



EGNOS, it's there. Use it.

EGNOS based Operations Implementation Status and Plans for 2016

EGNOS Service Provision Workshop
Copenhagen 29th-30th September 2015



European
Global Navigation
Satellite Systems
Agency



Precise navigation,
powered by Europe



Table of Contents

-  Drivers for APV Implementation
-  LPV Implementations: WHO DOES WHAT?
-  Guidance Material and Supporting Cells
-  LPV Implementation Status (September 2015)
-  Tracked Plans
-  LPV Implementation in Non EU Countries
-  LPV Implementation Challenges

Drivers for APV Implementation



ICAO Assembly (36th Assembly Oct 2007) resolution:

- Implementation of APVs (Baro-VNAV and/or augmented GNSS) for all instrument runway ends, either as the **primary approach** or as a **back-up** for precision approaches by 2016 with intermediate milestones as follows:
 - 30% by 2010
 - 70% by 2014

ICAO Assembly (37th Assembly Oct 2010) resolution:

- *“The implementation of RNP APCH procedures with vertical guidance (APV) to all instrument runway **ends by 2016**, either as primary or as backup approach procedures. RNP APCH to LNAV/VNAV and RNP APCH to LPV minima were the two options to fulfil the resolution.*

*RNP APCH to **LNAV minima acceptable** in places where APV implementation **is not possible or does not make sense** as no aircraft are suitably equipped for APV operations.”*

