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EGNOS System & Services Status
EGNOS Services

EGNOS Open Service (OS)
- Service Declaration: 1\textsuperscript{st} October 2009
- [http://www.essp-sas.eu/service_definition_documents](http://www.essp-sas.eu/service_definition_documents)
- Agriculture, maritime, road, rail...

EGNOS Safety-of-Life (SoL) Service
- Service Declaration: 2\textsuperscript{nd} March 2011
- [http://www.essp-sas.eu/service_definition_documents](http://www.essp-sas.eu/service_definition_documents)
- All phases of flight in aviation
- SoL applications in any domain

EGNOS Data Access Service (EDAS)
- EDAS Service provided by ESSP since 2010
- Service Declaration: 26\textsuperscript{th} July 2012
- [http://www.essp-sas.eu/service_definition_documents](http://www.essp-sas.eu/service_definition_documents)
- Service & system evolutions under development
- Commercial/professional multimodal applications

Markets
- Location Based Services
- Professional Applications
- Road
- Maritime
- Rail
- Aviation
EGNOS Performance Reporting

- **Real-Time** Performance Monitoring:
  http://egnos-user-support.essp-sas.eu/egnos_ops/public_upcm

- EGNOS User Support **Website**:
  http://egnos-user-support.essp-sas.eu/

- **Monthly Performance Reports**:
  http://www.essp-sas.eu/monthly_performance_reports

- **Yearly Performance Reports**:
  http://www.essp-sas.eu/printed_documents
EGNOS Latest Improvements (ESR v2.3.1i)

- **New EGNOS System Release V2.3.1i** was deployed in the 7/08/2012 bringing additional robustness against iono activity in the South and South-West of Europe

- **EGNOS SoL Service Degradation (SN#2) status:**
  - Contingency situation not existing anymore
  - EGNOS performance back to nominal levels since May mainly due to:
    - Effectiveness of Operational Work Around
    - ESR231p improvements (iono robustness, new RIMS and new GPS satellites Block IIF)
    - Moderation of solar activity
  - Additional robustness against iono activity brought by ESR231i
EGNOS Latest Improvements (ESR v2.3.1i)

- **EGNOS SoL Service Outage (SN#5) correction included in ESR v2.3.1:**
  - EGNOS Service Outage from 23 to 26 June 2012 (72 hours convergence by system design)
  - Due to an abnormal behavior of one RIMS and CPFs were not able to reconcile the inconsistent data generated
  - Problem fixed in ESR v2.3.1i (1 month later)
Actual performance obtained on a typical day…
EGNOS Latest Improvements (RIMS Athens)

- **RIMS ATH successfully integrated** in the operational platform on 9/10/2012 with a positive impact in the performances measured in the Mediterranean region close to Greece.
EGNOS Latest Improvements (RIMS Athens)

BEFORE

AFTER
EGNOS future improvements

• ESR V2.3.2 and V2.4.x: 2013-2015
  – Improvement of Ionospheric monitoring
  – LPV-200 service
  – Addition of new RIMS (up to 40)
  – Next generation infrastructure (New GEOs, improved comm network, etc.)

• APV I target Service Area…
EGNOS future improvements

EGNOS APV-I target service area
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EGNOS SoL Service Issues
EGNOS SoL SDD Publication (I/III)

• **EGNOS SoL Service Definition Document (SDD)** describing the characteristics and conditions of access to the service.
  Published on the 2\textsuperscript{nd} March 2011

• **EGNOS Service Notices** generated whenever there is any complementary information to be provided to users that could affect the any SDD contents.
  [http://www.essp-sas.eu/service_notices](http://www.essp-sas.eu/service_notices)
EGNOS SoL SDD Publication (II/III)

Current SDD commitment based on ESR v2.2ext

Need to update the SDD for ESR 231 (231p & 231i) performance

ESSP working on methodology to use real data to ensure commitment fits actual system capability / performance

Initial Methodology and initial results under discussion with EASA

SDD publication target: Q2 2013

ESR v2.2ext
EGNOS SoL SDD Publication (III/III)

Initial results under discussion with EASA…
EGNOS SoL Service Degradation (SN#6)

