EGNOS

EGNOS, it's there. Use it.

BULLETIN

IN THIS ISSUE:

THE EGNOS EVENT: SERVICE PROVISION WORKSHOP

Agenda available at:

Click here

Venue & accommodation information:

Click here

Registration & more information:

EGNOS-workshop@essp-sas.eu

Editorial Note:

EGNOS Bulletin has evolved in its appearance. Comments and suggestions to keep on improving it are wellcome, please contact egnos-helpdesk@essp-sas.eu

Cover page photograph: Santander Airport (first published LPV in Spain) –Aena courtesy-

New funding injection to boost EGNOS uptake

As an evidence of their full commitment to foster the use of EGNOS, the **European GNSS Agency** (GSA) has secured more funds for the uptake of this European technology by the aviation community.
The Call for Grants specifically addresses, on the one hand, operators looking to equip their aircraft and rotorcraft with SBAS enabled avionics and, on the other hand, Air Navigation Service Providers and aerodromes willing to implement EGNOS based operations, including Localiser Performance approaches with Vertical Guidance (LPV) in Europe.
To promote the Call for Grants, the GSA and the ESSP held an information session at the Farnborough International Airshow in July.

Carmen Aguilera, Market Development Officer at GSA, presented the objectives of this call:

"The operational implementation of EGNOS in aviation is a strategic goal to ensure the success of the programme. In this context, the objective of this call is to foster EGNOS adoption in the European aviation.
The priority of the call will be the EGNOS implementation in regional, business (corporate) aviation, general aviation (training, emergency services) and rotorcraft, considered the main aviation market segments for EGNOS and those maximising public benefits. Commercial operators and OEMs interested in benefitting from EGNOS may also apply to the call."
The GSA expects a wide scale operational implementation of EGNOS based approaches throughout European airports and airspace users as a result of this call, which covers the following activities: *"In the case of airports or heliports, the Call covers the site survey, procedure design, safety assessment, flight validation and publication of LPV approach procedures and PinS approaches down to LPV minima.*

In the case of aircraft and rotorcraft operators, the Call covers the development of new Supplemental Type Certificates or Service Bulletins, the installation of GPS/EGNOS enabled avionics and the airworthiness re-certification of
the aircraft for RNP APCH procedures. It also covers the necessary crew training, the update of the operational manual and the granting of the operational approval for Air Operator Certificate holders.
Additionally, it also considers the development of enablers and other EGNOS based operations such as RNP 0.3 routes, Localised Performance approaches (LP) and LPV 200 (SBAS CAT I)."

The GSA, who has launched other successful incentive schemes similar to this one in the past, is now encouraging all interested users to participate:

"We urge European ANSPs, airports and operators to take advantage of this opportunity and submit their proposals. The Call for Grants counts on a total budget of €6M and will fund these implementation projects at up to 60% of their costs."

Potential applicants can address questions related to the content of this call by e-mail to

EGNOS-adoption-aviation@gsa.europa.eu

Interested companies can contact the ESSP adoption team for any technical question on EGNOS implementation by emailing to

EGNOS-adoption@essp-sas.eu

European Global Navigation Satellite Systems Agency

Talking about EGNOS benefits with… DSNA

Benoît Roturier is Program Manager at DSNA for the implementation of Satellite Navigation Systems. He is the French representative of the ICAO Navigation Systems Panel and member of the Performance Based Navigation Study Group. He is an avid advocate of EGNOS benefits for aviation and has always had a strong commitment in the development of this technology in France, which is now leading Europe in terms of LPVs implementation with over 70 approach procedures published to date.

Question: How long have you been involved in EGNOS?

EGNOS is an old friend of mine now as I was involved in its first system developments by 2000 in cooperation with CNES and ESA. As a former academic researcher at ENAC, I was quickly convinced by the potential of this new navigation technology.

Q: What was the main reason that made DSNA early invest into this LPVs implementation campaign?

