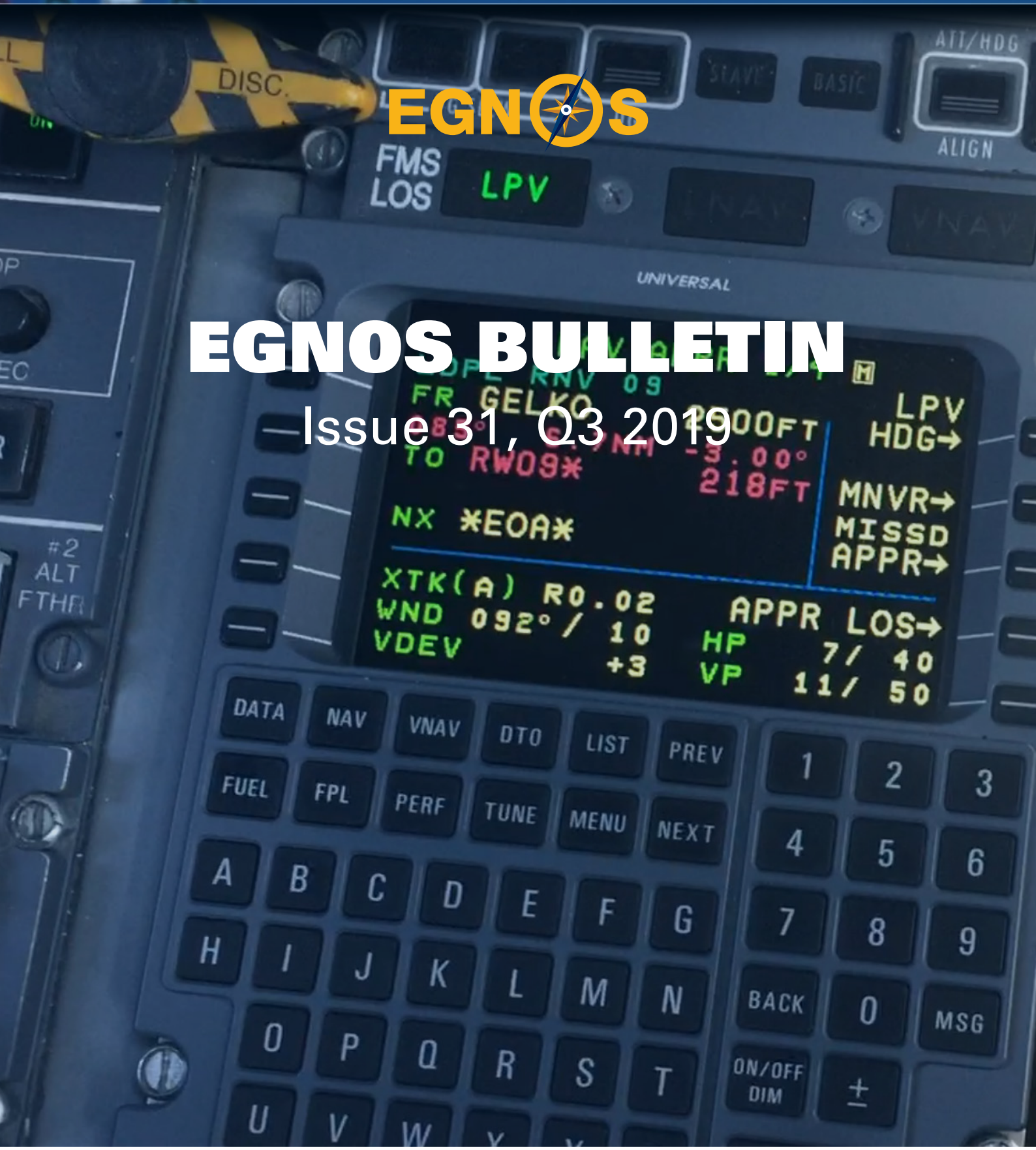
EGNOS

EGNOS BULLETIN

Issue 31, Q3 2019



Credits: Croatia Airlines

GSA

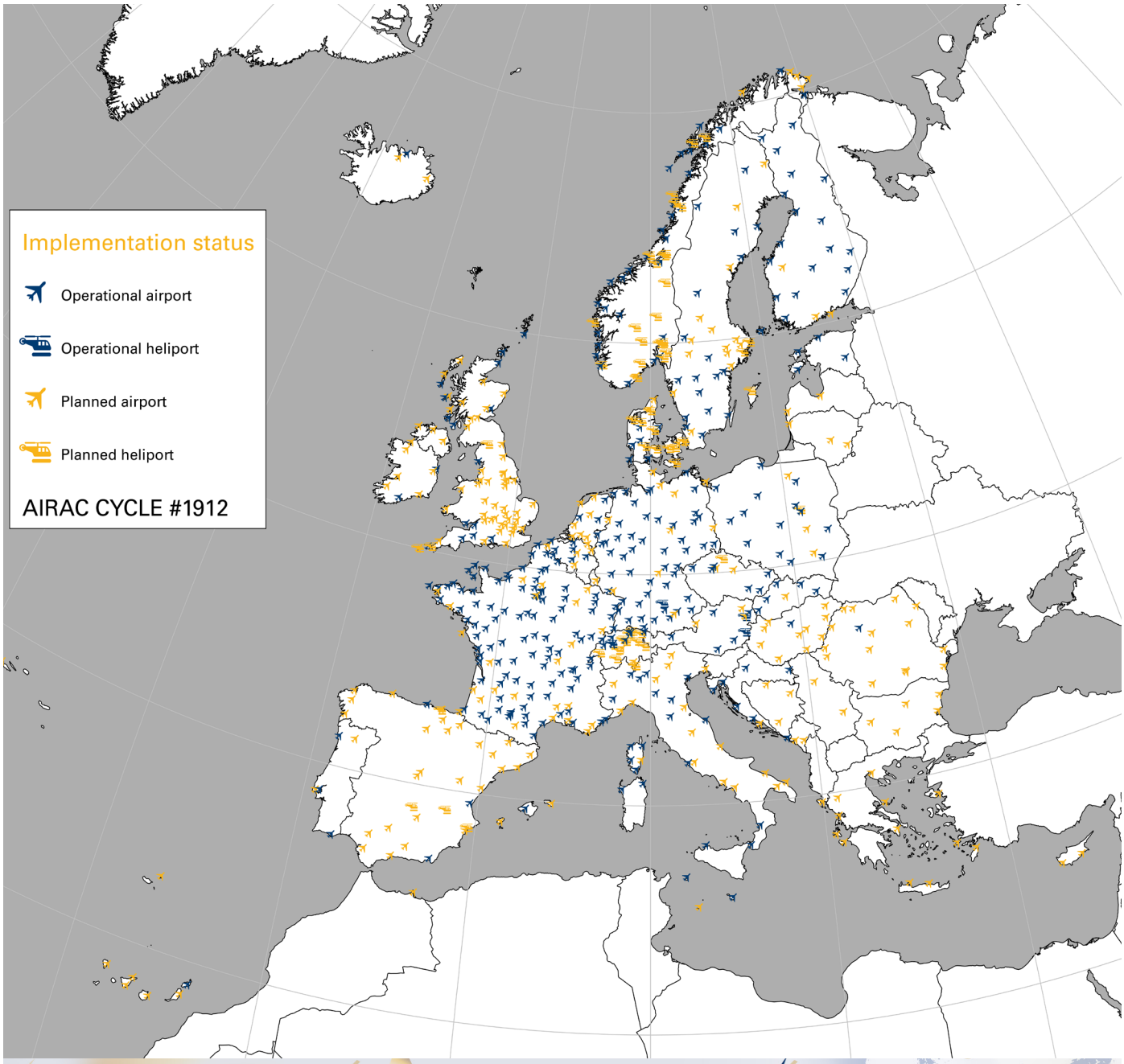
NAVIGATION MADE IN EUROPE

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

ESSP

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

EGNOS implementation



A review of the EGNOS Annual Workshop, Rome 2019

The EGNOS Annual Worskshop 2019, held at the ASI (Italian Space Agency) in Rome this year, brought together entrepreneurs and SMEs, along with business and public sector professionals from industry to share remarkable EGNOS implementation examples in every domain (Aviation, Rail, Maritime, Survey, Mapping, Agriculture). It was also the opportunity to learn more about how European Satellite Navigation programmes are tackling the high-speed growth of market penetration, as well as the maturity and stability offered by the EGNOS services to European users

Mr Carlo des Dorides, GSA Executive Director, at the EGNOS Annual Workshop

With nearly 200 attendees from 38 different countries, this one-of-a-kind event organised by GSA and ESSP proved the increasing importance of EGNOS for a wide range of user applications. For the organisation of the workshop a new ecological approach has been implemented. Less paper printed, ecological merchandising, and commitment to a Non-Governmental Organisation (Atmosfair) that works to protect the environment through CO2 offsetting.

