EGNOS

EGNOS, it's there. Use it.

EGNOS BULLETIN

Issue 20, Q3 2016

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European
Global Navigation
Satellite Systems
Agency

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

ESSP

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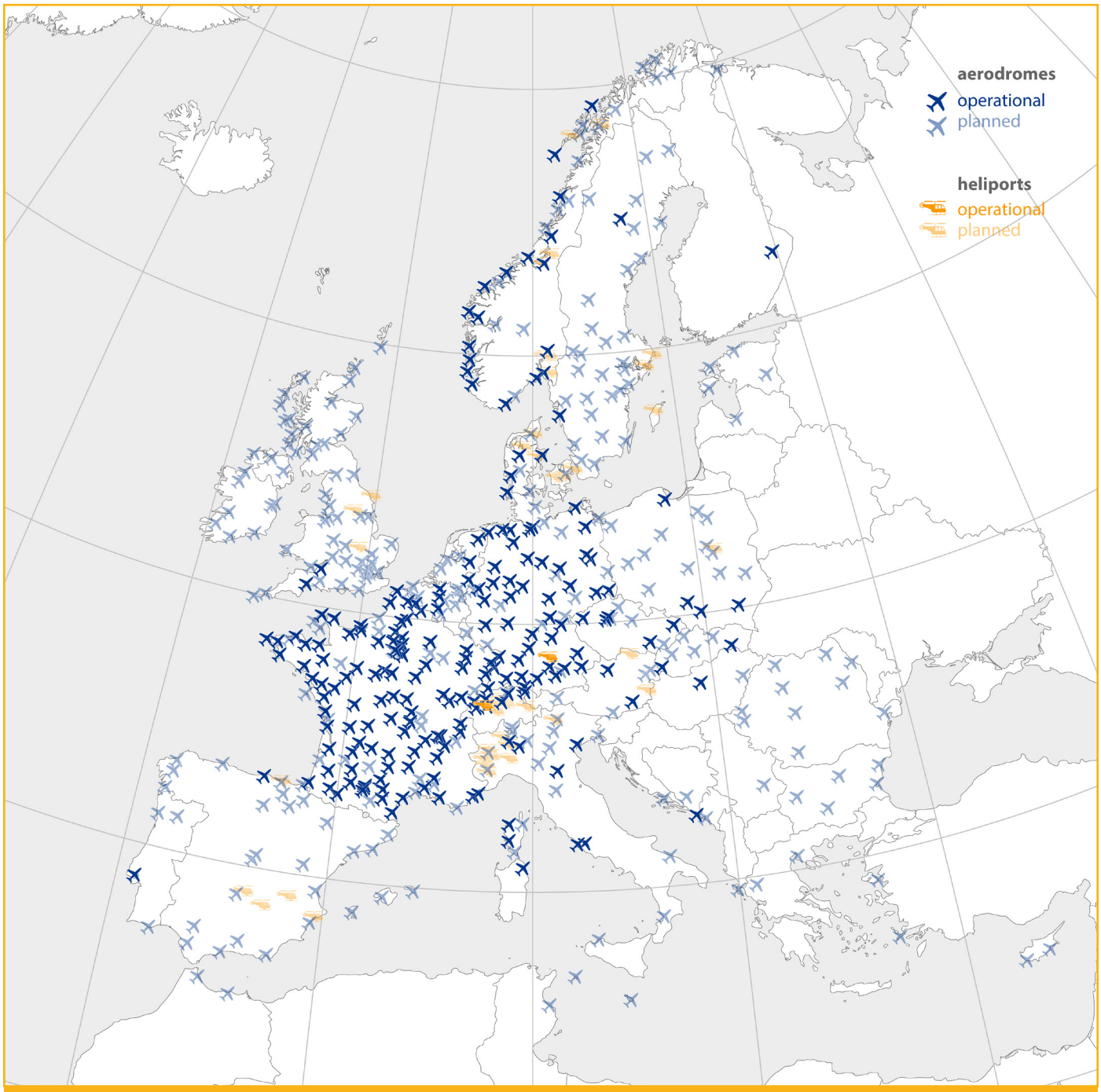


EGNOS ENABLED AERODROMES AND HELIPORTS

A review on...
EGNOS Service Provision Workshop
Warsaw 2016

We are pleased to introduce this issue of the EGNOS Bulletin devoted to highlight the main messages given by the different stakeholders who participated on the 27th and 28th September in Warsaw. Aviation, maritime, agriculture, surveying and rail market segments were present: definitely the EGNOS user community keeps on growing every year.