Both as pilot and former ILS engineer, I quickly realized that the wide-area EGNOS Cat I or near-Cat I signal had a great potential to increase safety and airport accessibility in many places. Fortunately, the DSNA management was easily persuaded by this range of benefits too. Additionally, France was struck during the pre-EGNOS era by some significant accidents over non precision approaches, which would have been avoided with an EGNOS LPV, like the AF A320 crashing in Strasbourg in 1992 during a VOR approach, with 87 casualties.

Q: What are, in your opinion, the key elements fur such a quick EGNOS uptake in France?

Of course, apart from the benefits I just mentioned, DSNA wanted to actively support the important investment made by the France space agency (CNES) in this technology. We thought that one of the best ways of accelerating the uptake of EGNOS was publishing a significant number of procedures, just as the FAA did for WAAS, so that users could quickly assess the benefits right after equipping.

"….wide-area EGNOS Cat I or near-Cat I signal has a great potential to increase safety and airport accessibility in many places"

"best way of accelerating the uptake of EGNOS was publishing a significant number of procedures"

"There is no doubt that a LPV is the best quality and safest PBN approach that an ANSP can offer to users"

Q: Do you think the rest of European countries/ANSPs will catch up soon?

One of the things people tend to forget is that the strategic vision is sometimes not enough to justify investing in any new technology. Publishing a new type of procedure in a so highly regulated environment like Europe is a hard work. However, I now see more and more ANSPs having completed this pre-publication work. We try to help other ANSPs with our experience and Eurocontrol is also providing a good support to European ANSPs in this sense.

Q: So, what are, in your opinion, the main benefits of EGNOS for an ANSP?

I guess that the most important benefit is the increase of safety in the absence of ILS, which is, unfortunately, sometimes a bit too immaterial to be taken into account by ANSPs but very important in my personal view. The second important benefit is the high level of performance of EGNOS LPVs. There is no doubt that a LPV is the best quality and safest PBN approach that an ANSP can offer to users, either as the main procedure over non-ILS equipped runways, or as the main back-up procedure in case of outage or maintenance of the ILS.

Talking about EGNOS benefits with… DSNA

Q: And, once you complete this LPV roll-out, will this have any implications in the existing navaids infrastructure?

Yes, and this is the third most important benefit that we foresee: EGNOS replacing ILS Cat I and thus increasing our ANSP economic efficiency. We are working since several years now towards an ILS Cat I DSNA efforts reduction plan over 50 small and regional airports which will be effective by end 2015. Thanks to the free EGNOS signal and the fact that no navigation infrastructure is required locally, we will cut our navigation infrastructure expenses by several million euros per year and this will help reduce landing charges over French airports as it was announced this year.

"We are working towards an ILS Cat-I reduction plan over 50 small and regional airports by the end 2015"

Q: What feedback did you receive from airspace users when they knew about such rationalisation plan?

We have been coordinating this with our main federations of users in France. Although they understand the implications in terms of equipage, they could barely object to a reduction of our costs as ANSP and consequently our charges to users.

"Airspace users understand the implications in terms of equipage, but they could barely object to a reduction of airport fees"

We clarified that the procedures will also support non-EGNOS equipped users (LNAV and LNAV/VNAV), but the airport accessibility may be reduced in poor weather conditions. It will thus be up to each airline to make a business decision on whether to equip with EGNOS or not. In this regard, it is of great help the support of GSA, who recently announced new funding opportunities for avionics installation for European airspace users.

On top of this, airspace users are also aware that they will have to get equipped with a vertical guidance capability before 2020 in the context of the PBN implementing rule under definition.

Q: Is DSNA planning to tackle small visual airfields too?

In France, we already have the possibility to publish LPVs at non-controlled IFR airports. Visual airfields are a further challenge that we are interested in, but this will require a significant evolution of our regulation, and this would need to be European coordinated for a better efficiency.

Q: What about Helicopter operations?

We have been interacting with Airbus Helicopters and some operators since a long time, and we also understand and support the interest of this community into EGNOS procedures.

