new version incorporates the latest changes introduced by EU regulations and can be used by Approved Training Organisations (ATOs) to develop Theoretical knowledge on RNP APCH within the ATO Training Manual.

What's going on...



in aviation.

EBACE



Organizers wrapped up a prosperous 2019 edition of the European Business Aviation Convention & Exhibition (EBACE2019). Innovation and investment driving the future of business aviation were highlighted at Geneva Airport and Palexpo conference centre during three productive days on 21-23 May.

It was fulfilling to witness that interest and awareness of EGNOS has significantly risen over

the past few years among manufacturers and airline operators. Attendees showed particular interest in EGNOS implementation status for LPV approaches and ADS-B out. One of the communities that can benefit the most from EGNOS is the business aviation industry, providing pilots with a whole new level of access to smaller airports across Europe that may have once been out of reach.

Did you know...?

...that Cargolux, Europe's largest all-cargo airline, headquartered and based at Luxembourg Airport, is in the process of incorporating ADS-B Out functionality in 16 of their Boeing 747-400 freighter aircraft? In fact, due to their worldwide network of destinations, and with a view to comply with all existing ADS-B Out mandates, the GNSS sensor model CMA-3024 from CMC Electronics is being used. The device is compatible with all SBAS signals worldwide, including EGNOS.

in agriculture.



EGNOS FOR PRECISION AGRICULTURE AT ECPA 2019



Plenary talk on EGNOS for agriculture, provided by Sofia Cilla, at ECPA 2019

The 12th European Conference on Precision Agriculture, ECPA 2019, took place in Montpellier, France, between 8-11 July. [Montpellier SupAgro](#) hosted this edition of [ECPA](#), bringing together 380 attendees from 37 different countries, including companies, universities and research centres, to share the last developments on precision farming technology and applications.

In this sense, a wide range of state-of-the-art topics, such as satellite-based applications, unmanned aerial vehicles (UAVs), robotics, and guidance and automation, were discussed at the different conference sessions. Attendees could also enjoy a visit to a traditional but technological Mediterranean farm, with live demonstrations showcasing the benefits of GNSS for innovative solutions such as crop monitoring with UAVs, agrochemical application, electrical weeding and

vine characterization. EGNOS was present at ECPA 2019 with its own stand to provide information on the features and benefits of [EGNOS for farming](#). It provided all attendees with not only general information on EGNOS but also tailored support for their specific activities.

They could also try [GEAR](#), the new EGNOS demonstrator for agriculture, and “drive” a virtual tractor equipped with EGNOS by means of the available steering wheel and pedals.

The importance of EGNOS in the farming sector was recognised by its presence as one of the plenary presentations, entitled “[GNSS and EGNOS \(SBAS\) for farming: all you need to know from this European free service](#)!”. This talk, given by [Sofia Cilla \(ESSP\)](#), raised great interest among all the attendees, who saw first-hand the capabilities of EGNOS for precision agriculture.



in surveying.

IMBA EUROPE SUMMIT 2019

Credits: Edoardo Melchiori
for IMBA Europe



IMBA Europe is a non-profit association whose mission is to secure and enhance sustainable access for mountain bikers and communities across Europe and to unlock opportunities for trail development.

Each year, IMBA Europe organizes its **Summit**, which in 2019 took place from 9-11 May in Danish town of Silkeborg.

ESSP and IMBA Spain had the opportunity to show how EGNOS accurate measurements are benefitting **signaling of Spanish mountain biking trails**. The event was an excellent occasion to promote EGNOS amongst other European trail building and planning communities, who appreciated how the service offers free-of-charge sub-meter positioning.



Upcoming Events

ION GNSS+

16 - 20
Sept

ION GNSS+ is the world's largest technical meeting and showcase of GNSS technology, products and services. This year's conference will bring together international leaders in GNSS and related positioning, navigation and timing fields to present new research, introduce new technologies, discuss current policy, demonstrate products and share ideas.

ION GNSS+ 2019 will take place 16-20, September 2019 at the Hyatt Regency Miami in Miami, Florida.



Intergeo

17 - 19
Sept

Intergeo is one of the world's largest events and communication platforms for geodesy, geoinformation and land management. It is held annually at different locations. The trade fair and conference cover all the key trends that crop up along the entire value-added chain – from geo-based information surveys and data processing to integrated applications. Intergeo attracts decision makers, developers and buyers from profit and non-profit companies, public and private providers, as well as economy and science.

Hall: 4 Booth: D4.018



ERA GENERAL ASSEMBLY

8 - 10
Oct

ERA's premier event, the **ERA General Assembly**, will take place this year in Juan Les Pins (near Nice), France, between the 8th and 10th of October. The event provides a vital forum for regional aviation businesses where EGNOS, as one ERA member, will participate in the conferences as an exhibitor.

