FACT SHEET

Galileo will be Europe's own global navigation satellite system, providing a highly accurate, guaranteed global positioning service under civilian control. It will be inter-operable with GPS and GLONASS, the two other global satellite navigation systems. Galileo's modern and efficient satellite infrastructure will enhance Europe's technological independence.

Galileo is a joint initiative of the European Commission (EC) and the European Space Agency (ESA).

Galileo In-Orbit Validation phase: Validating the overall concept

This phase is aimed at qualifying the Galileo space, ground and user segments through extensive in-orbit/on-ground tests and operations of a core spacecraft constellation and of the associated ground segment.

During this phase, four operational satellites will complement the two experimental satellites (GIOVE-A and GIOVE-B) already in orbit.

The In-Orbit Validation (IOV) architecture is being implemented as an integral part of the Full Operational Capability (FOC), i.e. the complete system, consisting of 30 satellites and a set of remote stations distributed worldwide to command and monitor the constellation and deliver the navigation and timing services to the users. When validated, it will be progressively completed, in a staggered approach, to reach the FOC. As a first step, initial services will be delivered with an initial infrastructure of a constellation composed of the four IOV spacecraft and the 14 satellites ordered to date, and their associated ground segment.



General information about the European Global Navigation Satellite Systems

www.satellite-navigation.eu
www.esa.int/nav
ec.europa.eu/enterprise/policies/satnav
www.gsa.europa.eu/go/galileo

Further information

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Facts and figures

The four spacecraft

Mass	Approx. 700 kg
Size with solar array stowed	3.02 x 1.58 x 1.59 m
Size with solar array deployed	2.74 x 14.5 x 1.59 m
Design lifetime	Over 12 years
Available power	1.420 W (sunlight)/1.355 W (eclipse)
Orbit	Medium Earth Orbit
Altitude	23 222 km
Orbit inclination	56 deg.

Payload

The payload consists in a complete navigation chain generating and broadcasting the different navigation signals of Galileo in L-band. The two rubidium atomic clocks and two hydrogen passive maser clocks are the most complex elements of the payload. Both highly stable clocks are the key to obtaining high-quality navigation signals.

The ground segment

- Two Ground Control Centres (GCC) working in 'Split GCC' mode:
  - Fucino (Italy) GCC will host and operate the GMS (Ground Mission Segment)
  - Oberpfaffenhofen (Germany) will host and operate the GCS (Ground Control Segment)
- A network of sensor stations providing the coverage for orbitography and synchronisation measurements;
- A network of uplink stations ensuring the uplink of the navigation data;
- Two TT&C stations ensuring the control of the constellation;
- A global data dissemination network to interconnect all the ground facilities.

Launches

The four satellites will be launched in pairs by two Soyuz launchers from the Guiana Space Centre (CSG), Kourou, French Guiana.

IOV Contractors

Space segment:	EADS Astrium GmbH (DE) as satellite prime, with Thales Alenia Space Italy as subcontractor for satellite AIT.
Operations segment:	Spaceopal, a company created by DLR (DE) and Telespazio (IT)
System support activities:	Thales Alenia Space
ItalyGround mission segment:	Thales Alenia Space France
Ground control:	EADS Astrium (UK)
Test user segment:	Thales Avionics (FR) and Septentrio (BE)
Global data network:	British Telecom (UK)