Q: To conclude, what would be your message to other EU ANSPs which are considering the use of EGNOS?

We have the extraordinary chance to dispose of a free of charge, high quality near-Cat I (Cat I performance by 2015) signal flowing from space continuously over our heads: Let's use it!

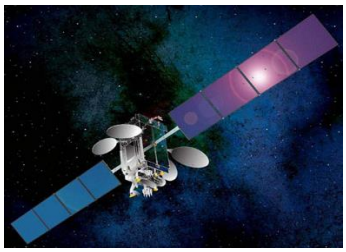
Benoît Roturier
GNSS Program Manager
DSNA

EGNOS Services Highlights

EGNOS SIS

Since beginning 2014, the ARTEMIS satellite (PRN 124) ceased to broadcast EGNOS SIS and has been totally removed from the EGNOS system.

New SES ASTRA GEO satellites (ASTRA-4B and ASTRA-5B) in L1/L5 frequencies will be replacing the current INMARSAT GEO satellites (3F2 and 4F2) as EGNOS operational GEO satellites in the course of 2015 and 2016 once qualified.



Currently, ASTRA-4B (PRN 136) is already part of the EGNOS TEST Platform broadcasting the TEST SIS.

Two upgrades of the EGNOS PRN mask (which includes the list of satellites for which EGNOS broadcast corrections) have been performed in the last months (May and July) to adapt the EGNOS configuration to the changes in the GPS constellation. By the end of July, 31 GPS satellites are considered by EGNOS to provide the corrections, optimizing the coverage area for the different EGNOS services. Next upgrade on EGNOS PRN mask will take place on the 18th September (PRN03 will be removed and PRN09 added).

SERVICE NOTICES

Applicable Service Notices (can be found at click here are the following:

- SN#8: EGNOS System Release v2.3.2 deployment
- SN#9: Upgrade of the EGNOS communication network (TWAN) in January 2014
- SN#10: Updated Status EGNOS performances - North and South West of Service Area -
- SN#11: EGNOS GEO PRN 124 Decommissioning and Space Segment Update

System Release Plan update

A new EGNOS system release, ESR2.4.1M is planned to be deployed by mid 2015. This new version will include some improvements in the EGNOs services:

- Full alignment with existing standards (MOPS DO229D, GPS SPS 2008)

- Introduction of LPV200 as part of the SoL service (service declaration 2015-2016, TBC)

- GEO modernization: SES ASTRA satellites to replace the INMARSAT GEOs (2015/2016)

- Hardware obsolescence

Did you know…?

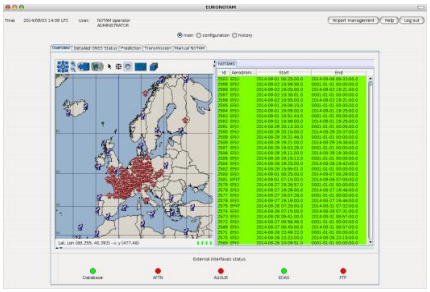
Since July 2014, you can find info **on EGNOS Timing Service** on the Monthly Performance Report, section 6 click here

Service Evolution

New roadmaps for the three EGNOS services will be made available to EGNOS users in October 2014. New EGNOS OS, EDAS and SoL SDDs will be published before the end of the year. After the corresponding service declaration process, a new EGNOS Service Level, LPV-200, is planned to be introduced as part of the ESR 2.4.1M.

EGNOS Services Highlights

NOTAM PROPOSALS PROVISION



Important improvements in the EGNOS NOTAM Proposals provision have been implemented (from the system architecture to the service operations) which have resulted in a huge reduction of the service reaction time to unscheduled events.

Since January 1st 2014, the EGNOS NOTAM Proposals are delivered to the concerned NOF (NOTAM Office) as follows:

- GNSS (EGNOS and GPS) scheduled events notified minimum 72 hours in advance.
- GNSS unscheduled events notified within 2 hours (7D/H24).

Did you know…?