Carlo des Dorides, from the European GNSS Agency (GSA) opened the workshop, mentioning the benefits EGNOS is proving to a wide range of users. "The future of European satellite navigation is bright" he said in relation with the Galileo Initial Services to be launched in the coming months. He highlighted the important role EGNOS played in laying the foundation for Galileo and concluded with the opportunities to come when both EGNOS and Galileo are operational. Thierry Racaud from ESSP welcomed the Workshop attendees highlighting the novelties introduced: participants had the possibility to fly an LPV with a Garmin G-1000 simulator, evaluate the EDAS demonstrator, try the EGNOS APP - which will be available soon- and check the information on the EGNOS ArcGIS story map.

The first day was devoted to explain the latest updates in EGNOS services & program together with an overview of the status of the implementation of EGNOS. Eurocontrol and EASA provided a glimpse on the regulatory and standardisation perspective. ASECNA and MSAS representatives provided the status of progress within their respective satellite navigation programs. Aviation EGNOS success stories took the complete afternoon as all the relevant stakeholders around PBN implementation were present: DSNA as the pioneer ANSP publishing an SBAS CAT-I procedure in Europe, one of the first aircraft manufacturers flying an LPV-200 (Dassault), helicopter manufacturers (Airbus helicopters), ERA and the European Regional Airline Association.

The first day session was closed awarding three European ANSPs that have recently published a LPV-200 procedure: DSNA, Skyguide and Hungarocontrol; as well as BAE Systems, having signed recently an EGNOS Working Agreement.

The second day was devoted to EGNOS in maritime and land application. The EDAS service for added value applications was also a main theme of the day. The GSA and ESSP explained in depth the current status of EGNOS markets, and the actions taken for further EGNOS adoption in multimodal domains. There were presentations from German Federal Waterways and Shipping Administration, Cerema, Polish Inland Navigation Office and Alberding all related with the solutions and possibilities EGNOS can offer to the AtoN infrastructures in those countries. Last but not least, AgLeader, Czech Paying Agency –SZIF, Handheld and Unife provided very interesting presentations where EGNOS added value in agriculture both for farmers and public institutions, mobile devices used for GIS applications and safety critical applications in rail respectively was shown.

EGNOS programme

EXPLOITATION PROGRAMME UPDATE

Mr Jean-Marc Pieplu, GNSS Exploitation Program Manager at the GSA, provided a high-level and quick overview of the status of the EGNOS Program: the system's operational configuration, the actual performances against the EGNOS committed Service Area or the number of EGNOS-based instrument approach procedures implemented in Europe. Several hints were also provided on the deployment of new System Releases. It is worth highlighting the minutes dedicated to brief the audience about EGNOS V3 deployment and how this major evolution is progressing from the programmatic, procurement and standardisation viewpoints. Presentation available here.

