



# Proposal of EGNOS Service Provision scheme for Rotorcraft Operators in Class G Airspace

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# Purpose

***1. What is EGNOS?***

***2. Which are the benefits of using EGNOS?***

***3. What do Rotorcraft need for flying EGNOS based procedures?***



# Table of Contents

1. EGNOS and ESSP Overview
2. EGNOS based procedures
3. Real Case of EGNOS Provision scheme for NOLAS
4. Conclusions

# How to complete HEMS Operations in IMC?



**GNSS**

**EGNOS**

**PBN**

# Global Navigation Satellite System



## What is GNSS:

GNSS (ICAO SARPS) is a “worldwide position and time determination system that includes one or more satellite constellations, aircraft receivers and system integrity monitoring, augmented as necessary to support the required navigation performance for the intended operation”



**EGNOS** was born to meet Civil Aviation requirements

so that key concepts in EGNOS come from ICAO



# Global Navigation Satellite System

## European Geostationary Navigation Overlay Service



**EGNOS** is the European SBAS system augmenting GPS signal over ECAC area.



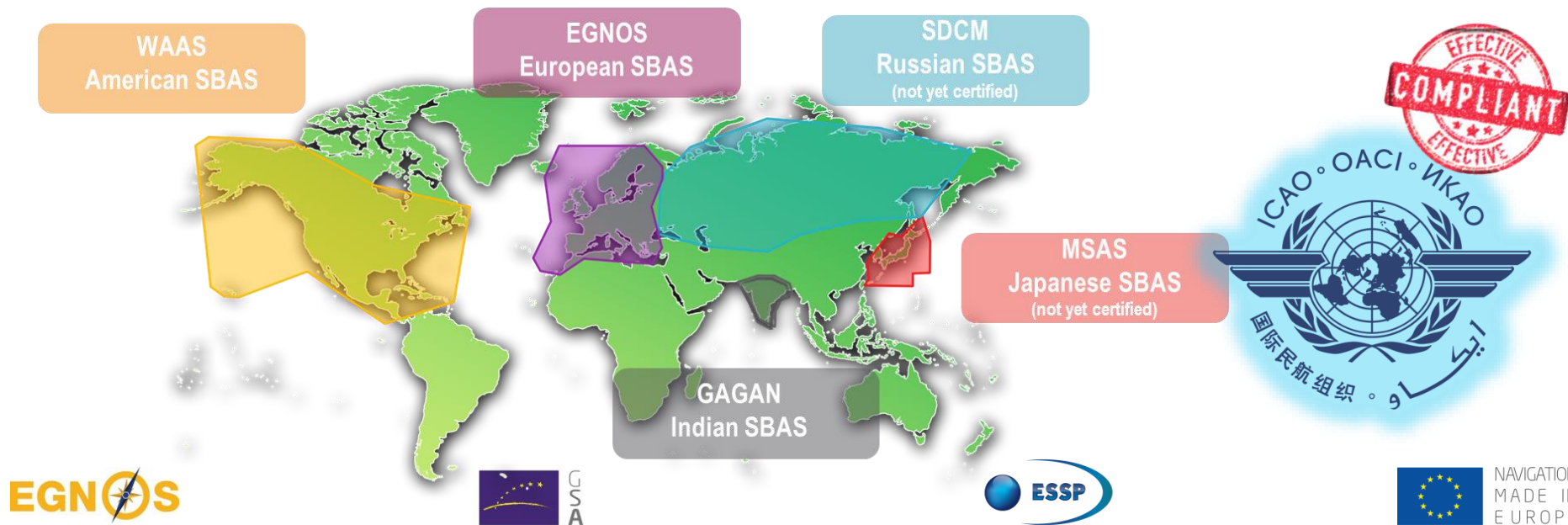
**EGNOS** meets stringent Aviation requirements (ICAO) for all phases of flight.