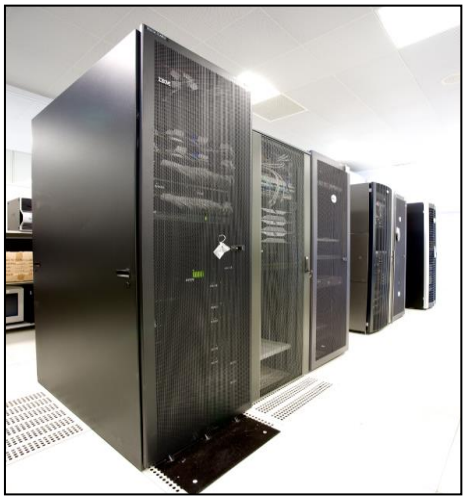
In 2013, the worst case reaction time for NOTAM service in front of GNSS unscheduled events was 16 hours. Since 1st January 2014 it is just 2 hours! Improving all of its EGNOS services is a must!

EGNOS DATA ACCESS SERVER

EDAS provides access over the internet to the GNSS data received by the EGNOS ground infrastructure, both in real-time and archive mode. Currently, the services provided by EDAS are the following (Click here):

- *Main Data Streams:* GNSS data is provided through Internet on real-time in ASN.1 format (Service Level 0) and RTCM 3.1 format (SL2).
- *Data Filtering:* Filtering capabilities to allow receiving GNSS data from only certain subsets of RIMS stations when connecting to EDAS Service Level 0 and/or 2.
- *SISNET Service:* EGNOS messages provided in real time using the SISNeT protocol defined by ESA.
- *FTP Service:* Historical GNSS data available through an FTP site.
- *Ntrip service:* GNSS measurements and corrections in real time using Ntrip protocol.

The performance of all EDAS services in terms of availability and latency is very stable and in line with the EDAS SDD commitments. To check EDAS monthly performance refer to Click here



What's new since last bulletin?

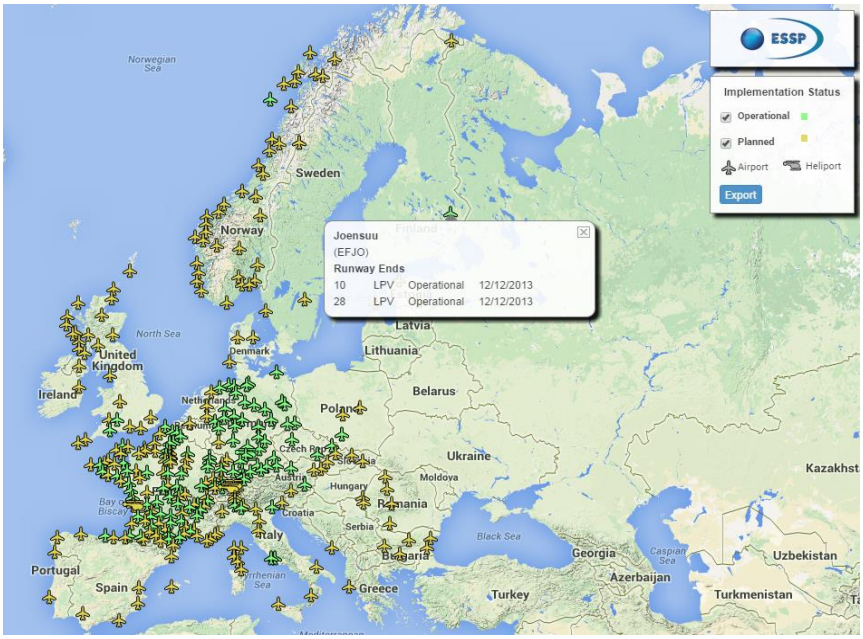
LAUNCH OF EGNOS SATISFACTION SURVEY

On the 10th of July the ESSP and GSA launched the EGNOS survey click here intended to measure EGNOS user satisfaction and gather valuable suggestions to improve the quality of the EGNOS services.

Your opinions are important to us, and will help EGNOS continue to improve, meet and hopefully exceed your expectations: JOIN THE SURVEY!