Stand A3/4



ITSF

4 - 7
Nov

The **International Timing and Sync Forum (ITSF)** is the largest time and synchronisation conference and exhibition in the world showcasing solutions for 4G/5G, Finance, Broadcast, Automotive, Smart Grids, IoT, Distributed Datacentres, Transport and Defence.

will be provided to the audience

Speaking session: 3:25pm Nov 7



INNORAIL

12 - 14
Nov

InnoRail Budapest, a series of professional conferences for the railway industry, is organized in Budapest once every other year. The conference was created by Hungarian professionals committed to rail transport with the objective of thinking together about the present of rail transport, in order to foster its future development.

Presentation: EGNOS, a key enabler in future railway positioning Nov 14 at 10:20



METS

19 - 21
Nov

The **METSTRADE** Show is the world's largest trade exhibition for marine equipment, materials and systems. We are the only truly international B2B exhibition for the marine leisure industry and have served as a platform for innovation, market developments and networking since our launch in 1988. In addition to the overall leisure marine industry, we cater to three specialist sectors, namely Superyachts, Marinas and Yards and Composites. We do this through three specialised pavilions, each offering a smaller self-contained show within the larger METSTRADE Show context.

EGNOS will be present at Hall 1, Stand 01.500 as in past editions



25th MARS conference

26 - 28
Nov

The JRC, in collaboration with DG AGRI and the Czech Republic Paying Agency for Agriculture (SZIF), organises the **25th MARS Conference** in Prague on 26, 27 and 28 November 2019. The annual conference provides a platform to present and discuss Member States' experiences and general observations regarding the Integrated Administration and Control System (IACS), including developments in shared management of EU farmers' dossiers. This year will be the 25th edition and therefore agenda will take this milestone into account.





EGNOS Annual Workshop 2019

On 24-25 September 2019 at the ASI (Italian Space Agency) premises in Rome, the 9th EGNOS Annual Workshop aims at bringing together users, industry and stakeholders to exchange impressions on how the European Geostationary Navigation Overlay Service (EGNOS) is performing

This year we will meet in Rome, September 24-25. This two-day workshop will feature presentations and will continue to reflect the achievements and challenges collected on the implementation of EGNOS throughout this year.

It will also provide all participants with opportunities to hear, think and contribute creatively to the lifelong learning and knowledge with new examples and experiences gathered. Last year, [EGNOS Annual Workshop](#) was held within the European Space Week event organized by the GSA and the European Commission in Marseille. This year, the EGNOS Annual Workshop in its 9th edition will stand on his own, in a moment in time where the services are more robust than ever, and its applications to different domains are fast growing.

This Workshop will start with a welcome from the GSA and ESSP, in charge of the event organization. Technical sessions will follow on EGNOS Program update and service status. Then, stakeholders and users will present their use of EGNOS in Aviation.

EGNOS Awards and Conclusions will end this 1st day.

Day 2 will be devoted to EDAS and the use of EGNOS in other domains of applications such as Maritime, Rail, Inland waterways and land applications.

To know more about this EGNOS Annual Workshop edition, take a look at the [Agenda](#) and do not miss the chance to [Register](#) now!

We are looking forward to meeting you all in Rome!



EGNOS, it's there. Use it.

<https://egnos-user-support.essp-sas.eu>

EGNOS applications. Developers platform. Business support.
Information on historical and real-time EGNOS performance. EGNOS Signal in Space (SIS) status. Forecast on SIS availability and EGNOS performance. EDAS information and registration. EGNOS adoption material and tools.

For questions & information

EGNOS HELPDESK

+34 911 236 555

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Disclaimer: EGNOS is a complex technical system and the users have certain obligations to exercise due care in using the EGNOS services. Before any use of the EGNOS services, all users should review the EGNOS SoL Service Definition Document ("SDD") and/or EGNOS Open Service SDD (both available on the ESSP SAS website <http://www.essp-sas.eu/>) in order to understand if and how they can use these EGNOS services, as well as to familiarise themselves with their respective performance level and other aspects the services may offer. Use of an EGNOS service implies acceptance of its corresponding SDD specific terms and conditions of use, including liability. In case of doubt the users and other parties should contact the ESSP SAS helpdesk at egnos-helpdesk@essp-sas.eu. Aviation Users may also contact their National Supervisory Authority. Data and information (the "Data") provided in this document are for information purpose only. ESSP SAS disclaims all warranties of any kind (whether express or implied) to any party and/or for any use of the Data including, but not limited to, their accuracy, integrity, reliability and fitness for a particular purpose or user requirements. Text and pictures that are part of the Data may be protected by property rights. Any use shall require the prior written agreement of ESSP SAS.



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