**EGNOS** might also be used in a wide range of other application domains.



**EGNOS** is fully interoperable with all other SBAS worldwide.



# EGNOS System: how does it work?

**2x MCC**

**Mission  
Control  
Centers**



**40x RIMS**

**Ranging  
& Integrity  
Monitoring  
Stations**



**GPS signal**

**6x NLES**

**Navigation  
Land  
Earth  
Stations**



**EGNOS**



**2 GEO satellites in EGNOS OP**

**EGNOS RECEIVER**

**GPS signal**



**EGNOS corrections**

***Improvement of accuracy***



- Position Integrity**  
(bounding of the position errors )
- is key for Civil Aviation and the main “differentiator” of SBAS w.r.t. GPS

# EGNOS SoL SERVICE SERVICE DEFINITION DOCUMENT



## Service Definition Documents



*describe the characteristics, terms and conditions of access to the corresponding EGNOS services offered to users*

- **Seventh issue v3.3 published on the 26th March 2019**
  - New commitment maps due to 72°N extension.
  - Accommodation of **new users** (included in v3.2 since 28/09/2018)



# Shareholders & location

**NATS**



**DFS** Deutsche Flugsicherung



**dgac**

**DSNA**



Toulouse



Madrid

**skyguide**



NAV Portugal, E.P.E.



