

#EUSpace



PROGRAMME OF  
THE EUROPEAN UNION



# Galileo, the European Union Global Navigation Satellite System

*Satellite navigation,  
made in Europe!*

Satellite positioning has become a vital part of our daily lives and is a key for transportation, science, precise timing, and emergency response. We use it on our phones, cars, planes, trains, ships and thousands of other applications.

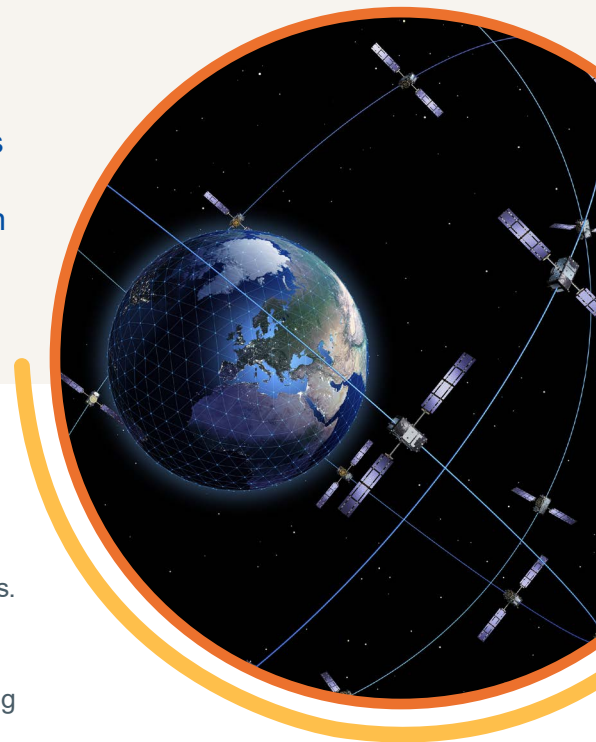
To calculate our position, we rely on **Global Navigation Satellite Systems** or GNSS in short. A GNSS is a constellation of satellites providing signals from space that transmit positioning and timing data to devices with the appropriate receivers. The receivers then use this data to determine a person's location. Currently in the world exist four GNSS constellations, the most known being the US GPS.

## WHAT IS GALILEO?

In 2016, the European Union's GNSS, called **Galileo**, launched its initial services. Since then, the system has been providing improved positioning, navigation and timing information to about **four billion** users across the globe.

Once fully deployed, the Galileo constellation will consist of 24 satellites orbiting Earth at 23,000 km. The signals of Galileo are freely transmitted to anyone who has a device capable of receiving its signals (e.g., smartphone). Galileo is **around three times** more accurate than GPS, providing 1 meter accuracy.

Galileo is **fully funded and owned** by the European Union and unlike other GNSSs it is under **civilian control**. Most of its services are provided free of charge all around the world.



**24**  
satellites

## WHY IS GALILEO IMPORTANT FOR EUROPE?

Galileo is a flagship programme of the European Union. It is a component of the EU Space Programme. It allows the EU and its Member States to remain independent in case other GNSSs becoming degraded or switched off and ensure **sovereignty and autonomy in space**.

## GALILEO OFFERS A BROAD RANGE OF SERVICES:

- **Galileo Open Service (OS):** the most used service we all rely on, in our phones, cars, smartwatch and more applications.
- **Galileo Search and Rescue (SAR):** allows the location of people in distress in less than 10 minutes and accuracy error below 5km.
- **Galileo High Accuracy Service (HAS):** offering an accuracy down to 20cm for applications such as autonomous cars or drones.
- **Galileo Public Regulated Service (PRS):** the most secured Galileo service designed to fulfill the needs of governmental applications including in the domain of defence. It provides worldwide robust uninterrupted Position Navigation and Timing services to authorised users. The service aims at an Initial Operational Capability declaration in 2025.

### Coming soon

- **Galileo Open Service Navigation Authentication Message (OSNMA):** A service which will secure Galileo signals against spoofing by enabling authentication of navigation data.
- **Galileo Emergency Warning Satellite Service (EWSS):** a service which will complement national alert systems by transmitting alert messages via the Galileo satellites when other terrestrial means are unavailable (4/5G towers).

Galileo is owned and managed by the European Commission on behalf of the European Union.

The EU Agency for the Space Programme (EUSPA) manages the exploitation of Galileo and ensure its security accreditation.

The European Space Agency (ESA) implements tasks in the design, development and evolution of the Galileo ground and space segment.

## Selected Use Cases



### Agriculture

Galileo helps farmers accurately guide their tractors and spray fertilisers and water only where needed, therefore reducing overapplication.



### Maritime

Thanks to Galileo ships can optimise they routes and reduce CO2 emissions and save fuel.



### Location Based Services

Mobile application that use geolocation such as maps and rideshare applications can benefit from Galileo's additional accuracy.



### Timing and Synchronization

Galileo is used to precisely timestamp bank and financial transactions.