Mr Enrico Russo, ASI Technical Director, opened the event with his first Welcome speech as the host of the event. Mr Carlo des Dorides, GSA Executive Director, gave an encouraging statement on EGNOS: "EGNOS is really becoming the reference for future civil aviation. The PBN regulation implemented in July last year has opened a new paradigm for new traffic leading to EGNOS approaches to all airports by 2020 to 2024." In his welcome speech, ESSP CEO Mr Thierry Racaud congratulated GSA "for the remarkable work done by the Agency during these past 15 years, for the competence it has gained and the trust the users place in E-GNSS, and for its global recognition, which is now undisputed." The workshop featured some presentations from high-level professionals, as well as key

(The text continues on the next page)

GSA is now launching a campaign to raise EGNOS awareness for the general public. It can be viewed here. Let's share!

EGNOS Annual Workshop auditorium

user communities demonstrating the substantial progress EGNOS implementation has achieved in different market segments.

The first turn was for the GSA team responsible for EGNOS, with the participation of the ESSP team as EGNOS service provider explaining the programme and service status, and the strategies to be followed in the near future. This workshop also dedicated a major session to looking at examples of the EGNOS implementation stories in aviation led by brilliant and diverse speakers from the EGNOS user community, such as ISAVIA, NLA (Norske Luftambulanse) ENAV (Italian ANSP), Croatia Airlines and Croatia Control, who explained the different opportunities and benefits that EGNOS brings into their activities.