**ENAV**

**ENAIRe**

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# IFR/EGNOS Benefits

## IFR

Increases airport accessibility



↑ SAFETY due to INSTRUMENTAL aid

Reduces environmental impact

## EGNOS

Higher performances → Lower minima

Not Temperature/Pressure dependent

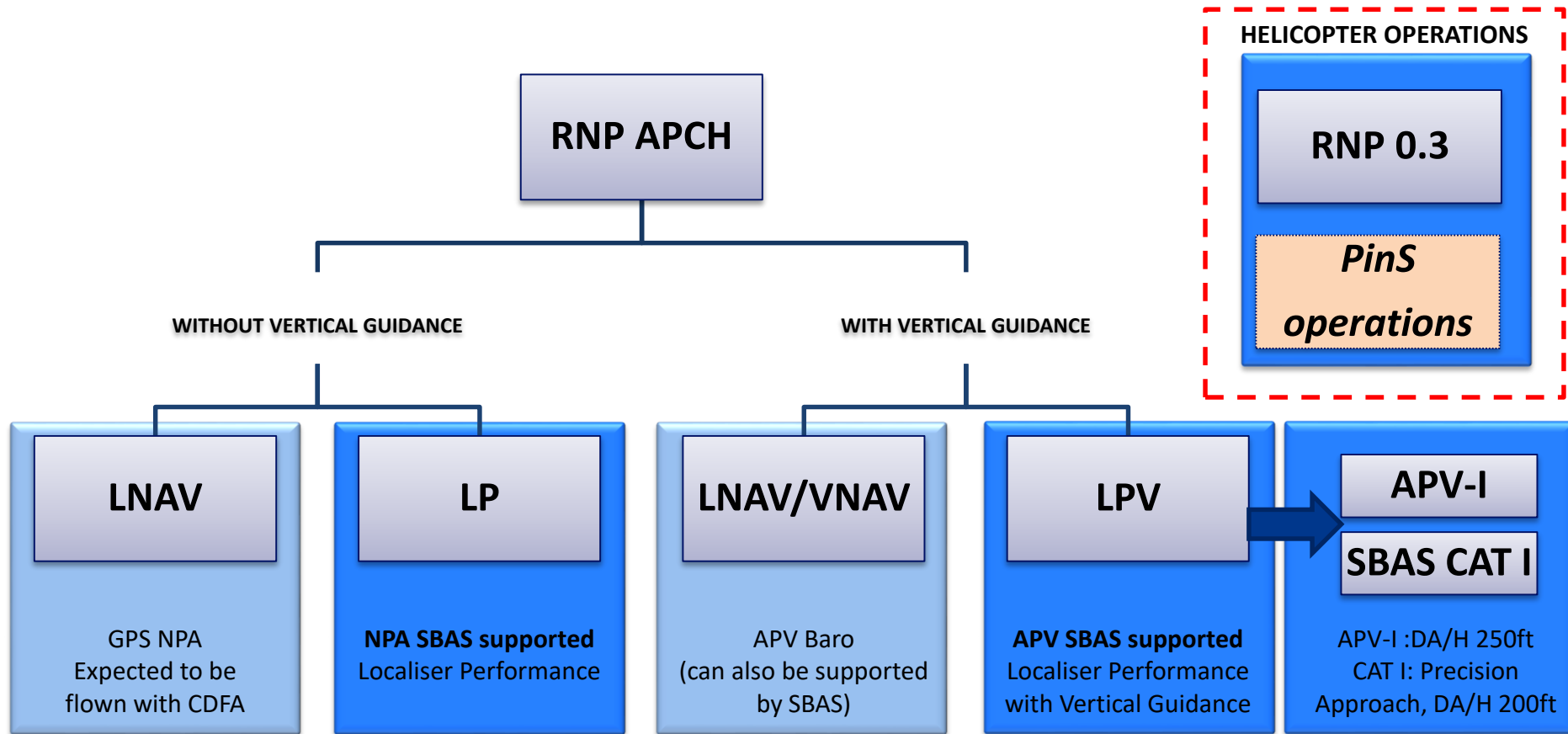