- **SoL Service degradation** since November 2012 affecting APV-I availability *mainly in N and NE* of Service Area but:
  - Not compromising integrity at any moment
  - Not affecting en-route/NPA users
  - Impact observed mainly at night
  - Limited impact in published LPV procedures

- **Investigations** showed that it was related to:
  - CPF check for TEC (Total electron counter) decrease in the northern mid and polar latitudes during geomagnetic quiet conditions
  - Workplan to solve the issue under definition
  - SN#6 to be updated
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EGNOS SoL Service Degradation (SN#6)

- The degradation only affected some airports in the North of Germany during few days of December
- For most of the airports, LPV performances >99.9%

<table>
<thead>
<tr>
<th>Country</th>
<th>Airports – LPV procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>24</td>
</tr>
<tr>
<td>Switzerland</td>
<td>2</td>
</tr>
<tr>
<td>Guernsey</td>
<td>1</td>
</tr>
<tr>
<td>Germany</td>
<td>5 (+38 APV-Baro)</td>
</tr>
<tr>
<td>Italy</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>35 (+38 APV-Baro)</td>
</tr>
</tbody>
</table>
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LPV Implementation Status (I/IV)

- **EGNOS Working Agreements (EWA) signed:**
  - **2011:** DSNA (02/03/11), Skyguide (14/11/11), Guernsey Airport (05/12/11) and DFS (09/12/11)
  - **2012:** ENAV (16/05/12), NATS (14/06/12), Austrocontrol (14/06/12) and AENA (!) (20/12/2012)
  - **2013...**

- **Many interest shown by different European ANSPs** mainly via the FP7 projects (ACCEPTA, SHERPA): Nav (Portugal), PANSA (Poland), HIAL (UK), LVNL (Netherlands), ANS (Czech Rep) and Finavia (Finland)
LPV Implementation Status (II/IV)

New LPV procedures published in Dec 2012 & Jan 2013:

- FRANCE: Nevers Fouchambault, Valence and La Roche Sur Yon
- ITALY: Milano (Linate) and Rome (Fiumicino and Ciampino)
- GERMANY: Hamburg, Magdeburg, Oberpfaffenhofen and Schwäbisch

<table>
<thead>
<tr>
<th>Country</th>
<th>Airports – LPV procedures</th>
<th># LPV Procedures</th>
<th>Airports – “EGNOS enabled” APV baro</th>
<th># “EGNOS enabled” APV baro</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>24</td>
<td>27</td>
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<tr>
<td>Switzerland</td>
<td>2</td>
<td>2</td>
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<td>0</td>
</tr>
<tr>
<td>Guernsey</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Germany</td>
<td>5</td>
<td>8</td>
<td>38</td>
<td>82</td>
</tr>
<tr>
<td>Italy</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>35</td>
<td>42</td>
<td>38</td>
<td>82</td>
</tr>
</tbody>
</table>
LPV Implementation Status (III/IV)

EGNOS-based procedures implementation map and detailed list included in the ESSP website

www.essp-sas.eu
EGNOS-based procedures implementation map and detailed list included in the ESSP website www.essp-sas.eu

LPV Implementation Status (III/IV)

ICAO PBN TF8

2013 FORECAST

FRANCE
Angoulême Brie Champigniers
Calais-Mer Merville
Calais-Mer Mondaleau
Colmar Houssen
Dreux
Evreux Fauville
Lamey-Poulmic
Levallois-Perret
Lyon-Saint-Exupéry
Marseille Provence
Nancy Eyser
Pau Pyrénées
Périgueux-Marcillac
Toulouse Blagnac
Valence Chabeuil
Vannes Meuron

SPAIN
Algeciras (Huelva)
Almeria
Barcelona (El Prat)
Girona
Santander

ITALY
Bergame (Milano)

POLAND
Katowice
Malbork

BELGIUM
Kortrijk

NETHERLANDS
Breda

PORTUGAL
Lisbon Portela

NORWAY
Trondheim/Værness

EGNOS for Aviation

e-mail: egnos-helpdesk@essp-sas.eu
web: www.essp-sas.eu

This map has been elaborated by the ESSP just for communication purposes, with information collected from the European projects ACEPTA, SESAR, TENT-T and HEDGE, and the information provided by several ANSPs with regard to their National Implementation Plans. Map v.9 January 2013.
LPV implementation status (IV/IV)

Eurocontrol One Sky on-line / PBN Approach Map tool

- wider scope (PBN) including LPVs
- LPV related information coordinated with ESSP
Courtesy of Eurocontrol’s PBN Approach Map tool
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Improved approach to contingency communication
Improved contingency communication: Summary

- **Approach definition (upon DSNA request):** ESSP proposal discussed and agreed with Eurocontrol, DSNA and EASA.