A specific session was devoted to the status of SBAS in different globe zones thanks to the presentations form ASECNA (Africa) and KARI (Korea). The day continued with a session devoted to "Safety of Life Service in the aviation segment", starting with a complete review on the situation and strategy in aviation, followed by a review of the impact of EASA new regulation 373, and the use of EGNOS for drone operations, to conclude with an interesting presentation on SBAS DFMC receiver development. The day closed with some impressive examples regarding the implementation of EGNOS in aviation, success stories addressed by speakers such as Airbus, that specifically explained the EGNOS implementation on the A320 and A330 aircraft families.

Plus, awards for…

At the EGNOS Annual Workshop, the EWA and LPV Awards gave special recognition to all European ANSPs that have signed an EGNOS Working Agreement this year or that have already implemented their first LPV procedure.

This year's winners were:

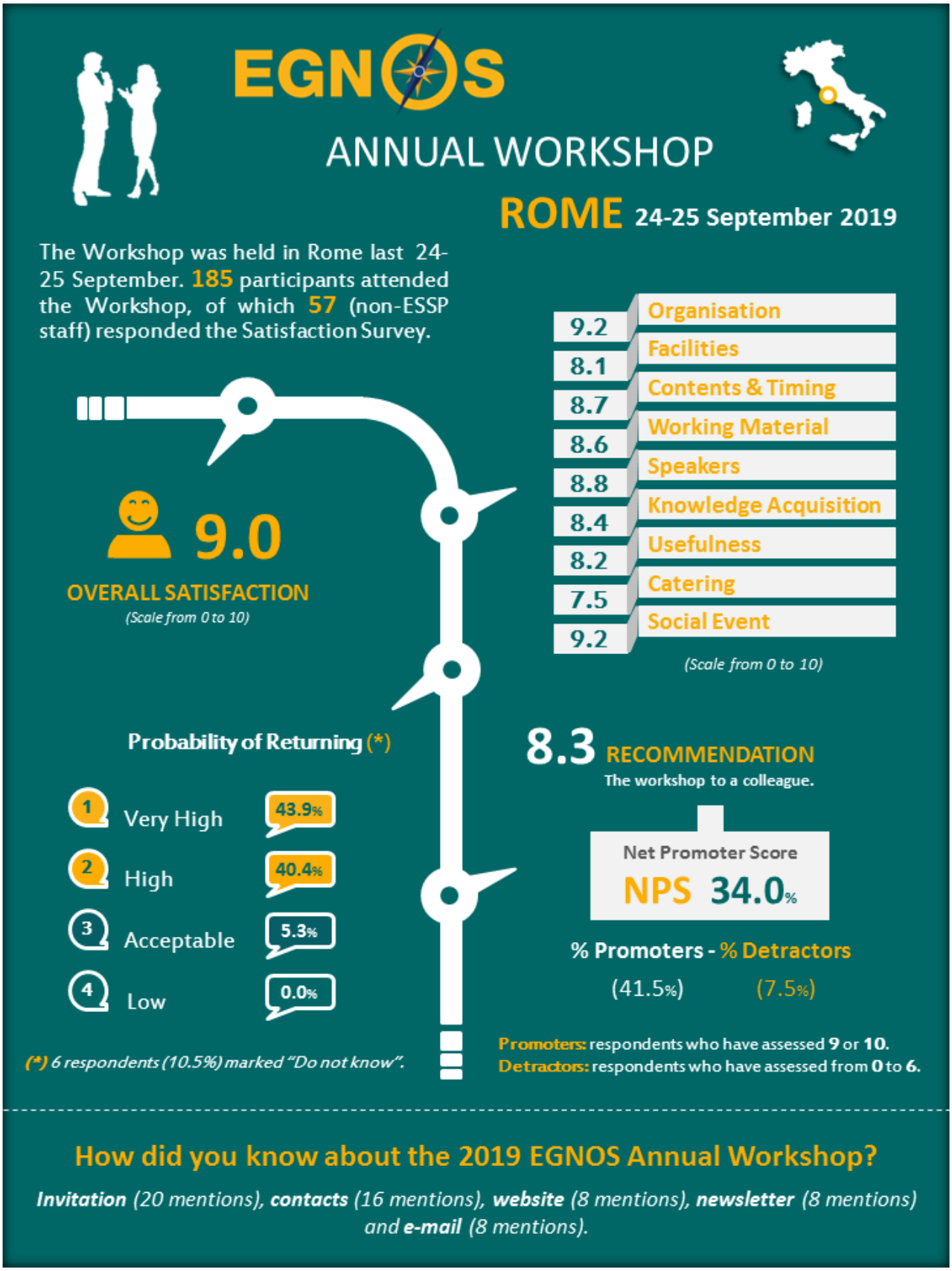
- EWA category: NLA, ANA from Luxemburg, and LGS.
- LPV AWARDS category: ISAVIA, ENAV and Malta Air Traffic Services.

The 9th EGNOS Annual Workshop also included sessions fully dedicated to other market segments where EGNOS is also achieving significant penetration, thanks to the participation with speakers specialised in Maritime and Land applications.