LPV Procedure is ILS look alike

No RAIM check

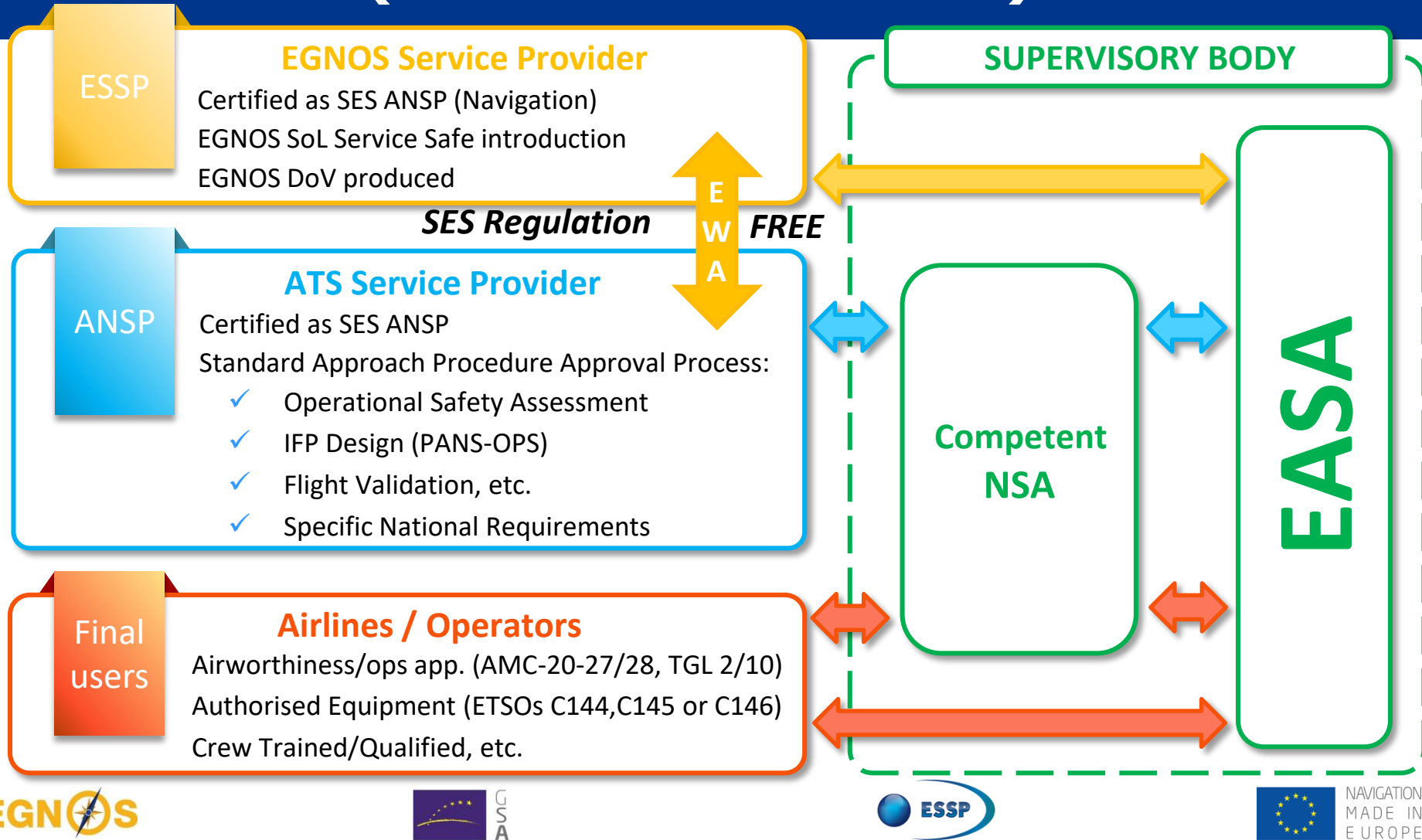
No ground infrastructure at the airport



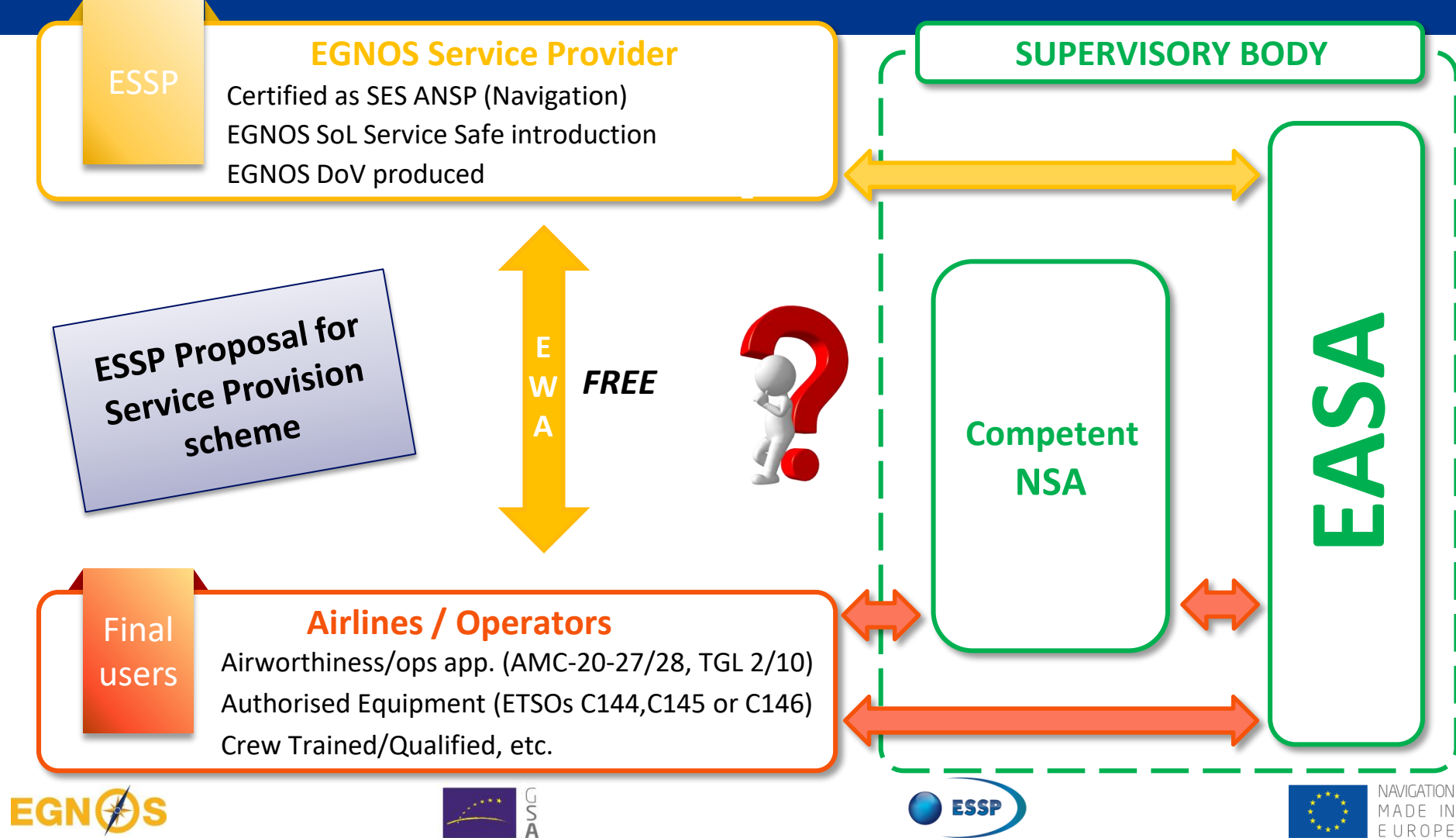
# PBN operations enabled by EGNOS



# EGNOS based procedures: Who does what? (ANSP Environment)



# EGNOS based procedures: Who does what? (Non-ANSP Environment / Airspace Class G)



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# Norsk Luftambulanse AS | NOLAS

## National Provider of HEMS in Norway and Denmark:

- Aprox 15 000 helicopter missions / year
- Aprox 6000 car missions / year
- 70 HEMS crew
- 22 helicopters (AW 139, H145, H135 and EC 135)
- 16 bases H 24/7