Drivers for APV Implementation

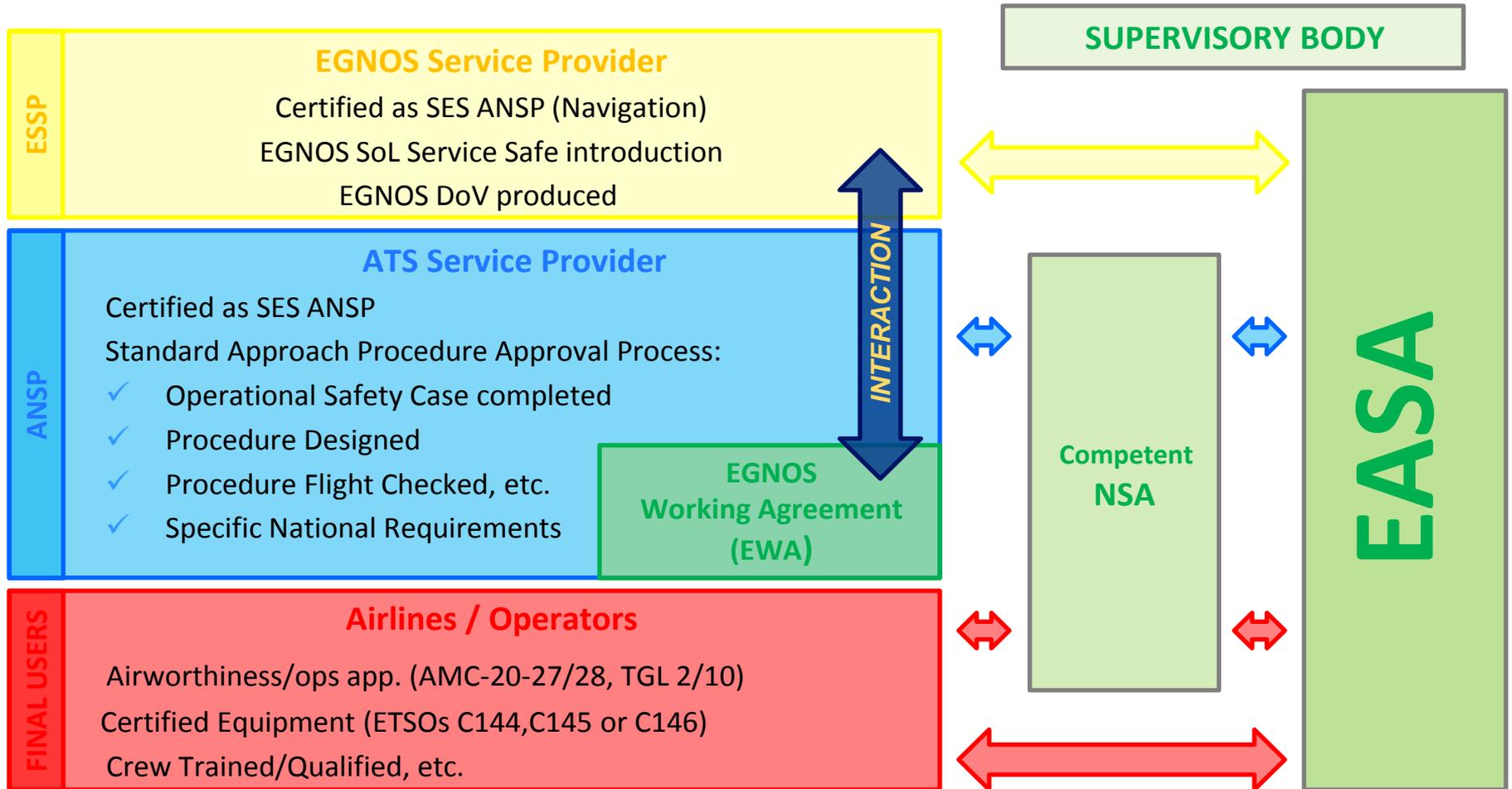


NPA 2015-01 PBN implementation in the EATMN (former PBN IR):

- EASA has taken the lead in the development of this Regulation **within the EASA regulatory framework**, continuing EUROCONTROL's work.
- **EGNOS will be a key enabler** for the APV objectives achievement in the frame of the NPA 2015-01.
- The NPA 2015-01 is **aligned** with Commission Implementing Regulation (EU) 716/2014 **Pilot Common Project (PCP)**, supporting the implementation of the EATMN Master Plan.
- EASA's Opinion will be issued in **Q4 2015**.

ATM Master Plan and SESAR deployment.

LPV: WHO DOES WHAT?



Guidance Material



ICAO EUR RNP APCH Guidance Material (EUR Doc 025):

- **Background** on RNP APCH operations as a brief introduction.
- The implementation described through a **set of 20 activities**.
- The Activities are mapped to the ICAO PBN implementation **Processes and Steps**.
- Provides reference to applicable **standards and regulatory documents** for each Activity.

GSA and ESSP supporting material available at:

- EGNOS Portal: <http://www.egnos-portal.eu/>
- ESSP User Support Website: <http://egnos-user-support.essp-sas.eu/>

European LPV Supporting Cells



Joint ICAO PBN TF / EUROCONTROL Navigation Steering Group (NSG) meetings

EUROCONTROL RNAV Approach Implementation Support Group (RAISG)

ESSP & GSA teams! → we are available to support!

- ESSP presence in TF & WGs
- EMA Action Plan activities
- ESSP EWA interfaces/support
- GSA EGNOS implementation projects & initiatives

Implementation Status



**37 EWAs
already signed!**



COUNTRY	Airports	LPV Procedures	APV baro Procedures (EGNOS enabled)
Austria	2	2	0
Czech Republic	4	8	4
Denmark	2	4	0
Finland	1	2	0
France	65	93	2
Germany	20	33	63
Guernsey	1	2	0
Italy	6	12	0
Netherlands	2	3	0
Norway	9	18	0
Poland	2	4	0
Portugal	1	2	0
Slovak Republic	2	4	0
Spain	1	2	0
Sweden	2	3	0
Switzerland	6	6	0
United Kingdom	2	4	0
Total	128	202	69

17th September 2015



Implementation Status - EWAs



Latest

- Belgocontrol
- Royal Netherlands Air Force (RNLAf).
- Biggin Hill Airport Ltd (UK)
- Royal Danish Air Force (RDAf)
- Hungarocontrol
- Saint Mary's Airport (UK)



In progress

- IAA (Ireland)
- Airways Aero Associations Ltd (Booker Airfield-UK)
- BAE Systems Marine Ltd (UK)



Initiated

- Latvijas Gaisa Satiksme (Latvia).
- Kortrijk Airport (Belgium).
- FerroNATS (Spain)