MORE INFORMATION DISPLAYED ON THE LPV MAP IN EGNOS USER SUPPORT WEB

From last August, an upgraded version of the LPV implementation map is accessible on the EGNOS user support website. The overall graphical interface has been improved, the information displayed for every airport includes runway ends, status of implementation of the LPV procedures, equipped operators and operation dates. New functionality to export the information has been added. The map will be updated every month with the latest information available.



What's new since last bulletin?

EGNOS WORKING AGREEMENTS (EWA) SIGNED

Since 1st January 2014, the following EWAs have been signed

 Naviair

 Storumand Flygplats

 Letové Prevadzkové Služby SR

 London Southend Airport, Cambrigde Airport, Kent Airport, Wolverhampton

LPV & APV Baro PROCEDURES PUBLISHED PER COUNTRY (valid until Airac cycle 12)

Next table shows for each country:

- the number of airports with LPV procedures, as well as the global LPV procedure number
- the number of airport with APV Baro procedures as well as the global LPV procedure number

Warm wellcome to the **United Kingdom** as the "newcommer" in the EGNOS LPV publications list!

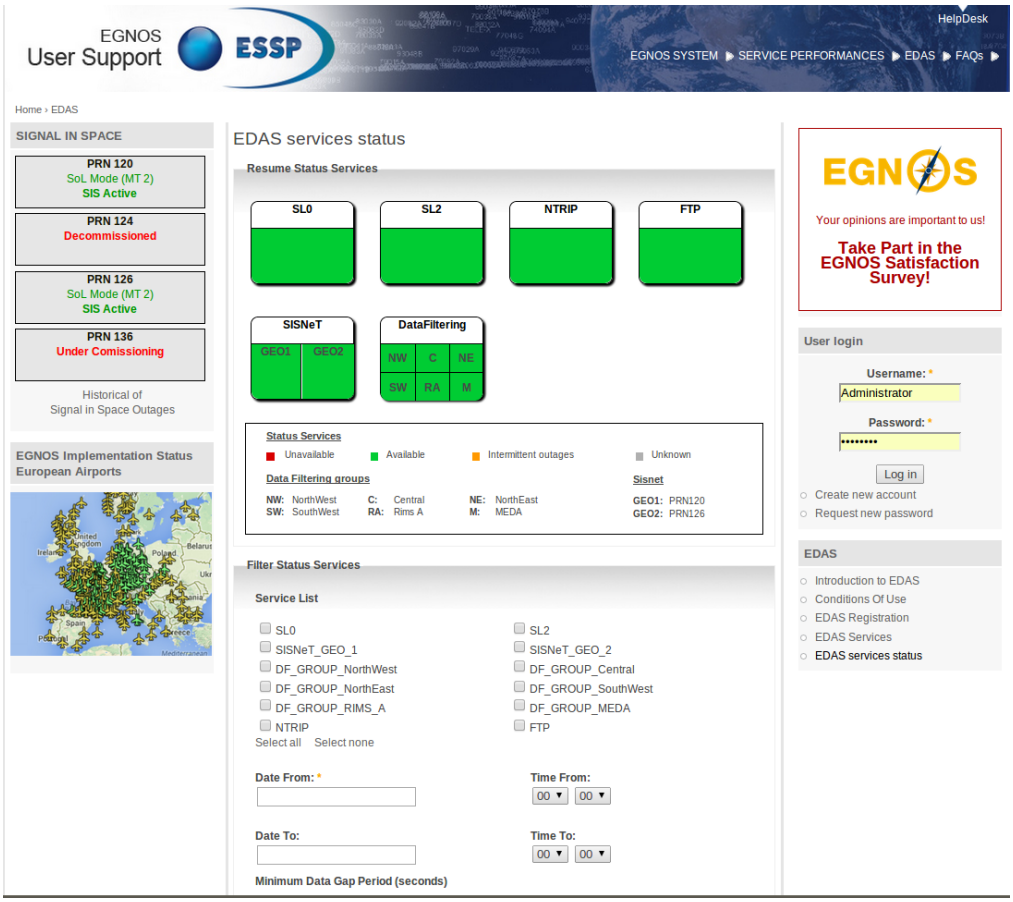
Country	Airports – LPV procedures	# LPV Procedures	Airports - APV baro Procedures	# APV baro Procedures
France	55	74	1	1
Switzerland	6	6	0	0
Guernsey	1	2	0	0
Germany	9	15	31	71
Italy	5	11	0	0
Spain	1	2	0	0
Finland	1	2	0	0
Austria	2	2	0	0
Czech Republic	2	4	1	4
Norway	1	2	0	0
Poland	1	2	0	0
United Kingdom	2	4	0	0
Total	**86**	**126**	**33**	**76**