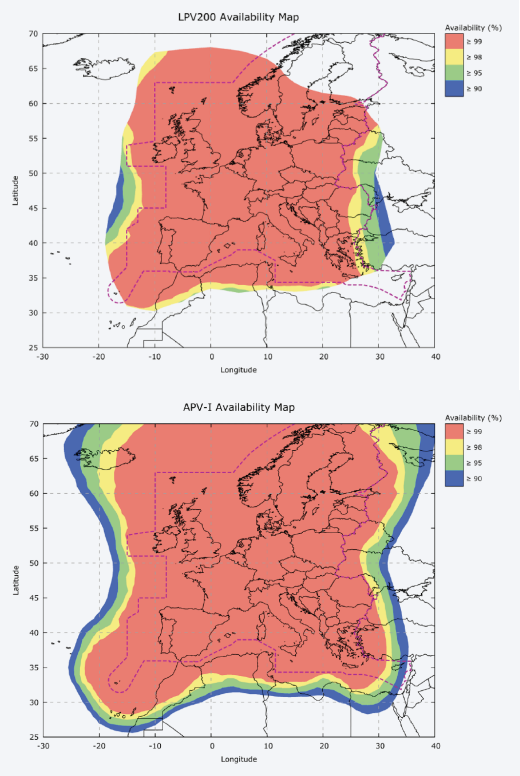
MARKET STRATEGY AND ACHIEVEMENTS

The market strategy set up to accelerate the use of EGNOS in different market segments was provided by Mr Gian-Gherardo Calini, Head of Market Development Department at GSA. With a clear identification of where EGNOS should be within the next years, the audience could learn about the current and foreseen uses and applications of EGNOS in aviation, maritime, rail, road, surveying & mapping and agriculture segments. At the same time, the most recent achievements for transport-market, mass market and high precision market segments were listed.

In 2016, Galileo has been recognised by the International Maritime Organisation (IMO) as part of the World Wide Radio Navigation System; the Radio Technical Commission for Maritime Services (RTCM) has started the activities to standardised the use of SBAS within maritime navigation; and once again, it has been confirmed that more than 80% of GNSS receivers used in mapping and surveying applications are EGNOS-enabled, a number rising to 87% in agriculture.

Presentation available here.

EGNOS services



PERFORMANCE & ROADMAP

Javier Gómez and Almudena Márquez presented the current performance and status of the EGNOS system, as well as the expected evolution of the services in the next years.

The updated commitment maps in new EGNOS Service Definition Document (SDD) corresponding to release ESR 2.4.1M for the SoL service were presented, showing a global increase of the commitment areas, as well as more performance stability both for the APV-I and LPV-200 Service Levels.
An overview of the links between Service Notes, System Releases and SDDs was presented, and the next key milestones in the evolution of EGNOS were also introduced: ESR2.4.1 in Q4 2016, YSR #2 in 2017 and YSR #3 in Q1 2018.
Presentation available here.

USER SATISFACTION SURVEY RESULTS 2015

Carmen Aguilera (GSA) and Miguel Ángel Sánchez (ESSP) introduced the results of the 2015 User Satisfaction Survey. This survey intendsto gather the feedback from the EGNOS users so as to identify recommendations and extract new actions for the incoming years.

7.6
Global Satisfaction Score

The overall satisfaction score (same as 2014) was remarkably good, increasing in the perception of the EGNOS services and, overall, in the sensed performance, whereas some room for improvement was identified in some specific areas of the service provision.

After the presentation of the EGNOS User Satisfaction Process andthe analysis of the Survey results, the different recommendations for improvement, inputs to the mission evolution and mapping to ongoing multimodal action plans were introduced. Finally, an overview of the already implemented actions (from last year's feedback) and the presentation of the new survey (for this year) followed.

Presentation available here.

EGNOS in aviation.

EGNOS ADOPTION IN AVIATION

The European Global Navigation Satellite Systems Agency (GSA) explained the importance of their support in LPV implementations in Europe through different funding schemes, which are tailored to satisfy specific segment needs such as General Aviation, Business Aviation, Regional Aviation or helicopters. The ongoing projects cover avionics or flight simulators update, together with LPV publication at various types of aerodromes. The ESSP, as EGNOS Service Provider, presented the LPV implementation status focusing in the coverage at EU countries from the EGNOS Working Agreement (EWA) perspective, highlighting the EWA as a key piece to support LPV implementation, as it defines the framework to provide service arrangements beneficial for the LPV-fostering ANSPs.

It ended with a brief explanation on the process for the implementation of EGNOS at non-EU countries and the challenge of using EGNOS at non-instrument runways as a key niche for EGNOS in the near future.
Presentation available here.

EASA SUPPORT IN THE IMPLEMENTATION OF EGNOS-BASED OPERATIONS

The European Aviation Safety Agency provided information on how EASA fully supports the implementation of EGNOS based operations by means of Regulatory coverage.

A total of 6 Rule Making Tasks are currently ongoing to support the full integration of PBN into the European regulatory framework for pilot training and air operations. Most PBN specifications are treated therefore as a normal mode of navigation, removing the requirement for specific (operational) approvals for most PBN specifications, replacing it by improved pilot training, testing and checking rules and performance-based and proportionate operating rules.