Implementation Status



As of 5th September 2015

202 LPV serving 128 airports
69 runway ends served by EGNOS-enabled APV Baro



Plans by 2016

>340 LPV planned

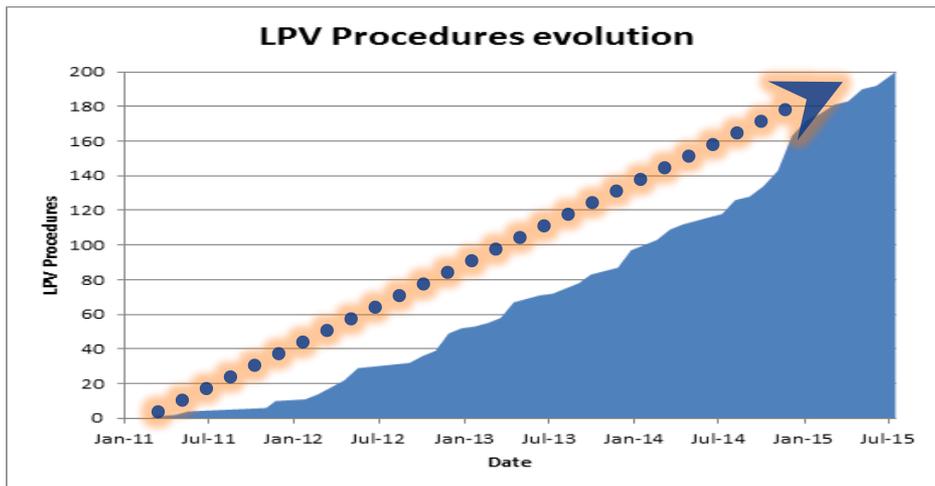


Tracked Plans



SIGNIFICANT HIGHLIGHTS:

- Numerous LPV publications expected in **UK, Sweden, Austria, Slovak Republic and Spain**
 - As a result of GSA's call for Grants 2014.
- Growing interest detected in commercial operators for their bases in Scandinavia.
- Significant increase of new plans in Belgium, Spain, Germany for the incoming years.



LPV Implementation Status and Plans



- EGNOS-based procedures implementation map and detailed list included in the ESSP User Support Website

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

The screenshot shows the EGNOS User Support Website interface. At the top, there is a navigation menu with links for DOCS & TOOLS, HELPDESK, EGNOS SYSTEM, SAFETY OF LIFE SERVICE, OPEN SERVICE, and EDAS SERVICE. Below the menu, there are three main sections: LPV Procedures Map (with a map of Europe), Quarterly Bulletin (with a thumbnail of a bulletin cover), and Signal in Space (with a table of signal status).

Signal	Status	Mode
PRN 120	Active	SoL Mode
PRN 136	Active	SoL Mode
PRN 126	Outage	Test mode

- All information coordinated with Eurocontrol's PBN Approach Map Tool available at:

<https://ext.eurocontrol.int/pbn/>

LPV Implementation in Non-EU Countries



Non-EU EWA Countries (within SES framework):

- Bailiwick of GUERNSEY (Channel Islands – 2011).
- Switzerland (2011).
- Norway (2013).
- Bailiwick of JERSEY (Channel Islands – 2014).

Non-EU (out of SES framework):

- Explicit interest expressed by **several neighbouring regions/countries** (projects BEYOND and MEDUSA).
- On going discussions at EC level:
 - A **bilateral International/Institutional Agreement** (between EC and the non-EU State), defining the overall framework for the use of the EGNOS SoL Service.
 - An **agreement/coordination scheme**: if deemed necessary between EASA and the Civil Aviation Authority of the non-EU country.
 - **EWA (EGNOS Working Agreement with ESSP)**: Established on the basis of the previous agreement/s.

LPV Implementation Challenges



Increase the number of EGNOS-enabled aircraft:

- **Reducing the costs** of installation and airworthiness certification.
- Increasing the availability of LPV capable **simulators**.
- Elaborating **Guidance** Material.
- **EU funding schemes** in place (SESAR, TEN-T, Horizon 2020, GSA Call for Grants, etc.).

Increase the number of published EGNOS based operations

- Implementation of EGNOS **LPV-200 SoL Service Level**.
- Implementation of **Instrument Approaches at VFR airfields**.
- Implementation of LPV/PiNS/LFN/SNI procedures for **rotorcraft**.
- Support to ANSPs PBN implementation / infrastructure rationalization strategies – ANSPs LPV implementation plans.

EGNOS Implementation Challenges Beyond LPV



EGNOS based operations other than LPV:

- LP approach procedures.
- RNP 0.3 routes.
- Potential EGNOS based RNP AR APCHs.
- Advanced RNP (A-RNP).

Support the development/use of EGNOS in new operational concepts:

- Use of EGNOS for approach operations with minima lower than 200 ft.
- Surveillance (EGNOS as an enabler for ADS-B - Regulation N° 1207/2011 Surveillance Performance).
- Advanced approach and departure procedures.
- RPAS (Remotely Piloted Aircraft System).
- Use in the Military Domain.



EGNOS, it's there. Use it.



QUESTIONS?

José Manuel Álvarez

jose-manuel.alvarez@essp-sas.eu



We certify you're there.