

GALILEO



Telespazio

A Finmeccanica/Thales Company

THE GALILEO PROGRAMME

Galileo is Europe's programme for a global navigation satellite system, providing a highly accurate, guaranteed global positioning service, interoperable with the US GPS and Russian Glonass systems. It consists of 30 satellites and ground infrastructure.

Telespazio's role

Telespazio (a Finmeccanica/Thales company) plays a leading role in Galileo, having built, at the Fucino Space Centre (near L'Aquila), one of the control centres (GCC) that will manage the programme's constellation and mission. The German Aerospace Centre (DLR) has built a second GCC at Oberpfaffenhofen near Munich.

Telespazio is heavily involved in all the phases of the system's operational life through **Spaceopal**, its joint venture with DLR GfR. Spaceopal is responsible for operations and integrated logistics of the entire Galileo system.

Spaceopal manages and co-ordinates the services using the LEOP Operations Control Centres in Toulouse and Darmstadt, operated by CNES and ESOC respectively, which will provide constellation launch services, using the Galileo Control Centres at Fucino and Oberpfaffenhofen, for the in-orbit control of the satellites and the provision of navigation signals, and the In Orbit Test system at Redu during the validation phase for the satellites launched.

Telespazio France, through its teams in Toulouse and Kourou, will also play an important role in the launch of the third and fourth Galileo satellites. The Telespazio subsidiary will support CNES and Arianespace in managing the launch centre in Guiana, as well as the launch and early orbit operations of the Galileo satellites.



The Galileo programme

Galileo is developed in collaboration between the European Union and the European Space Agency (ESA). Galileo's modern and efficient design will increase Europe's technological independence, and help to set international standards for Global Navigation Satellite Systems (GNSS). These services will be tested beginning in 2014. They will be provided progressively as the constellation grows.

Galileo services

The services offered by the Galileo system differ depending on whether the signals are open or encrypted and can be used according to the needs of the end-user:

Open Service (OS) - This service is based on open signals for all citizens.

Commercial Service (CS) - This service is based on an encrypted signal, enabling the provision of dedicated, commercial services offering location and time information.

Public Regulated Service (PRS) - This restricted-access service provides information on location and time to specific users such as the security forces (police, military) that require high levels of signal reliability and continuity.

Search and Rescue Support Service (SAR) - This service is able to detect emergency signals, relaying them immediately to emergency service centres.

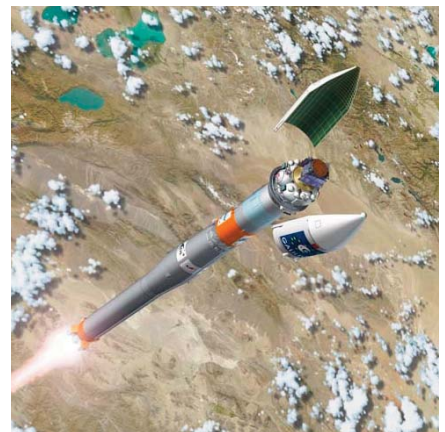
It will be used to manage alerts and locate users who are at risk.

Services and innovative applications

Telespazio is developing a wide range of applications based on Galileo, for civilian use (Open Signal and Commercial Services),

as well as government use (Public Regulated Services). Galileo and EGNOS (European Geostationary Navigation Overlay Service), infrastructure that guarantees satellite navigation enhancement in Europe, will foster the development of applications for land, air, rail and maritime transport, telecommunications, Earth mapping, oil exploration and mining. Telespazio intends to further develop its presence in these service areas, which will also boost the implementations of measures for protecting sensitive areas such as ports, stations and airports. In EGNOS Telespazio will provide system maintenance activities, telecommunications and logistics services. The company will also develop new services in various public and private sectors including highway, rail, and maritime.

For several years, Telespazio has been participating in satellite navigation projects. These include the SENECA programme supported by the Italian Space Agency and ENAV, for preparing Italian Aviation for the widespread use of satellite navigation based on EGNOS, and MEDUSA, a European program for introducing such services in the countries of the Mediterranean basin. Telespazio has also developed solutions for the tracking and tracing of hazardous materials. Italy's leading oil & gas company, ENI, relies on these solutions for the management of over 300 vehicles, in the European projects such as SCUTUM for which Telespazio acts as coordinator.



THE GALILEO CONTROL CENTRE

The Galileo Control Centre (GCC) in Fucino, which was part financed by the Abruzzo region, covers around 5,000 square metres. The GCC handles the transmission of the navigation signal to the satellites, while also guaranteeing the quality of service provided to end users. From the main control room, it is possible to control the orbit of all the satellites in the constellation, managing a network of about 40 ground stations spread right around the globe. The Galileo Control Centre in Fucino houses the Precise Timing Facility (PTF), which contains the atomic clocks that generate the frequency references and the time signals essential for the workings of the entire Galileo constellation. The Precise Timing Facility uses ultra-accurate synchronisation techniques, which also ensure that the Galileo system and GPS are interoperable. Once fully operational, the GCC will monitor the orbit of the Galileo satellites via a main control room and a dozen integrated control rooms manned 24 hours a day by highly skilled personnel.



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