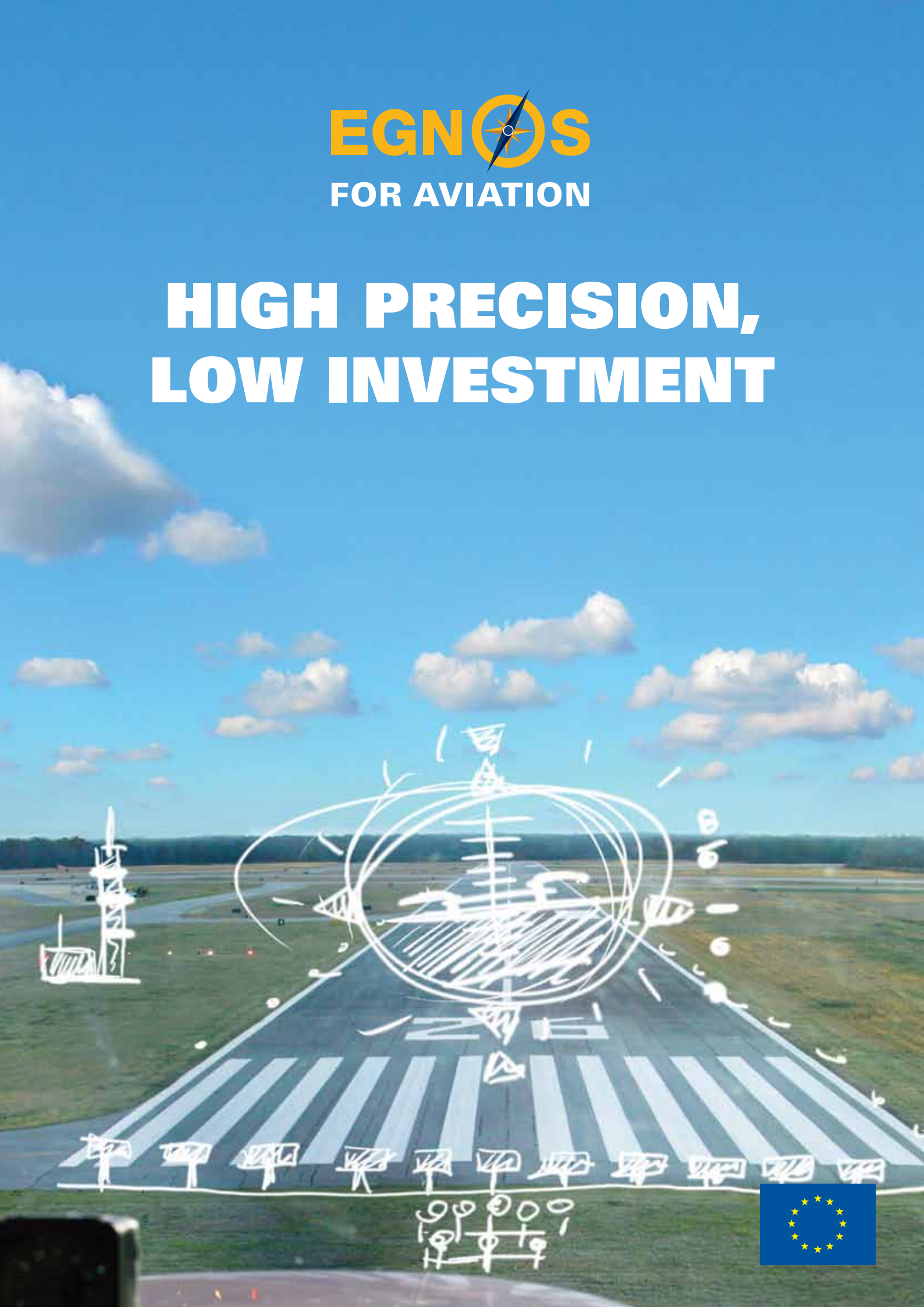


**EGNOS**  
FOR AVIATION

**HIGH PRECISION,  
LOW INVESTMENT**





The skies above Europe are becoming increasingly congested, as are Europe's major airports. This growth in air traffic means smaller airports also need to be safely accessible at all times, which cannot be achieved by relying solely on non-precision approaches.