These regulatory activities cover different aspects of the implementation of instrument approach procedures, such as airworthiness rules for PBN operations, specifying PANS-OPS criteria or ensuring data quality.

Presentation available here.

EASA
European Aviation Safety Agency

ENABLING A HARMONISED IMPLEMENTATION OF SBAS-BASED OPERATIONS IN EUROPEAN AIRSPACE

The European Organisation for the Safety of Air Navigation (Eurocontrol) made a presentation on their activities to enable a harmonised implementation of SBAS-based operations in the European airspace.

A brief review on the Pilot Common Project (PCP) Regulation and the implementation status at the 25 impacted airports provided an interesting view of the progress so far. Together with the GSA, they also help in identifying airports where LPV publication would be relevant and could be supported, by means of analysing airspace users' needs. The RNAV Approach Implementation Support Group (RAISG), chaired by Eurocontrol, is also a key fora, whose main objective is to share information between the different stakeholders to support harmonized implementation of RNP APCH throughout Europe.

Presentation available here.

EUROCONTROL

Successful EGNOS implementation stories in aviation.

Alain Ducolet (Airbus Helicopters), Alain Boucher (Dassault Aviation), Benoit Roturier (DSNA)

FIRST LPV-200 APPROACH IN EUROPE: PARIS CHARLES DE GAULLE (DSNA)

The EGNOS Service Provision workshop was the perfect chance to hear how France has implemented the first European instrument approach procedures based on the EGNOS LPV-200 Service Level. Mr Benoît Roturier, GNSS & PBN program manager at DSNA, started his presentation by reviewing how the ongoing PBN implementation in this State is targeting the ICAO A37-11 goal. Indeed, the French program includes an ILS CAT I rationalization plan supported by EGNOS.

As for the first four SBAS CAT-I (LPV-200 based) approaches, Mr Roturier presented the motivations, implementation steps and the very positive post-implementation pilot appreciations. Why SBAS Cat I is a significant evolution (a revolution)? The final part focused on several facts why these approaches increase airport accessibility and approach safety, more than other navigation solutions, at virtually no cost.

Presentation available here.

MANUFACTURER'S EXPERIENCE ON LPV-200

Dassault was one of the first manufacturers to actually fly the LPV200 procedure published by DSNA in Paris Charles de Gaulle airport. The feedback from the test pilots and a short video recorded during the approach were shown during the presentation given by Alain Boucher, Dassault's representative at the EGNOS Service Provision Workshop.

The French manufacturer, with over 8,000 aircraft delivered since 1945, was one of the first to appreciate the benefits of SBAS technology in aviation and thus started offering LPV capabilities for all their aircraft in-production ever since 2011. The main SBAS benefits for the business aviation community were listed through Dassault's presentation. These include, for instance, on-board high performance solutions to maximize the flexibility of their operations and better accessibility to small and medium size airports which cannot equip with CAT I ILS or are currently rationalising those.

Presentation available here.

EGNOS ENABLED FLEET

What is the current status of LPV equipage in Airbus Helicopters? From which mission segments is the demand for LPV mainly coming from? Which benefits does EGNOS provide to rotorcraft operators? All these questions and more were answered by Airbus Helicopters Navigation Senior Expert Mr Alain Ducollet.

In particular, the different LPV implementation options were presented, with the pros and cons of each option in the case of available retrofit programs. A clear for attendees was that Airbus Helicopters has definitely bet for this technology, which is today offered in all families as a standard option.

Presentation available here.

Successful EGNOS implementation stories in aviation.

EGNOS FOR HELICOPTERS OPERATIONS

Andrea Reviglio and Roberto Vacca introduced the status, breakthroughs and issues experienced in the implementation of the development of PinS and low-level IFR routes in the Piedmont region in Italy. Airgreen, a HEMS operator approved in 2015 to fly LPVs, is engaged in the development of a network of routes linking PinS at several hospitals in the area, allowing overcoming the usual risk of entering inadvertently into IMC conditions due to low-level fogs.

Although there are challenges ahead, Airgreen is confident to start operations by the end of 2016 and increase the number of missions up to a 15% per year.