- **Target ANSPs:** Concept is offered to all ANSPs with EWA signed *(no “a la carte” solutions from ESSP).*

- **Notification:** EWA ANSPs informed on 8th August 2012.

- **Availability:** Since 2nd October 2012 *(minor EURONOTAM Tool evolution was required)*

- **Harmonization process required:** ANSPs’ feedback being collected (close coordination with Eurocontrol). Need for a harmonized approach at European level consolidating/updating the European GNSS NOTAM Concept

**Remark:**

No operational impact *(flight planning for LPV approach still possible)* derived from the “contingency-related” NOTAMs publication
Improved contingency communication: Agreed scheme (I/II)

1. **Communication trigger (Contingency identification)**
   - ESSP to monitor performances wrt. specific performance indicators at airports with published procedures → EGNOS APV-I (99%) service degradations will trigger the contingency status

2. **Communication delay**: 3 working days associated to required analyses to confirm the contingency

3. **Contingency Communication content & distribution**: ESSP to provide to all ANSPs under EWA with
   - **Ad-hoc report** to EWA PoCs distributed via e-mail
     - Contents: severity, identified cause, expected duration…
   - **Specific NOTAM proposal** to the NOF (AFTN or EAD)
   - **Additional information** such as APV-I availability service area maps and performance per airports with LPV procedures (covering last 14 days) to be available at ESSP website
Improved contingency communication: Agreed scheme (II/II)

**ANSPs potential actions enabled**: to provide to users (pilots) with

1. **Generic AIC (Issuance/update)** addressing all EGNOS-based RNP APCH related information (including the different communications to be potentially published through NOTAMs). Recommended to refer to the information available at ESSP website

2. **Publication of “contingency-related” NOTAMs**
   - NOTAM proposal provided by ESSP
   - NOTAM proposal can be modified/complemented to point at additional sources of information (applicable AIC, ESSP website or any other reference)
Improved contingency communication: “contingency related” NOTAM proposals

- **NOTAM Proposals duration**: 1 week
- **No cancellation/replacement NOTAM will be issued**, a new NOTAM proposal will be sent if the contingency is not finished (NOF won’t need to cross check)
- **NOTAM proposals will be sent through AFTN (AFTN-AFTN or EAD)**.
- **NOTAM proposals content**: These “EGNOS contingency” related NOTAM proposals will be based on the following template proposed by Eurocontrol:

  Q) LFBB/QGAXX/I/NBO/A/000/999/4100N00200E005
  A) LFBO
  B) 1204170000
  C) 1204232359
  D) 0000-2359
  E) 00xx/12 NOTAMPN

  “LPV FLIGHT PLANNING POSSIBLE DESPITE POSSIBLE EGNOS UNAVAILABILITIES FOR MORE INFORMATION PLEASE REFER TO XXXX”

  1[ref of National “EGNOS based RNP APCHs related” AIC and ESSP Service Notice / Website or any additional source of information, to be included by the NOF before to complete the final NOTAM content]
Improved contingency communication: Additional info in ESSP website (I/II)

- **LPV availability evolution**: performance maps and availability at airports with published procedures over the last 14 days
Real time availability:

- Instantaneous LPV availability (Horizontal Alert Limit < 40m and Vertical Alert Limit < 50m) computed every 15 minutes is displayed.

Improved contingency communication:
- Additional info in ESSP website (II/II)
How to Contact ESSP?

ESSP Website:  
www.essp-sas.eu

EGNOS User Support Website:  
http://egnos-user-support.essp-sas.eu

EGNOS User Helpdesk:  
Egnos-helpdesk@essp-sas.eu  
📞 +34 911 236 555 (24/7)

Service Development:  
francisco-javier.deblas@essp-sas.eu
Questions?
Thanks!