NORSK LUFTAMBULANSE



# EGNOS Service Provision scheme in Class G Airspace



*REQUIRES THE EXISTENCE OF AN AGREEMENT  
TO ENSURE THE SERVICE PROVISION SCHEME*



*EWA SIGNED IN AUGUST 2019*



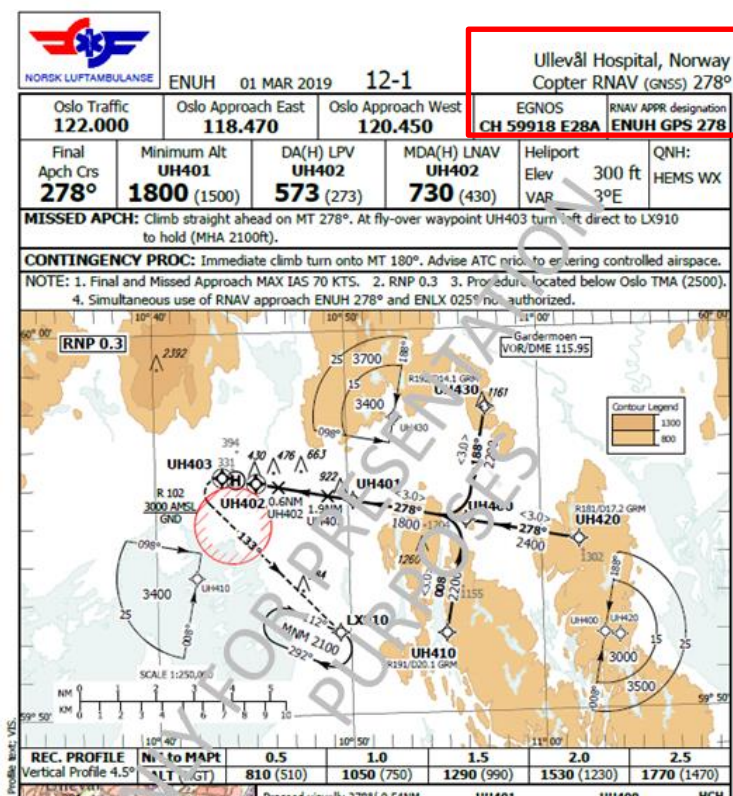
## AOC HOLDER

*PBN APPROVAL*

*EGNOS CAPABLE → CERTIFIED RECEIVER*



# NOLAS - EGNOS based procedures in Class G Airspace



**LPV**

MISAP gr 10.2% to 700  
DA(H) **573 (273)**

**LNAV**

MISAP gr 4.2%  
MDA(H) **730 (430)**

VIS **1000 m**

Gnd speed-Kts

Descent Gr FAF-MAPt 4.5° (7.9%)

	60	70	80	90
	478	558	638	717

# NOLAS - EGNOS based procedures in Class G Airspace

 NORWAY CAA REQUIRES THE EXISTENCE OF AN AGREEMENT ➡ EWA SIGNED

 ALL LANDING SITES WILL HAVE AN OFFICIAL ICAO CODE.