Presentation available here.

EGNOS BENEFITS FOR REGIONAL AVIATION

The European Regions Airlines Association (ERA), founded in 1980, has since its inception developed and grown in size and reputation to represent 52 airlines and 143 providers including airframe and engine manufacturers, airports, suppliers and service providers from all over Europe.
ERA's Manager Policy and Technical Mr Russell Dudley gave a talk where mostly practical cases of ERA member airlines benefiting from EGNOS were presented. Having become a well-respected and established voice of the industry, of high interest for the audience was also the second part of the presentation, where it was explained how several ERA member airports are today in the process of implementing EGNOS LPV-200 approaches and how these will benefit the airport users, including not only regional airlines but also business and general aviation, by increasing safety and accessibility in most cases.

Presentation available here.

EGNOS USE IN GERMANY: VERTICAL GUIDANCE FOR BARO-VNAV PROCEDURES AND OTHER OPERATIONS

Germany authorised the use of EGNOS for the vertical guidance on Baro-VNAV approach procedures in 2011, a few moths after the SoL signal was declared operational by ESSP.
Andre Biestmann, Director Airspace & ANS-Support at DFS, reviewed the different steps prior to such authorisation and the roles of the involved entities such as DFS, the German regulator and the navigation databases providers, who need to properly code such authorisation following the ARINC 424 standard.
Andre also reviewed the number of LPVs (33) and Baro-VNAV (90) procedures which are currently published in Germany and informed on new initiatives looking into the use of EGNOS for steep angle (6.3º) approaches for helicopters or the first national LPV200 which is expected in Bremen by Q1 2017.

Presentation available here.

EGNOS RETROFIT EXPERIENCE FROM A PART-21 CERTIFIED ORGANIZATION

Attending former EGNOS Service Provision Workshops audience requests, Gama Aviation Engineering, one of the most proactive Design Organisation Approval in the development of new avionics retrofitting solution for EGNOS in Europe, was selected by the organisers to provide an insight on their day to day activities and the different steps involved in the design, validation and certification of these so-called STCs (Supplemental Type Certificates).

Harry Lees, Project Specialist for Business Development at Gama, gave an in-depth description of their two Garmin GNS and GTN product solutions which are applicable to hundreds of differentaircraft types.

Presentation available here.

EGNOS market status & adoption plan

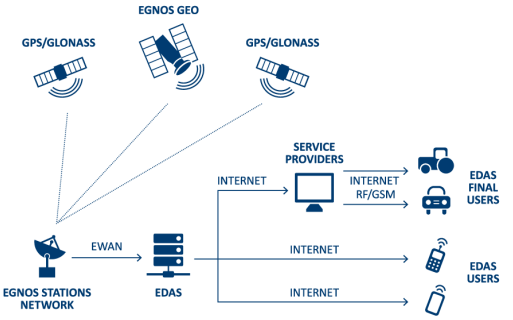
Manuel López (GSA) and Sofía Cilla (ESSP) provided an overview of the EGNOS market status and the activities developed in the frame of the EGNOS Multimodal Adoption Plan for 2016 in different market segments. GSA presented the strategy and goals to be reached in aviation, maritime, rail and agriculture & surveying market segments while ESSP debriefed on the actions and tools launched to accomplish such objectives. LPV map, CBA tool for airports and aircraft operators, operational guidelines, understanding SBAS capabilities in simulators, the needs behind LPV-200 procedures, identification of landing sites, operators and barriers for PinS and promotion of EGNOS in the main European aviation events were some of the activities presented in relation with aviation. For maritime, it was mentioned both the capabilities to assess high level architectures of an EGNOS-based DGNSS service over IALA beacons and AIS using EGNOS SIS or EDAS together with the development of the corresponding CBAs. It was also highlighted the creation of an EMRF subgroup to ensure an European common and harmonized approach for the Services provision aspects in the EGNOS introduction in the Maritime market segment.

In relation with agriculture and surveying, it was presented the specific receiver configuration campaigns and material developed to let agriculture users know how they have to configure an EGNOS compatible device; the availability of the pass-to-pass accuracy assessment –parameter used by farmers – already on-line; as well as the activities launched to monitor user feedback both on agriculture and surveying.

