



GALILEO/EGNOS

EUROPE'S CONTRIBUTION TO GLOBAL NAVIGATION SATELLITE SYSTEM (GNSS)

Telespazio is Finmeccanica's reference company for navigation and localisation services, a role also based on its contribution to the development and deployment of Galileo, the European satellite navigation programme that will be implemented through the launch of a constellation of 30 satellites.

GALILEO, THE EU'S LARGEST TECHNOLOGY PROJECT

Galileo is the European satellite navigation system developed jointly by the European Union and the European Space Agency, and is the largest project ever conceived by the European institutions. Galileo will provide the basis for a range of applications and services dedicated to a variety of sectors, including road, air, rail and sea transport, telecommunications, Earth mapping and cartography, gas/oil exploration and mining. Particular focus will be on Public Regulated Services, security and defence applications, such as the protection of ports, airports, railway stations and other critical infrastructure, as well as other important civil protection and rescue services for people and vehicles in danger or a state of emergency.

Galileo's infrastructure comprises the space, ground and user segments. The space segment comprises a constellation of 30 satellites that orbit the Earth at a distance of around 24,000 km on three distinct orbital planes (10 satellites each), inclined at 56 degrees to the equatorial plane. In reality 27 satellites will be operational (nine for each orbital plane), while the remaining three will be in reserve, ready to become operational in the event of a malfunction.

The ground segment plays a central role in the entire system, as it contains Galileo's true intelligence. Its main tasks are to monitor the space segment, checking that it is functioning correctly, and to generate data to send to final users. Three elements make up the ground segment in terms of physical architecture:

- the two Galileo Control Centres
- the remote stations, which are spread around the world (five for telemetry and telecontrol, ten for the uplink of mission data and 29 GSS sensor stations that receive the signals from each satellite);
- the communication network that connects these to the GCCs.

The user infrastructure consists of all the various types of signal receiver and everything involving the final users (the public, companies and the P.A.).



CONTROL CENTRES

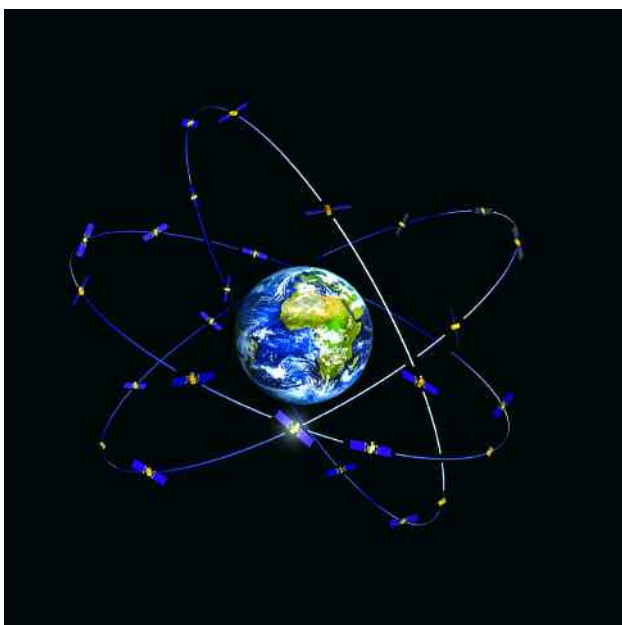
One of the two control centres (GCC) that will manage the Galileo constellation and mission is being built at Telespazio's Fucino Space Centre. The company will also be responsible for setting up one of the two Signal Performance Validation centres near Rome.

THE GALILEO TEST RANGE

Telespazio will play a leading role in the construction and management of the Galileo Test Range (Gtr), the multifunctional technological infrastructure for satellite navigation, financed by the region of Lazio and supported by the Italian Space Agency, Alcatel Alenia Space, ENAV (Italy's air traffic control body) and Italian universities and companies. This programme will lead to the creation of a laboratory for the validation of the Galileo signal, the testing and certification of terminals, and the development of navigation and positioning applications.

SERVICES AND INNOVATIVE APPLICATIONS

Galileo and its precursor EGNOS (European Geostationary Navigation Overlay Service) will foster the development and launch of services and applications for land, air, rail and maritime transport, telecommunication, Earth mapping, oil exploration and mining. Telespazio intends to further develop its presence in these service areas, which will also boost measures aimed at protecting sensitive areas such as ports, stations and airports. These include the EtoG (Egnos to Galileo) programme supported by ENAV and the Italian Space Agency, which aims to prepare Italian air traffic for the widespread use of satellite navigation based on Egnos. Telespazio has also developed solutions for tracking and tracing dangerous goods. These solutions are used in European projects such as M-TRADE and METIS, for which Telespazio acts as co-ordinator.



THE GALILEO SYSTEM SIMULATOR

For ENAV, Telespazio has developed a Galileo system simulator, covering the space, ground and user segments. The Galileo simulator was conceived as a prototype in the first phase of the STENAV programme in 2002. This further upgrade is a "laboratory" that can be used to experiment with different navigation algorithms and testing models of the main physical phenomena that affect position calculation. The simulator tests innovative applications based on services that will be offered by Galileo.