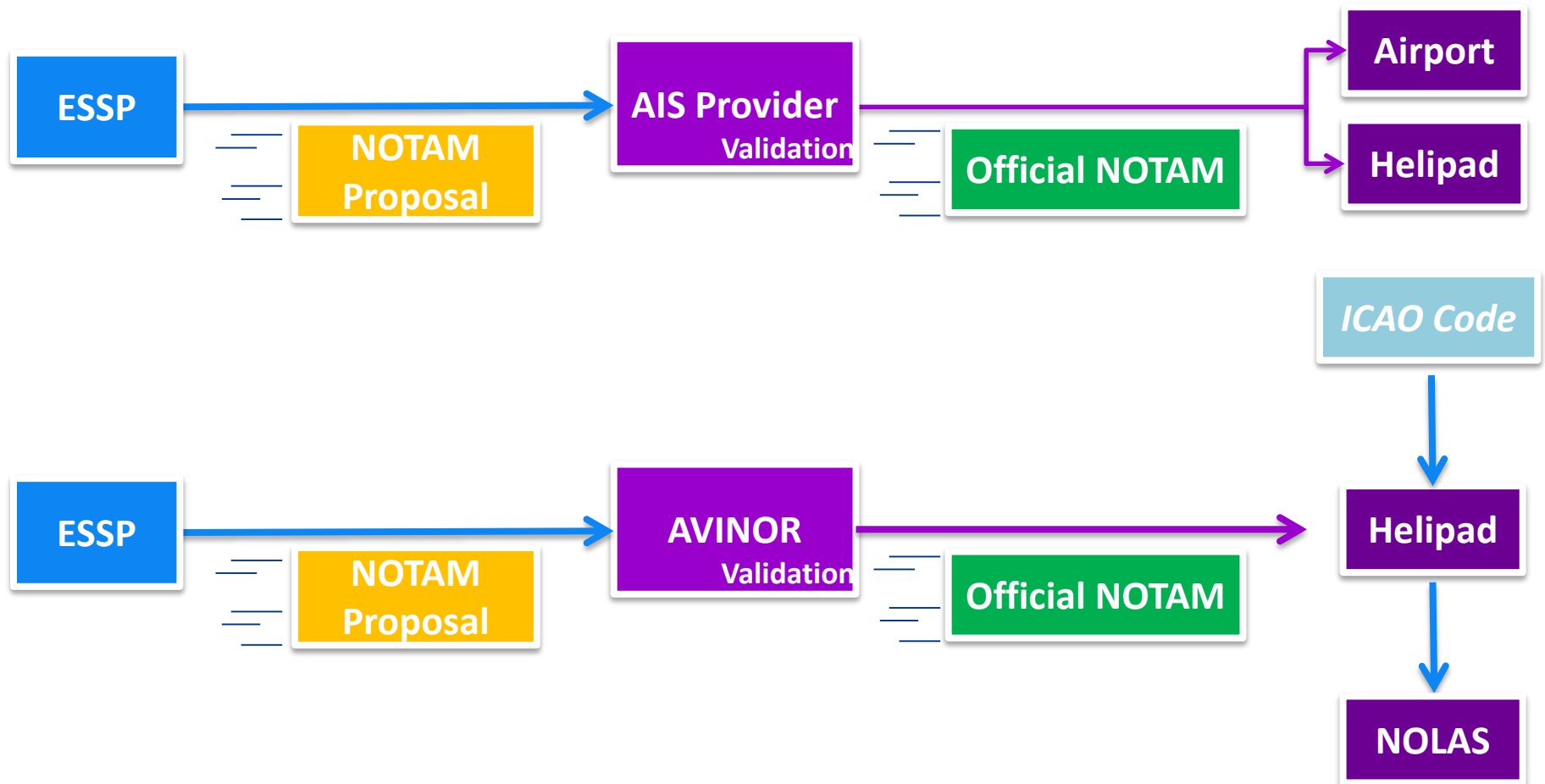
 FREE SERVICE PROVISION SCHEME FOR USER ➡ VALIDATED BY  
PENDING ON



 EWA INCLUDES NOTAM DISTRIBUTION.

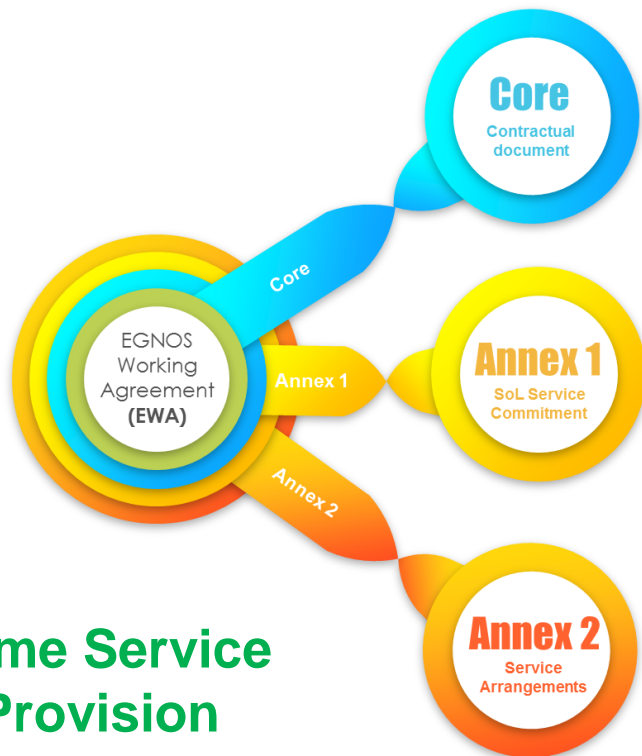
*AIR-OPS REGULATION: "PILOTS TO BE AWARED NAVAID STATUS (EGNOS STATUS) FOR HEMS OPERATIONS".*

# NOTAM Distribution



# Service Provision in Airspace Class G

## Same Service Provision Scheme (EWA)



### EWA Core:

- Identified with  An AOC holder

### Annex 1:

- SoL Service Definition Document (SDD).
- Service Notices (SN).
- Contingency.

### Annex 2:

- Collaborative Decision Making (CDM).
- GNSS Data Recording.
- NOTAM Proposal.