Presentation available here.

EDAS for added value applications

ESSP started by providing a quick overview of the different services available through EDAS (EGNOS Data Access Service), the EGNOS ground-based service which provides free-of-charge access to all the data generated and collected by the EGNOS infrastructure over the Internet, followed by some figures on the current user activity (c.a. 60% linked to professional/commercial applications in all market segments), examples of use cases and the associated EDAS benefits.



EDAS high-level architecture

After showing the excellent performance provided by the different EDAS services in the last year, ESSP presented an ad-hoc performance analysis campaign conducted in 2016 for the potential use of EDAS DGNSS corrections for land applications.

Presentation available here.

EGNOS in maritime.

DGPS NAVIGATION SERVICE BASED ON VRS WITH LOCAL EGNOS BACK-UP

The German Federal Waterways and Shipping Administration (WSV) made an interesting presentation describing their DGPS navigation service based on VRS and their intention to use EGNOS as the correction source local back-ups. Michael Hoppe explained that the existing German radio beacon network is currently based on the classic decentralized approach and that recapitalization is required. They aim to implement a network based on VRS concept. In order to mitigate the network limitations of this type of centralized configurations, a local backup based on EGNOS SIS data will also be used. The WSV is currently implementing this solution for the Inland Waterways Network.

Presentation available here.

TEST CAMPAIGN EGNOS/EDAS BASED DGPS CORRECTIONS BROADCAST

Nowadays, the French DGPS network is becoming outdated, therefore the maritime authority foresees to renew the infrastructure in place and CEREMA is in charge of this task.

Etienne Leroy from CEREMA provided an overview of the current deployment and its issues. They are assessing the possibility of implementing a centralized architecture based on EGNOS. To cope with this objective, the first step is to design the architecture, install the required elements and finally validate in-situ the hardware and software development done. The test campaign is ongoing and the results of the preliminary tests yielded good results. CEREMA concluded that implementing an EDAS VRS concept would be a promising source of DGPS corrections for coastal navigation.

Presentation available here.

POTENTIAL APPLICATIONS OF E-GNSS FOR MARITIME AND INLAND WATERWAYS SERVICES

Konrad Kurpinski, on behalf of the Polish Inland Navigation Office in Szczecin, outlined their view on the potential applications of E-GNSS for maritime and inland waterways services. The presentation focused on the RIS implementation plans in the Odra River with special attention to the DGNSS sub-system; it is foreseen to deploy five new AIS sites to join the two current ones. One of the key points in this new development will be the further development of AIS services, including DGNSS correction distribution over AIS Message 17. EGNOS has been identified as a promising source of those corrections. Opportunities and challenges of an EGNOS-based alternative were shown and the importance of performing cost-benefit analyses was highlighted, in order to decide about the implementation of EGNOS as a primary or back-up DGNSS solution supporting sailors and skippers visiting the RIS Odra area.

Presentation available here.

EDAS BASED DGPS SERVICE WITH PRE-BROADCAST INTEGRITY

Alberding GmbH provided their view on the drivers for the need for the modernization of maritime navigation infrastructure, in which EGNOS could play a major role, and their SW solution for operation of maritime and inland waterways DGNSS services, the Beacon.net software suite. The different modules of this scalable solution were presented, highlighting the support to the EGNOS VRS (Virtual Reference Stations) concept.

The core of the presentation detailed the results of the performance assessment campaign (in collaboration with ESSP) on EGNOS-based differential GPS corrections conducted in the summer of 2016, which showed that the EGNOS based approach allows complying with the accuracy, availability and integrity requirements defined by IMO for general navigation (even for port operations).

Presentation available here.

EGNOS in land.

Ag Leader

EGNOS FOR PRECISION AGRICULTURE

Paul Rose presented the main reasons why Precision Agriculture is needed, namely to have a better soil management and to increase farms efficiency, a "must" nowadays. As technology is becoming more accessible, more farmers are having access to it, being guidance the most popular form of precision farming. He explained the main types of activities on farms requiring the accuracy EGNOS provides and explained that although accuracy can be addictive, it is not always necessary, and EGNOS is there to offer a valuable free service for farmers.