What's new since last bulletin?

USER SUPPORT WEBSITE NEW FEATURES

With the aim of improving the EGNOS User Support website and covering different EGNOS users' needs, the following evolutions have been implemented:

- A new section on the EGNOS User Support Website has been included to provide EDAS users with EDAS Services status in real time click here



- The map with *EGNOS Implementation Status European Airports* has been migrated from ESSP corporate website to the EGNOS User support Website (click here)

ESSP is working in close coordination with GSA in a continuous improvement of the EGNOS User Support Website to cover different aspects such as robustness, usability and user experience and including new contents.

What's going on…

… in aviation

SUCCESSFUL FLIGHT TESTS WITHIN FILLGAPP AND HEDGE-NEXT PROJECT

During April and May 2014, EGNOS flight demonstrations were conducted in Valencia and Pamplona airports (Spain). The advanced departures, arrivals and approach procedures were successfully flown by an Air Nostrum CRJ-1000 aircraft.

These flight demos showed the benefits of EGNOS and of the advanced avionics functionalities – such as the Radius to Fix (RF) – to support flexible flight procedures, contributing to mitigate the noise impact in the vicinity of the Valencia's airport and providing operational improvements in the case of Pamplona's environment.

These trials were organized by Aena (Spanish ANSP) within the GSA FP7 funded project FilGAPP led by the Spanish transport firm Ineco.

Almost in parallel, a series of EGNOS helicopter flight trials were conducted during the 6th, 7th and 8th of May 2014 at Mutxamiel aerodrome and Albacete heliport. The new Point In Space (PinS) approach and departure procedures were flown by an Inaer Bell 412 suitably equipped for the occasion.

Again, EGNOS proved to be a valuable system for supporting helicopter operations, as in the case of approaches it allows flying PinS down to LPV minima to heliports and landing sites where only visual operations could be conducted before.

The pilot's feedback was excellent***: "I felt like I was flying an ILS",*** said Pedro Luís Clavero, Fire and Aerial Works Coordinator at Inaer.

With on-site support from ESSP personnel and in collaboration with Aena and Inaer, the Spanish consultancy and project leader Pildo Labs organized these flights within the GSA FP7 funded project HEDGE-Next a R+D project which successfully held its Final Meeting during June 2014.

Did you know…?

That Aurigny Air Services, a regional operator based in Guernsey (Channel Islands), is nowadays conducting more than 70 EGNOS enabled LPV approaches per week! Pilots find these approaches more stable than even ILS Cat I approaches.

What's going on…

…in aviation

GREAT INTEREST ON EGNOS AT EBACE & FARNBOROUGH AIRSHOWS

The message coming from EBACE annual meeting was clear: **business aviation needs EGNOS**. This is because the sector's value lies in convenience, and to be convenient, business aviation demands access to small and medium sized airports which most of the times lack the high-tech equipment found in commercial airports.

The GSA and ESSP had numerous one-on-one meetings with operators and manufacturers to find out the SBAS forward fitting possibilities of their new aircraft fleet and the retrofitting opportunities for the older ones. It became apparent that most new business aircraft are SBAS equipped by default which are excellent news.