Insights from Analysts Covering the EGNOS Workshop

"The figures speak for themselves: EGNOS has doubled the number of users in recent years, and a great number of decision-makers in several sectors (aviation, agriculture, maritime, etc.) see expanding the use of EGNOS Open Service as a high priority"

EGNOS Annual Workshop Satisfaction Survey results



EGNOS programme update

Jean-Marc Pieplu, GNSS Exploitation Programme Manager at the GSA

EGNOS PROGRAMME STATUS AND ROADMAP

Jean-Marc Pieplu, GNSS Exploitation Programme Manager at the GSA, provided a high-level overview of the status of the EGNOS Programme. He offered a debriefing on the system's operational configuration and the actual performance on the EGNOS committed Service.
Several hints were also given related to the deployment of new System Releases and for EGNOS v3 development. Presentation available here.

Nathalie Ricard, EGNOS Service Engineering Manager at GSA

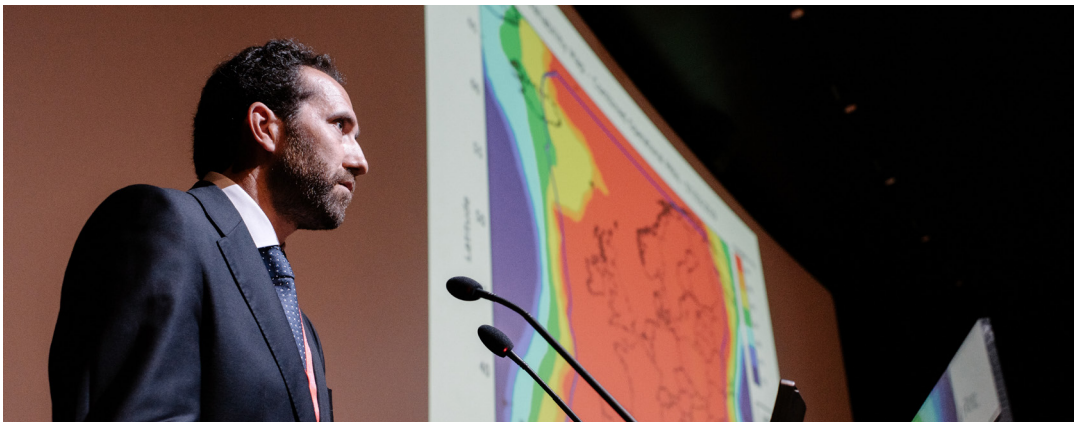
INTRODUCTION TO EGNOS DFMC SERVICES

Nathalie Ricard, EGNOS Service Engineering Manager at GSA, presented way forward for the transition from SBAS L1 to double frequency multi-constellation (DFMC) in the near future. She presented a roadmap for that transition, the benefits DFMC will bring compared to L1, and an overview of the standardization status. Presentation available here.

Carmen Aguilera, Head of Section Operational Market Development & Safety Critical applications at GSA

EGNOS MARKET STRATEGY AND ACHIEVEMENTS

Carmen Aguilera, Head of Section Operational Market Development & Safety Critical applications at GSA, presented the market strategy and methodology set up to accelerate the use of EGNOS in different market segments.
With clear identification of where EGNOS should be in the near future, the audience learned about the current and foreseeable future uses and applications of EGNOS in aviation, maritime, rail, agriculture and geomatics segments. She also announced that the GSA Market report would soon be available. Presentation in this link.



Teodoro Seoane, Performance Tools Manager at ESSP SAS

EGNOS SERVICES STATUS

Teodoro Seoane, from ESSP, presented EGNOS system status and performance for the period of 18 April 20018-July 2019, as well of the results of the latest User Satisfaction Survey. In this period, the EGNOS Signal in Space was available at all times, and the observed Safety of Life performances covered practically the entire SDD commitment, with the exception of some small areas in the east and south-east. In any case, no airports with EGNOS LPV or LPV200-based approaches were affected. During this period, there has been a significant LPV200 coverage extension to the North, and both LPV200 and APV-I commitments reached 72° North thanks to the modification of the EGNOS MT 27. The observed Open Service and EDAS performances exceeded the commitment. The latest survey results were presented, with a global satisfaction score of 8.3, consolidating an uptrend in the satisfaction level since 2014. In general, most of the evaluated areas improved with respect to the 2017 results. Presentation available in this link.

EGNOS FOR AVIATION

EGNOS SAFETY-OF-LIFE SERVICE FOR AVIATION

EGNOS in aviation: strategy and implementation status (GSA & ESSP)

Katerina Strelcova, from GSA, and José María Lorenzo, from ESSP, presented the main achievements and benefits of EGNOS Services for the aviation community, including commercial operations, general aviation, rotorcraft operators and drone operations, amongst others.
Along that line, the work done to enable EGNOS operations for general aviation in non-ATS environments is expected to be published as EASA Safety Promotion Material in 2019.
On the other hand, an overview of the pioneer, current and new EGNOS capable operators was also given, highlighting that there are currently more than 60 operators flying with EGNOS in Europe. Exponential growth is expected in this area, with the new EGNOS solutions due to retrofit and forward fit coming to the market. Finally, the EGNOS Service Provision Scheme was explained, including services for non-EU States.
Presentation available in this link.