# EGNOS Users

EWA

## ANSP

Certified Air  
Navigation Service  
Providers



Conventional  
operations

## AOp

Licensed Aerodrome  
Operator



Non-ATS  
environments

## ROp

Rotorcraft Operator  
as AOC holder



Non-ATS for  
Rotorcraft

## Other



Under  
study

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# Conclusions

- FREE SERVICE PROVISION SCHEME
- INCREASES SAFETY
- NAVAID (EGNOS) STATUS → NOTAM (PROPOSAL) DISTRIBUTION

***HARMONIZED SOLUTION → IDENTICAL  
SERVICE PROVISION SCHEME NO MATTER  
THE ENVIRONMENT***

# Conclusions

## 1. What is EGNOS?

*European SBAS system augmenting GPS signal over ECAC area (provides integrity)*

## 2. Which are the benefits of using EGNOS?

*Increases safety and accessibility (best source of positioning)*

*Enables PBN operations*

*Free of charge harmonized Service Provision scheme*

## 3. What do Rotorcraft need for flying EGNOS based procedures?

*AOC for PBN operations → SBAS certified receiver*

*If requested an agreement with ESSP to ensure the service provision scheme*



**ARE YOU WILING TO USE EGNOS ?**

**LET'S  
COLLABORATE**



# Aviation Portal

## Dashboard

- EGNOS System status
- Active and planned unavailability
- Services performance
- Airports availability information

## Contractual doc.

EWA +  
Serv. Arr.

## Manuals

- Airport Data Generation Tool
- Contingency

## Contact form

## Points of Contact

- Information
- Modification request

## Contingency

Comm.  
repository

## Airport Data Generation Tool

AIXM file  
generation

## GNSS Data Recording Forms

- Access request
- Data request

REGISTER SUBSCRIPTIONS

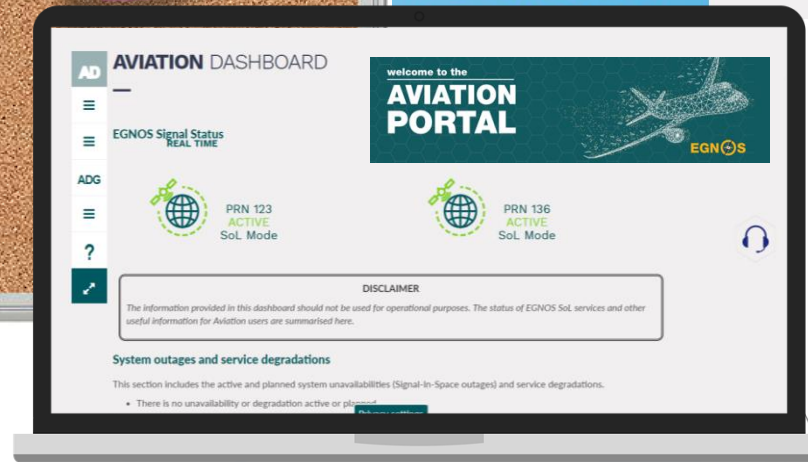


RESOURCES & TOOLS

AVIATION PORTAL

AVIATION DASHBOARD

ABOUT



# EGNOS User Available tools

## NEW EGNOS User Support website



### New Library

Filter by document type,  
market segment and more



### Easy access EGNOS Helpdesk

New floating icon  
available on every page

Find the support you need!



### Redistributed Navigation panel

Relevant information per market segment at a glance



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

### Restyled Look & feel



### Handy Dashboard

For free!

The information you need available at your fingertips!

## EGNOS APP



Get it on **iOS** and **Android** for free



EGNOS Helpdesk  
Accessible from  
app



Signal in Space  
EGNOS system  
information



Docs and tools  
Browse official  
documents & tools



EGNOS performance  
Sol, EDAS, OS  
services



**Online LPV Flight Simulator**  
<https://www.essp-sas.eu/>



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

[egnos-helpdesk@essp-sas.eu](mailto:egnos-helpdesk@essp-sas.eu)

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Corporate Video

# THANK YOU!



**Time for QUESTIONS!**

