

EGNOS and GALILEO for WATERBORNE TRANSPORT



Trusted Precision, Extensive Availability





Global waterborne transport is increasing and Europe's ports and inland waterways are becoming ever more congested. This growth requires new solutions to improve efficiency, safety and minimise the impact of maritime traffic on the environment.

Accurate and reliable positioning provided thanks to global navigation satellites systems (GNSS) are key elements for a range of operations, improving safety and protecting maritime and inland waterways environments. New satellite based systems that substantially reduce response times in case of an emergency are also being deployed.

Two European programmes, EGNOS and Galileo, serve as the backbone for a wide-range of solutions tailored to navigation at sea and in inland waterways of commercial and leisure vessels, search and rescue activities, port operations and environmental protection.

How EGNOS and Galileo

Navigation

Satellite-based systems have fundamentally changed maritime navigation. Vessels ranging from small sailing boats to super tankers now have systems on board that rely on satellites for positioning. EGNOS and Galileo contribute to make navigation more **accurate** and **safer**.

Many systems installed on leisure craft already integrate EGNOS corrections. In European waters, both coastal and inland waterways, EGNOS already complements existing ground-based systems.

The deployment of Galileo is further enhancing positioning accuracy by adding additional satellites to the currently available constellations increasing resiliency of the computed position. Galileo is recognised by IMO as part of the world wide radionavigation system and can be used for navigation in merchant shipping.

GALILEO for SAR

Search And Rescue (SAR) operations involve locating and helping people in distress. In this case, time is of the essence and first response is critical.

Galileo's SAR capabilities are integrated into the international COSPAS-SARSAT programme – a satellite-based SAR distress alert detection and information distribution system.

Galileo SAR services will make a meaningful difference by offering:

- Faster alert localisation and message detection (reduction from several hours to a few minutes)
- A more precise localisation of the distress beacon
- Higher availability

The SAR/Galileo infrastructure is interoperable with GPS and Glonass SAR transponders. In addition, by the end of 2018, people in distress will receive an acknowledgment via the Galileo SAR return link that their distress signal has been localised.



"Be it for fisheries, yachting, passenger or freight, waterborne transport relies on satellite technology."

"By contributing to a safer, more efficient and more sustainable waterborne transport, EGNOS and Galileo are making a real difference."

make a difference!

Port Operations

Many ports are congested and require systems to ensure efficient operations whilst guaranteeing safety. Furthermore, the increase in the size of cargo ships has led to the need for extremely accurate manoeuvring.

One solution is EGNOS-based portable pilot units that provide increased confidence and accuracy in the vessel's positioning. Accurate positioning enhances the precision of Vessel Traffic Monitoring and Information Systems (VTMIS), which manage vessel movements and increase both efficiency and safety.

Galileo is already contributing to an enhanced position solution, in terms of availability of satellites in view and in terms of increased accuracy.

Environmental Protections

Maritime environments are often vulnerable and require protection. Galileo is the foundation for a range of new solutions designed to protect delicate marine environments, reduce fuel consumption and enable more efficient enforcement of environmental protection measures.

Improved accuracy can facilitate the development of tools that promote sustainable fishery, and the authenticated positioning that Galileo will offer more efficient enforcement. This authenticated position can also serve as the basis for systems designed to protect vulnerable maritime areas such as marine parks.



How does EGNOS work?

EGNOS, the European Geostationary Navigation Overlay Service, uses geostationary satellites and a network of ground stations to increase the accuracy of existing satellite positioning signals while providing a crucial 'integrity message' that informs users in the event of signal problems.

The EGNOS reference stations pick up signals from GPS satellites, which are processed in Mission Control Centres (MCC). The accuracy of the original signals is determined and confounding factors are corrected.

This data is then incorporated into EGNOS signals and sent to its three geostationary satellites. The satellites relay these signals back to users on the ground, providing greater positioning accuracy than would be achieved through GPS alone.

Galileo Initial Services

With the declaration of Initial Services in December 2016, Galileo - the European Global Satellite Navigation System (GNSS) - has moved from testing to the provision of live services. Users around the world can now be guided using the positioning, navigation and timing information provided by Galileo's global satellite constellation.

By working together with GPS, Galileo satellites provide better positioning and navigation for users, particularly in cities, where satellite signals can often be blocked by buildings. Plus, Galileo's excellent timing accuracy helps make the synchronisation of banking and financial transactions and telecommunication and energy distribution networks more resilient, allowing them to operate more efficiently.

www.gsa.europa.eu

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Whether in the air, at sea or in the mountains or desert, Galileo's Search and Rescue (SAR) service's improved precision and faster detection time dramatically improves the ability to locate a user in distress from up to three hours to just ten minutes. In other words, by expediting the emergency response process, Galileo saves more lives. Galileo's effectiveness will only increase with the addition of the Galileo Return Link Service, which sends a confirmation message back to the beacon acknowledging that the emergency signal was received.

useGALILEO.eu

Mass-market devices containing a Galileo-enabled chipset, such as smartphones or vehicle navigation devices, can use Galileo signals for positioning, navigation and timing. The www.useGALILEO.eu tool helps you keep track of Galileo-enabled in-vehicle, portable, road tolling and fleet management systems, serving a variety of needs, as they become available.

GSA: linking space to user needs

The GSA is the European Union Agency in charge of managing operations and service provision of Galileo and EGNOS, ensuring that European citizens get the most out of Europe's satellite navigation programmes in terms of innovation, competitiveness, economic growth, and benefit to users.

As Europe's link between space technology and user needs, GSA keeps users at the centre of Galileo and EGNOS.



Navigation solutions
powered by Europe