Impact of new regulations 2017/373 and 2018/1139 (EASA)

Manuel Rivas Vila from EASA presented the most significant milestones of the current applicable regulation with importance in the EGNOS services: PBN regulation, Regulation 2017/373 on ATM/ANS and new Basic Regulation 2018/1139.
The most important Rulemaking Tasks related to PBN implementation were identified along with the presentation for the following topics: Air Crew and AirOPS, CS-ACNS, EATMN, ASD, AIS and DAT providers.
The only Rulemaking Tasks pending by EC are related to ASD and AIS, expected for 2020.
Additionally, the evolution of the requirements for CNS (NAV) was highlighted based on the new Regulation 2017/373, which will be applicable from 02/01/2020,.
Presentation available in this link.

The skies above Europe are becoming increasingly congested, as are Europe's major airports. EEGNOS: The European Geostationary Navigation Overlay Service offers enhanced vertical as well as horizontal precision and integrity.

Use of EGNOS for drone operations: the Spanish regulatory approach (AESA)

Mónica de Frutos Ortega of AESA (Spanish Aviation Safety and Security Agency) presented the EGNOS benefits in the drone operations, taking into account the Spanish regulatory framework. Due to the high number of UAS users in Spain, the RPAS Advisory Commission at AESA has developed guidance material for UAS operations. The presentation highlighted that some commercial drones already comply with the requirements for using EGNOS. Due to the expected high number of drones, having an accurate navigation solution is a key requirement for safe navigation, and EGNOS is a significant enabler in that sense, improving the accuracy of the position and ensuring better navigation capabilities. Presentation available in this link.

SBAS DFMC receiver development (Thales Avionics)

Mr Bouniol of Thales Avionics presented the status of the EDG²E project (Equipment for Dual frequency Galileo GPS and EGNOS), its achievements, and the next steps. In terms of status, phase 1 of the project, which dealt with the definition of the HW architecture and support for the standardisation activities, has concluded. The project contribution to the ED-259 (Initial version of the SBAS DFMC GPS GALILEO MOPS), published by EUROCAE in February 2019, was highlighted. The next phase of the project will focus on the development of a SBAS DFMC receiver prototype, which will then be evaluated in flight, in parallel to the continuous contribution to the ongoing standardisation activities. Presentation available in this link.

SUCCESSFUL EGNOS IMPLEMENTATION STORIES IN AVIATION

Implementation of EGNOS-based approaches at the border of the Service Area (ISAVIA)

Arnór Bergur Kristinsson of Isavia presented the most significant milestones in the implementation of the first EGNOS approach procedure at Húsavík airport (BIHU) in Iceland. The location of this country, at the border of the APV-I coverage area required the development of a dedicated EGNOS performance research. Iceland Authority finally authorised EGNOS LPV/APV-I procedures in May 2019 at Húsavík airport, with a set of mitigating actions (among others): publication on AIP of the EGNOS related information, NOTAM services for all airports and an assessment of the EGNOS signals-in-space quality before publication. Plans for publication at Akureyri (BIAR) were presented, as in its particular environment conditions (a narrow valley), the smaller protection surfaces when designing EGNOS based procedures enable having Precision-Approach-like procedures with a much lower minima. The presentation also included an explanation of the signing process for the EGNOS Working Agreement, between Isavia and ESSP, remarking that cooperation between organisations was key to enabling EGNOS procedures in Iceland. Presentation available in this link.

Use of EGNOS for PinS and low-level routes (NLA)

Lars Erik Bragstad and Lars Amdal, both helicopter pilots from Norsk Luftambulanse AS, presented the implementation process for EGNOS approach procedures for PinS and Low-Level Routes in Norway and Denmark, in non-ATS environments. To establish the operational and legal framework for using EGNOS as a navigation aid, an EGNOS Working Agreement was signed between ESSP and the Rotorcraft Operator, including the Provision of EGNOS NOTAM thanks to the involvement of ESSP, the operator NLA, EAD and Avinor. The signing of this EWA agreement (the first of its own) concludes a major step in international cooperation to employ EGNOS precision signals and services for a cost-efficient navigation solution bringing benefits for patients in need of helicopter transport by NLA by using satellite-based navigation in Norway. Presentation available in this link.

ENAV contribution to EGNOS aviation services adoption and next steps (ENAV)

Mr Patrizio Vanni, from the Italian ANSP (ENAV), gave the audience an overall picture of the company's past, present and future contributions to the use of EGNOS in aviation. ENAV has been active in GNSS since the late 90s. It was a founding member of ESSP and, amongst several RIMS, has hosted one of the system's Control Centres since the early 2000s. With nearly 40 LPV approaches in service today, the company has built many technical capabilities related to PBN implementation, thanks principally to its participation in major Italian and EU-funded projects. Its growth is not over, and the company is still at the forefront of E-GNSS innovation with new projects such as ECARO or DREAMS, funded by GSA and SJU, respectively. Presentation available in this link.

The Croatian case: LPV implementation benefits (Croatia Control / Croatia airlines)

The LPV implementation status on the ground was firstly presented by Mr Josip Josipović, Executive Director, Regional ATC Centres at Croatia Control. Currently, 70% of the country's instrument runway ends are already served by LPV approaches, and the company has a sound plan to fulfil the obligations derived from the PBN IR. This implementation is dramatically improving accessibility at some Croatian destinations. Croatia Airlines Chief pilot DASH-8 Q400 Davor Miši, on the other hand, showed how this strategy is already benefitting the daily operation of its x6 Dash 8 Q400 fleet. After giving some hints on how the retrofit process took place, Davor Mišić delighted attendees with a video shot during an aircraft's LPV approach and landing at Pula Airport, runway 09. Presentation available in this link.