Another positive outcome coming from this year's airshow is that the GSA and the European Business Aviation Association (EBAA) agreed to form a partnership with the specific purpose of facilitating this enhanced use of EGNOS for business aviation click here

Farnborough Air Show was a great opportunity to meet aircraft manufactures and operators. In addition, ESSP and GSA organised an Informative Session during the show to announce the imminent publication of a **new Call for Grants to foster EGNOS Adoption in European civil aviation.** They gave relevant information on the EGNOS status, its roadmap and the current implementation of LPVs across Europe together with lessons learnt from these implementation projects.

Representatives from CMC Electronics, Universal Avionics, UK CAA, Belgian airports, Kawasaki Heavy Industries, PPL/IR Europe and several airport managers, among others, showed their interest in this incentive scheme which will count on the technical support offered by the ESSP.

Did you know…?

Richard Bristowe, Head of Training at Aviation SouthWest, had the privilege to become the first UK pilot to operationally fly an LPV. At midnight of the 21st of August, as the LPV approach procedure at Exeter Airport became operational, their Beechcraft 76 GBXWA started the approach to RWY 26 at 01:02am local time, just two minutes after it became operational! Richard found especially interesting to see how the ILS glide-path fluctuated slightly on their box 2 but the LPV remained rock steady – "My co-pilot thought the autopilot was still engaged!"

What's going on?

…in maritime

PROGRESSING IN MARITIME: IALA CONFERENCE

IALA 2014 conference took place in A Coruña (Spain) during May. IALA (International Association of Marine Aids to Navigation and Lighthouse Authorities), gathers main stakeholders in this domain including marine aids to navigation authorities, manufacturers, consultants, scientific and training institutes from all parts of the world . This event (organised every four years) offers the opportunity to exchange and share main experiences and achievements regarding provision of aids to navigation .

Conversations held in this meeting with different attendants, showed there is an increasing interest in GNSS (and EGNOS) in particular in this domain. Maritime community is exploring the possibility to have access to differential corrections via satellite and/or EDAS.

Did you know…?

That most of the maritime receivers available in the market are SBAS/EGNOS enabled? Not only recreational and leisure boats can take advantage of EGNOS but also merchant, passenger and fishing vessels. Next challenge is to create a SBAS standard for maritime and to get wider adoption and recognition from this community.

What's going on?

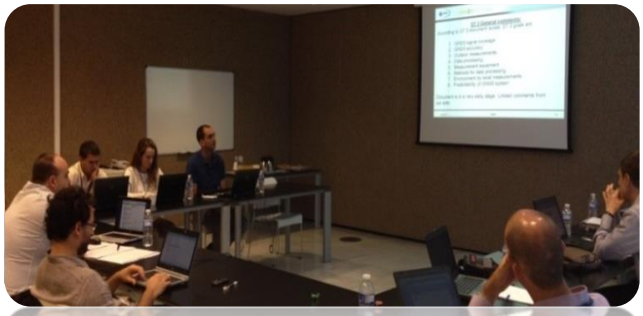
…in rail

RAIL INFRASTRUCTURE

Last May 20 the Infrarail 2014 took place in London and EGNOS was represented by Riccardo Nicolè (Telespazio). The event focused on railway infrastructure and was attended by the most relevant stakeholders in UK.

Although little awareness of EGNOS capability was shown, the general feedback and appreciation on the matter was positive.

EGNOS EXPERTS SUPPORTING NGTC PROJECT



Backed by the European GNSS Agency, representatives of the Next Generation Train Control project (NGTC), coordinated by UNIFE, visited the ESSP in June and July to exchange about the possible specifications of a location unit based on GNSS and the means to characterize the railway propagation environment for these signals.

The NGTC representatives recognize the role of the EGNOS integrity in the achievement of the high safety levels needed in the different safety-of-life rail applications and acknowledged the support provided by the ESSP on the SBAS technology.

…in agriculture

Did you know…?