Air Traffic management technologies also need to evolve from costly and rigid ground based infrastructures to more advanced systems, based on new technology.

EGNOS, the **European Geostationary Navigation Overlay Service**, will offer enhanced vertical **precision** and **integrity**, improving **safety**, **accessibility** and **efficiency** to operators, pilots and airports all over Europe.

EGNOS is the **European Satellite Based Augmentation System** (SBAS) and it is set to be certified for civil aviation in 2010. It will enhance:

## Safety

Increased vertical accuracy provided by EGNOS will improve safety by:

- Reducing the occurrence of Controlled Flight into Terrain by as much as 75%.
- Acting as a backup system for approaches into airports that already offer precision approaches.
- Allowing the design of more flexible and safer approach procedures for rotorcraft.

EGNOS enables the implementation of safe approach procedures specifically designed for helicopters. For example, EGNOS will enable safer approaches on North Sea oil platforms.

## Sustainability

EGNOS will, in many cases, reduce the impact of aviation on the environment. It will enable curved approaches and continuous descent paths, which will reduce both noise and emissions. For helicopters, EGNOS will allow approach procedures to be developed from any direction, creating the possibility to avoid densely populated areas.





## Efficiency

EGNOS provides a cost effective alternative to ILS CAT I, offering similar performance yet without the need for infrastructure installation and maintenance.

With EGNOS, lower decision height can also considerably reduce costly delays, diversions and cancellations. This can even allow other ground nav aids to be phased out, possibly reducing landing fees.

All that is needed is an on-board EGNOS certified receiver, an adapted approach procedure for the runway end, and corresponding flight management system functions.

## Accessibility

Increased accuracy and integrity means the decision height can be decreased to as low as 200ft, depending on local geography.

With an EGNOS procedure, even small and medium-sized airports and heliports remain accessible in poor weather conditions. Plus, the lower decision height provided by EGNOS may open up approach paths to runway ends previously inaccessible due to local obstacles.

Publishing EGNOS procedures can:

- Offer airports a competitive edge over those only offering non-precision approaches.
- Significantly enhance the effectiveness of helicopter emergency medical services by increasing the accessibility of heliports.





-  Ranging and Integrity Monitoring Stations
-  Navigation Land Earth Stations
-  Mission Control Centres

## How it works

EGNOS, the European Geostationary Navigation Overlay Service, improves the accuracy of position measurements by sending out signals that correct GPS data and provide information on its reliability.

The EGNOS network includes about 40 reference stations in 20 countries. Ranging and Integrity Monitoring Stations (RIMS) on the ground pick up signals from GPS satellites, which are processed in Master Control Centres (MCC). The accuracy of the original signals is determined and confounding factors, such as electrical disturbances in the atmosphere, are corrected.

These data are incorporated into EGNOS signals and sent to its three geostationary satellites. The satellites then relay the signals back to EGNOS-enabled receivers, thus providing far greater positioning accuracy than would be achieved through GPS alone.

In Europe, ICAO recommends deploying APV approaches on all runways by 2016, and EGNOS is included in the regional PBN plan.

EGNOS-enabled receivers are widely available thanks to its compatibility with the proven US WAAS system, with over 40,000 aviation receivers already in use. In the US, as of October 2009, there were

over 1,800 published WAAS LPVs, outnumbering the number of Instrument Landing System (ILS) procedures.

Once certified, the EGNOS signal may be used for approaches using a certified receiver, FMS and SBAS procedure.

The EGNOS signal is free and is here to stay. EGNOS is set to be certified for civil aviation in 2010 and its geographic reach will be extended over subsequent years.

EGNOS can provide accessibility, safety and cost savings in a single, proven solution, by delivering high precision with a low investment.



For more information, please visit:  
[www.gsa.europa.eu/go/aviation](http://www.gsa.europa.eu/go/aviation)  
[www.essp-sas.eu](http://www.essp-sas.eu)  
<http://ec.europa.eu/transport/egnoss>



Precise navigation, powered by Europe