SUCCESSFUL EGNOS IMPLEMENTATION STORIES IN AVIATION

Largest EGNOS-equipped fleet in business aviation (VistaJet)

The last round of presentations of the first day began with Mr Stefano Oprandi, from VistaJet, on the stage. VistaJet, a business jet operator with a global presence, is currently operating a fleet of 73 aircraft, 57 of which are approved for LPV approaches. Mr Oprandi explained how, in certain environments, EGNOS-based operations bring major benefits to the company: from less-demanding steep approaches to reductions in flight mileage, for example. In addition, the audience learned about VistaJet's operational experience and how LPV approaches were. The closing words were dedicated to encourage all relevant stakeholders to continue working towards the further implementation of new LPVs all along the European continent. Presentation available here.

LPV implementation status in A320 and A330 families (Airbus)

Mr Mathieu Hiale-Guilhamou from Airbus, was the guest speaker to share a few words on how EGNOS is entering the world of commercial airliners. Mr Hiale-Guilhamou introduced the strategy followed by Airbus, from a cockpit perspective, to introduce LPV approaches in their aircraft through the "SLS (SBAS Landing System)" function. Then he offered the auditorium an outstanding video about SLS test flights conducted by Airbus in perhaps their best-selling platforms: the A320, A330 and A350. The accuracy and stability of the LPV guidance observed onboard were superb, even enabling Airbus to test an auto landing SLS. At the end, Airbus illustrated its commitment to EGNOS, as all of their product families will receive SLS capabilities between Q3 2020 and Q4 2021. Presentation available here.

SBAS solution for cargo operations (CMC Electronics)

The final presentation of Day 1 was provided by Mr Tarek Sabanekh, CMC Electronics' Strategic Marketing Manager. After dedicating a few words to the origins and history of the company and to the impressive GPS product portfolio at CMC, Mr Sabanekh focused on the success of the company in providing retrofit solutions for cargo airlines. In recent years, solutions for various functionalities (ADS-B Out, SBAS Navigation, LPV, GBAS, or combinations of these) have gone on the market for popular cargo platforms, such as the Airbus A300/310 and A320 or the Boeing B737 classics and NG, B747-400, B757, B767 and B777. In closing, Mr Sabanekh explained several lines of work within the company, including the development of a new generation MCMF (Multi-Constellation Multi-Frequency) receiver. Presentation here.

EGNOS market status

SUCCESSFUL EGNOS IMPLEMENTATION STORIES IN AVIATION

Carmen Aguilera (GSA) presented the methodology defined to foster adoption of EGNOS in maritime, rail, agriculture and geomatics market segments. She provided an overview of the priority activities for GSA in each market segment. Sofía Cilla (ESSP) presented the most relevant results of the activities conducted in those market segments during 2019. In maritime, a CBA and architecture feasibility assessment was done for the Portuguese entity in charge of IALA DGPS stations in this country, to support them in their decision to recapitalise this infrastructure using EGNOS/EDAS. For rail, a large submarket segment was identified: over 170,000 freight wagons will be equipped with GNSS by 2022, according to the plans published by freight wagons operators. Today, over 7,500 are already configured to use EGNOS. In the frame of precision farming, the audience was informed about the availability of an online CBA tool (EASE) and demonstrator (GEAR). Presentation available in this link.

Carmen Aguilera (GSA) and Sofía Cilla (ESSP)

EDAS FOR ADDED VALUE APPLICATIONS

Mr Vázquez of ESSP introduced EDAS and its services, focusing on the variety of GNSS products that are delivered by EDAS, and their potential to address a wide range of user needs. Then the classification of the active EDAS-based applications/usage cases was presented by market segment, showing that EDAS is present in practically all application domains. He also highlighted that more than 50% of the active users come from professional and commercial initiatives, which results in a large number of end users being supported by EDAS. Some current EDAS-based applications were presented (GNSS performance monitoring, fleet management, precision farming, and maritime navigation services) to reinforce EDAS's potential to provide value in multiple environments. Other promising initiatives that are under development were introduced briefly as well. Presentation available in this link.

Current EDAS users –market segment distribution and type of use

EGNOS/EDAS-BASED SERVICES FOR U-SPACE

Mr de Piccoli of Telespazio, began his presentation by explaining the U-Space concept, a set of procedures and services that aim to enable safe use of airspace for large numbers of drones, as well as the specific services to which EGNOS could contribute. After that, the issues addressed by Telespazio's solutions for U-Space management were described, including GNSS performance and real-time flight monitoring. As part of their solution, EGNOS/EDAS is used for real-time positioning of the drone for navigation and flight control (drone operator), anti-tampering and detection of GNSS threats. Network and satellite-based connectivity are part of Telespazio's solution. Their vision and proposed solution for U-Space will be validated as part of the Full Flight View (F2V) project, as well as through other ongoing R&D activities. Presentation available in this link.