GNSS is a key technology enabler for the so called "Precision Agriculture". Farmers need guidance in their daily tasks (fertilising, spraying and harvesting) as it allows them saving time and money. EGNOS is widely used by European farmers devoted to extensive cereals crops in dry soils as a technology that provides for free 15-20 centimetre level **pass-to-pass** accuracy .

EGNOS success stories

Aurigny: follow-up of the first commercial use of EGNOS for approach and landing operations

In December 2011, Aurigny Air Services became the first regional airline making use of EGNOS during their approach and landing operations. Concretely, December 21st 2011 sets the date since when the company conducts LPV approaches at Alderney (Channel Islands) airport during their scheduled services using their B-N Trislanders.

The use of EGNOS based LPV approach procedures has become the preferred choice for all the company's pilots when reaching the island, as it has supposed an impressive improvement with respect to previous NPA NDB approaches.

Click here for more information.

Exeter Airport and Aviation SouthWest: another success story for EGNOS in aviation

In the frame of the ACCEPTA project, Exeter Airport received funding from the European GNSS Agency for the upgrade of runways 26 and 08 from their current GNSS (RNAV) AIP certification to to include LPV SBAS capability.

As a joint participant, ASW received funding for the upgrade of one Beechcraft BE76 (G-BXWA) and one Piper P28A (G-BTID) to achieve certification & operational approval to perform EGNOS-based LPV approaches and for the upgrade of its FNPT II simulator to match.

Click here for more information.

Did you know…?

That Aviation SouthWest has given training on PBN, including EGNOS, not only to pilots but also to flight instructors and examiners from the UK CAA.

Flight training is considered as a key instrument to consolidate the long-term penetration strategy of EGNOS within civil aviation, and this includes not only training pilots in its use but also the Industry Examiners so the procedure can be included in the relevant flight tests.

Upcoming events

ERA general assembly 2014

If you plan to attend next ERA general assembly taking place on the **1st and 2nd September in Barcelona**, you will have the chance to **visit the EGNOS aviation booth stand A-15.**

Regional aviation is one of the key aviation markets for EGNOS services as they allow implementing cost-effective precision approach-like operations in secondary airports, thus increasing the access under poor visibility conditions. In fact, since the ERA recognises EGNOS as a system benefitting the continuity of their operations, a dedicated speech will be offered to the ERA Operations Advisory group.

Intergeo 2014

EGNOS will be present in the world's largest event and communication platform for geodesy, geoinformation and land management that will take place **beginning October** in Berlin.

In the stand there will be information about EGNOS accuracy using widely accepted metrics in agriculture and mapping domains. Convincing arguments that show EGNOS economic benefits for specific agriculture users (extensive cereals crops in dry areas) will be also shown.

Visit EGNOS stand at Hall 2.1 - Booth C2.050

First Satellite Masters Conference

Berlin, will hold from **22 to 24th October** a marketplace for sharing innovations based on satellite navigation and Earth observation capabilities.

Participants will have the possibility to learn about the available EGNOS data and how to get access to it by means of EDAS service. **Attend EGNOS session on the 22nd October at 16:00 Room K1** (as part of the " Access to Earth observation and positioning data" workshop).

METS 2014

At the next Marine Equipment Trade Show 2014 that will take place from **18-20 November** in Amsterdam. EGNOS will be present.

METS is organized by ICOMIA (International Council of Marine Industry Associations) and is the biggest fair in Europe with more than 1300 exhibitors devoted to the marine recreational and leisure market.

Visit EGNOS stand at Hall 11 - Booth 110

MORE INFO ON

http://egnos-user-support.essp-sas.eu

Information on past and current EGNOS performances. Signal in Space (SIS) status. Forecast on SIS availability. EDAS information and registration

http://egnos-portal.gsa.europa.eu

EGNOS applications. Developers platform. Business support

http://essp-sas.eu

EGNOS Service Provider Website. Info on the EGNOS system, news on the service. Status on EGNOS implementation in Aviation. Projects. Events. Others

For questions & information

EGNOS HELPDESK

+34 911 236 555

egnos-helpdesk@essp-sas.eu