Presentation available here.

handheld

EGNOS ENABLED PORTABLE DEVICES

Johan Held provided an overview of the company devoted to manufacture rugged devices such as tables and phones which are used as a basic tool in activitities carried out in hard environments such as forests, communication, lines management, electric utilities, etc.

Those users need to collect data with enough accuracy to be displayed afterwards on their GIS application for management and inventary purposes, and EGNOS performance is usually sufficient for this type of works.

Handheld showed their interest of using EDAS for offering their users higher accuracy for free.

Presentation available here.

EGNOS FOR THE IMPLEMENTATION OF CAP; EXPERIENCE FROM THE MEMBER STATE – CZ.

Lucie Šavelková presented the experience of the Czech republic in using EGNOS in the frame of the Common Agricultural Policy (CAP) as it is necessary to measure farming areas to provide the corresponding subsides.

She provided an historical overview covering the period 2005-2016, where starting from an intense EGNOS use was done gradually moving to an hybrid scenario where other non-free positioning services, usually reference stations are used together with EGNOS.

She finished giving clear messages: it is needed more awareness on EGNOS in agriculture public sector, EGNOS accuracy is enough for CAP and EDAS could meet the requirements in terms of limited signal availability in some areas.

Presentation available here.

EGNOS POTENTIAL IN RAILWAY SAFETY CRITICAL APPLICATIONS

The vision from the European Rail Industry was provided by Peter Gurník, Technical Affairs Manager at UNIFE. His message was oriented to explain the role and members of UNIFE, providing a high level description of the ERTMS concept as well.

He also introduced UNIFE as coordinator of the NGTC and STARS projects, outlining their main goals: To define relevant GNSS parameters for railway applications and standard process for GNSS signal coverage and accuracy measurements, to define engineering rules and operational management of the database for satellite positioning, to analyse other applications of satellite positioning functionality and finally to perform safety analysis for satellite positioning. In this regard, he also highlighted the support of GSA, ESSP and ESA to NGTC WP7.

Presentation available here.

SBAS in the world.

WAAS APPROACH PROCEDURES

Table below shows the WAAS list of satellite-based approach procedures. You can find further information on SatNav news.

Satellite-based Approach Procedures

	Procedures (Part 139 Airports)	Procedures (Non-Part 139 Airports)	Total Number of Procedures
RNAV (GPS) Approach **LNAV Line of Minima**	1,775	4,332	6,107
RNAV (GPS) Approach **LNAV/VNAV Line of Minima**	1,401	2,198	3,599
RNAV (GPS) Approach **LPV Line of Minima**	1,403	2,319	3,722
Non-ILS runway	*51*	*1,724*	*1,775*
ILS runway	*1,352*	*595*	*1,947*
RNAV (GPS) Approach **LPVs w/200' HAT**			949
RNAV (GPS) Approach **LP Line of Minima**	88	533	621
GPS Approach **GPS Stand-Alone Procedures**	8	78	86
GLS Approach	11	0	11

(Data as of September 15, 2016)

Courtesy of the FAA WAAS Team

MSAS

Hideaiki Tashiro, from the Civil Aviation Authority (Ministry of Land Infrastructure, Transport and Tourism) spoke about MSAS current status, the future plans up to 2017 covering the MSAS service together with QZSS and how the PBN mandate was being implemented in the Japanese aviation segment. He provided figures for SBAS equipped aircraft in Japan (airlines only), airports with RNAV/RNP procedures as well as Japanese aircraft SBAS capabilities.

Presentation available here.

MLIT Ministry of Land, Infrastructure, Transport and Tourism

S B A S - A S E C N A PROGRAMME UPDATE

An overview of Asecna and the Africa-EU Strategic Partnership was provided by Julien Lapie. He continued explaining the operational needs as well as strategic objectives up to 2023 together with the institutional ecosystem deployed and working since Sept 2014 when the opening of negotiations was authorised by the EU Council.

Presentation available here.

EGNOS Service Provision Workshop - Warsaw 2016

EGNOS Awards

DSNA, Skyguide and Hungarocontrol received an EGNOS award for the publication of the first LPV-200 respectively in France (up right side), Switzerland (down right side) and Hungary (up left side). BAE Systems (down left side) was awarded for having signed recently an EGNOS Working Agreement.