Telespazio's U-Space services architecture

EGNOS...

for maritime and inland waterways applications

NEW FRENCH DGPS MARITIME SERVICE POWERED BY EDAS

French DGPS maritime service: central server architecture

Mr Horvath from Alberding GmbH introduced their software targeting maritime authorities in delivering DGPS navigation services, ready to use EGNOS and EDAS as an input. Following his introduction, Mr Horvath presented the set-up of the French DGPS navigation service, which uses the EGNOS message as provided by EDAS as its primary input. Currently, the service is being delivered operationally with excellent performance results both on the availability and accuracy sides from 4 IALA beacons, with two more to come in the next year. From the service provider perspective, Cerema highlighted the excellent availability performance delivered by the EDAS-based solution, as well as the cost savings provided with respect to a traditional set-up (based on local DGNSS reference stations). Presentation available in this link.

SPANISH IALA DGPS NETWORK UPGRADE BASED ON EGNOS/EDAS

IALA beacon in Tarifa (Spain)

Mr Rebollo and Mr Argul of Puertos del Estado introduced their current IALA DGPS network, the largest in Europe by number of stations. Today, the Spanish IALA DGPS network is facing obsolescence issues and maintaining the service requires a re-engineering project. In this situation, Puertos del Estado intends to go with an EGNOS/EDAS-based centralised architecture. Puertos del Estado recalled the importance of the SC24 project (funded by GSA) for them, as the pilot projects conducted by the project team enabled them to test and verify the very high performance, as well as the cost savings, that the EGNOS/EDAS-based solution could provide. Currently, Puertos del Estado is ready to launch the recapitalisation project of the Spanish IALA DGPS network, pending clarification regarding the international position on the future of the IALA DGPS networks. Presentation available in this link.

EGNOS IMPLEMENTATION IN MARITIME RECEIVERS

Per Erik Kvam, GNSS group project manager at Kongsberg Seatex

Per Erik Kvam, GNSS group project manager at Kongsberg Seatex, presented the status of the Draft Guidelines for manufacturers for the implementation of SBAS in Shipborne Receivers which are being developed thanks to the collaboration of multiple EGNOS stakeholders. To further progress in this work, GSA set up the 24-month MAREC project, which is managed by Kongsberg, contributing to standardisation for SOLAS and non-SOLAS applications, both for navigation equipment and for AIS. The goal is to provide guidelines for the implementation of SBAS in maritime, and to contribute to work on test specifications. Finally, Mr Erik Kvam talked about test standards and future equipment testing. Presentation available in this link.

for land applications

USE OF EGNOS IN FRENCH FARMING

AgroTiC is a French Monitoring Centre for Digital Agriculture Adoption that aims to support the digitalisation of French farming. Adopting GNSS and EGNOS in particular in France was the topic of the presentation. Nina Lachia confirmed that according to the survey conducted by AgroTiC, EGNOS is one of the signals used most frequently by farmers. It is mainly used for cereal crops, but also for vineyards and orchards. Farmers benefit from it because it increases working convenience, allows economic and environmental savings and also improves agronomics for their farms. Despite all those positive facts, fewer than a half of all French farmers use the GNSS capabilities available on their tractors (with 80% of the tractors being equipped), which reveals that there is a lot of work yet to be done to engage, explain and increase awareness of GNSS in French Farming. Presentation available in this link.

GNSS/EGNOS ROLE IN FARMING TECHNIFICATION

Michael Mahieu of Case New Holland, presented an overview of this Italian-based company, which is part of the Chrysler-FIAT group. He explained that EGNOS is the starting point for precision farming for many farmers in Europe, as it is easy to use, there are no subscription fees and accuracy is sufficient for many applications. Nevertheless, he pointed out that as precision farming evolves there are more demanding applications that require higher accuracy than is provided by this service. He highlighted that there are over 150,400 CNHI customers who are using EGNOS in their farming activities. The presentation concluded with the message that CHNI EGNOS users find the service reliable, indispensable for their field operations and a valuable contribution in making their farming more productive and sustainable. Presentation available in this link.

FIRST EGNOS IMPLEMENTATION ON A COMMERCIAL RAIL LINE: PINEROLO-SANGONE

Mr Massimiliano Ciaffi, from RFI, introduced the ERSAT Programme based on ERTMS and Satellite solutions where EGNOS is viewed as an external service to ERTMS. ERSAT programmes are designed to develop and validate EGNSS applications compatible with ERTMS evolution, including the verification and testing the environment in real-scale ERTMS railway scenarios to contribute to the standardization process. He explained the architecture based on multiple GNSS constellations, EGNOS and including local augmentation networks and signal of opportunity positioning systems. Mr Ciaffi presented the Roadmap for certification and operational activation of the Virtual Balise, expected by 2023. The outcomes will include the planning to migrate to a full ERTMS infrastructure where satellite technology is mandatory to reduce opex, therefore enabling a massive ERTMS deployment. Presentation available in this link.

MOUNTAIN BIKE TRAIL SIGNALLING WITH EGNOS

The auditorium welcomed Mr Víctor Tarodo, Chairman of IMBA Spain (International Mountain Bicycling Association) as the final speaker at the EGNOS workshop. IMBA is a non-profit association that works primarily to advocate for the interests of mountain bikers, including accessibility to mountain pathways and trails. In Spain, one major means to achieving this goal is signposting for trails and routes. In this activity, EGNOS represents a huge step forward when it comes to accurately geo-referencing the location of the signs deployed along the routes. More than 36,000 kms have been signposted by IMBA Spain so far, with nearly 54,000 signs deployed along the way. As a result, the use of EGNOS-enabled devices is now mandatory for all Mountain Bike centres and routes certified by IMBA Spain. Presentation in this link.