What's new?
Since last bulletin...

EGNOS WORKING AGREEMENTS SIGNED

The following EWAs have been signed in the last quarter:


Brighton City Airport Ltd
United Kingdom


Serco Ltd
United Kingdom


Esbjerg Airport
Denmark

LPV & APV BARO PROCEDURES PUBLISHED PER COUNTRY

(including last AIRAC cycle #11 – Oct 13th, 2016)

Next table shows, for each country:

- the number of airports with LPV procedures, as well as the total number of LPV procedures;
- the number of airports with APV Baro procedures authorised to be flown with EGNOS vertical guidance as well as the total number of APV Baro procedures.

Country	Airports – LPV procedures	# LPV Procedures	Airports – APV baro Procedures	# APV baro Procedures
Austria	2	2	0	0
Belgium	3	5	0	0
Croatia	1	1	0	0
Czech Republic	4	8	1	4
Denmark	4	8	0	0
Finland	1	2	0	0
France	92	151	4	5
Germany	22	36	24	63
Guernsey	1	2	0	0
Hungary	1	4	0	0
Italy	7	17	0	0
Netherlands	2	3	0	0
Norway	11	23	7	16
Poland	5	9	0	0
Portugal	1	2	0	0
Slovak Republic	2	4	0	0
Spain	1	2	0	0
Sweden	2	3	0	0
Switzerland	8	10	0	0
United Kingdom	2	4	0	0
Total	**172**	**296**	**36**	**88**

Satisfaction Survey Results

The Workshop was held in Warsaw last 27-28 September. **185** participants attended the Workshop, of which **57** (non-ESSP staff) responded the Satisfaction Survey.

8.5

OVERALL SATISFACTION

(Scale from 0 to 10)

9.7	Organization
9.0	Facilities
8.1	Contents & Timing
7.8	Working Material
8.1	Speakers
7.7	Knowledge Acquisition
7.6	Usefulness
9.4	Catering
8.9	Social Event

(Scale from 0 to 10)

Probability of Returning

1	Very High	26.3%
2	High	61.4%
3	Acceptable	10.5%
4	Low	1.8%

8.1

RECOMMENDATION

The workshop to a colleague.

NPS 24.6%

Net Promoter Score

% Promoters - % Detractors

Promoters: respondents who have assessed 9 or 10.
Detractors: respondents who have assessed from 0 to 6.

How did you know about the EGNOS Service Provision Workshop?

invitation *(20 mentions),* ***e-mail*** *(19 mentions),* ***contacts*** *(16 mentions),* ***website*** *(12 mentions),* ***newsletter*** *(5 mentions) and* ***events*** *(3 mentions).*

Upcoming Events

International Technical Symposium on Navigation and Timing

8-10 Nov

International Technical Symposium on Navigation and Timing

The objective of this symposium is to gather experts and innovators that will present their views/work on dedicated navigation- and/or timing-related topics, emphasizing on technical aspects.

METS Trade Show

15-17 Nov

METS MARINE EQUIPMENT TRADE SHOW

METS is the world's largest trade exhibition of equipment, materials and systems for the international marine leisure industry. It provides everything there is to know about building and equipping a boat. METS provides the perfect platform to network, exchange ideas and do business.

EGNOS will be present at Hall 1, Stand 01.500

Space Weather Week

14-18 Nov

13TH EUROPEAN SPACE WEATHER WEEK

The ESWW is the main annual event in the European Space Weather calendar. The ESWW will again adopt the central aim of bringing together the diverse groups in Europe working on different aspects of Space Weather.

EGNOS 52 SUPER SERIES Cascais Cup

The EGNOS 52 SUPER SERIES Cascais Cup took place from October 11th to October 15th in Cascais. This was the final regatta of the season where the title was decided. Thanks to EGNOS, positioning is more accurate, which is specially important for navigators at the start line.
More information available here.

11-15 Oct

EGNOS

EGNOS, it's there. Use it.

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

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.

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

EGNOS applications. Developers platform. Business support.

For questions & information

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