SBAS in the world

EXPORT AND EXTENSION OF EGNOS OUTSIDE EU

Mr. Stefano Scarda (European Commission)

Stefano Scarda, from the European Commission, presented the EU's leading driving forces in promoting EGNOS beyond the EU, regulation (EU)1285/2013 and an overview of the three potential models that allow expanding EGNOS beyond the EU. Presentation available in this link.

KASS PROGRAMME STATUS

Mr. Sangeun Yun from KARI

Mr Sangeun Yun of KARI provided an update on the KASS system development status. The programme goal is to deliver APV-I capability at all airports in South Korea and it expects to begin the Open Service and SoL service delivery over the region in 2022. The target KASS system architecture and KARI's roadmap for reaching the SoL service declaration by 2023 were then described, as well as the current progress status, with the development and certification activities already ongoing. Presentation available in this link.

SBAS-ASECNA PROGRAMME STATUS

Mr. Lapie of ASECNA

Mr Lapie of ASECNA began by confirming the benefits the future SBAS-ASECNA services would bring to the region. In particular, the objective of having CAT-I equivalent operations without additional ground infrastructure at aerodromes was identified as the key priority. ASECNA views are validated by the support of one of the key commercial airlines operating in the region (AirFrance). In terms of service delivery, ASECNA expects to progressively ramp up their SBAS system to deliver early services (L1) from 2021/2022 for NPA, APV-I and CAT-I operations. On the performance side, being close to the equator, Mr Lapie addressed the potential impact of the ionosphere on their system and explained that, , they expect to maintain the APV-I availability above 85% even in severe conditions. Presentation available in this link.

SBAS

Chart below shows the WAAS list of satellite based approach procedures. You can find further information on SatNavNews. Courtesy of the FAA WAAS Team

Satellite-based Approach Procedures

RNAV (GPS) Approaches	ILS Runways	Non-ILS Runways	Total
LPV Line of Minima	1,178	2,791	**3,969**
<250' Decision Altitude			*1,088*
Exactly 200' Decision Altitude			*1,037*
LP Line of Minima	5	693	**698**
LNAV Line of Minima	1,222	4,848	**6,070**
LNAV/VNAV Line of Minima	1,154	2,703	**3,857**
GPS Stand-Alone Procedures	0	51	**51**
GLS Approach	11		**11**

(Data as of January 31, 2019)

EGNOS AWARDS

1. *ENAV receiving a LPV-200 Award.* **2.** Norske Luftambulanse *receiving an EWA Award.* **3.** *Ana Luxembourg receiving an EWA Award.* **4.** *ISAVIA receiving an LPV Award.* **5.** *Malta Air Traffic Services receiving an LPV-200 Award.* **6.** *Latvijas Gaisa Satiksme receiving an EWA Award.*

What's new?
Since last bulletin...

EGNOS WORKING AGREEMENTS SIGNED (EWA)

The following EWAs have been signed in the last quarter:

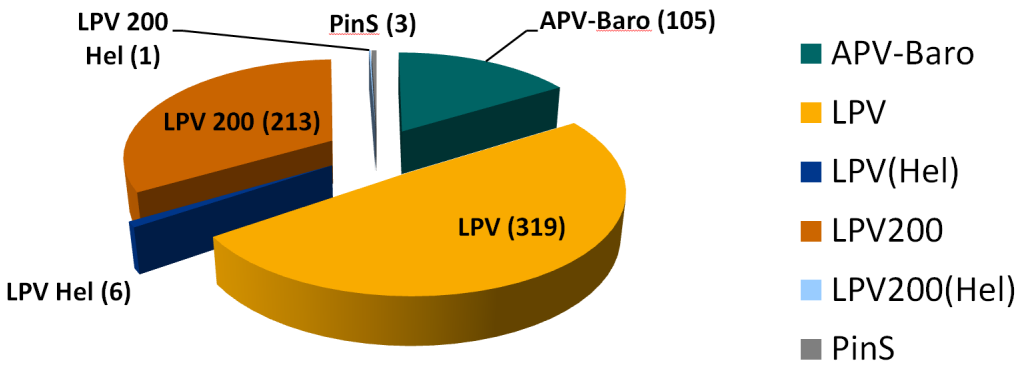
SafeSkys **United Kingdom**

Avinor AS **Norway**

Györ-Per **Hungary**

LPV, LPV-200, PinS & APV Baro procedures published (including AIRAC cycle 2019 #12– 07/11/2019)

Next graph shows, the number of procedures LPV, LPV-200, PinS, APV-Baro, LPV-Hel and LPV200-Hel. The total number is **647**



Upcoming Events

WORLD ATM CONGRESS

10 - 12 March

A new edition of the World ATM Congress, the most important Air Navigation Services Providers (ANSPs) congress in the world, will be held again in Madrid between 10th-12th March 2020.
Operated by CANSO BV in association with the Air Traffic Control Association (ATCA), the event provides an excellent opportunity for worldwide ANSPs and the ATM Industry to meet. Visitors will have the chance to walk the exhibition and enjoy a large number of free conferences.

EGNOS will be present at Stand 1141

EGNOS

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

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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.
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GSA ESSP NAVIGATION MADE IN EUROPE