Galileo and EGNOS programmes

European Commission

GALILEO EGNOS

Navigation solutions powered by Europe

European contributions to GNSS

Navigation solutions powered by Europe

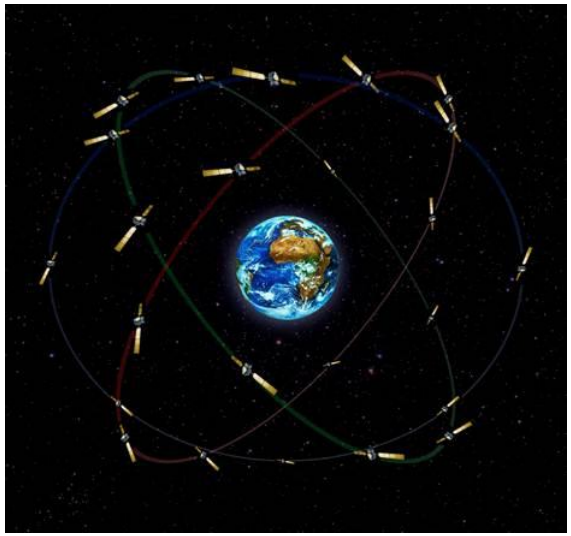
- Europe has set ambitious political objectives to contribute to the provision of satellite navigation services to the world
- Two major complementary programmes are running in parallel:
  - Galileo
  - EGNOS
- Both programmes are managed by the European Commission under fully public funding.


GALILEO

Europe needs Galileo

Galileo enhances Europe's technological independence

- The first global satellite positioning, navigation, and timing system, designed and operated under civil control
- As of 2008, financed entirely by the European Union and managed by the European Commission
- Provides Europe independence from other similar systems and greater robustness
- Targeted to be interoperable with other GNSS to facilitate their combined use and to offer better performances for all kinds of user communities worldwide



GNSS: Global Navigation Satellite System

Galileo services

Navigation solutions powered by Europe

Open Service (OS)	Freely accessible service for positioning, navigation and timing	
Public Regulated Service (PRS)	Encrypted service designed for greater robustness and higher availability	
Search and Rescue Service (SAR)	Assists locating people in distress and confirms that help is on the way	
Commercial Service (CS)	Delivers authentication and high accuracy services for commercial applications	

The former "Safety-of-Life" service is being re-profiled:

Integrity Monitoring Service	Provides vital integrity information for life-critical applications	


EGNOS

EGNOS services will be delivered on a long-term basis

Open Service (OS)	Accuracy ~1m, free	Available since October 2009	
Safety of Life Service (SoL)	Accuracy ~1m, compliant to aviation standards	Available since March 2011	
EGNOS Data Access Service (EDAS)	Accuracy <1m, corrections provided by terrestrial networks	Available since July 2012	

Quite a feat !

REGULATION (EU) No 1285/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

of 11 December 2013

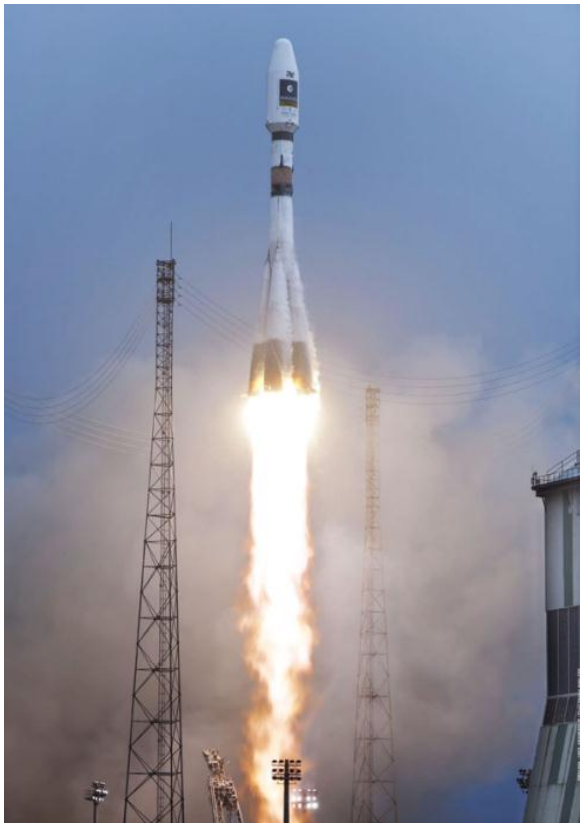
on the implementation and exploitation of European satellite navigation systems and repealing Council Regulation (EC) No 876/2002 and Regulation (EC) No 683/2008 of the European Parliament and of the Council

- ✓ A stable 7 years perspective
- ✓ A subtantial budget
- ✓ A new governance scheme driven by exploitation

2014-2020

- ❑ **1,930 B€ for Galileo Deployment**
- ❑ **3 B€ for Galileo Exploitation**
- ❑ **1,580 B€ EGNOS Exploitation**

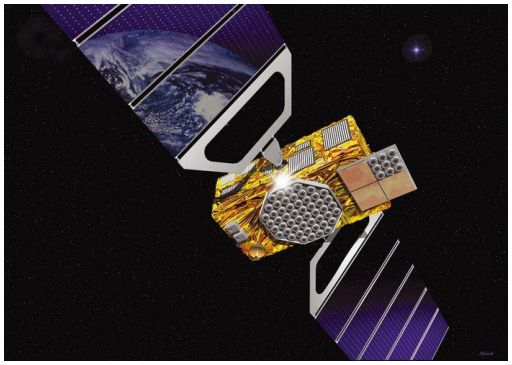
Galileo launches



- First four satellites (IOV) launched in 2011 and 2012
- Satellite 5 & 6 are recovered and safe on improved orbits
- Satellite 7 & 8 launched on 27 March 2015
- Satellite 9 & 10 launched on 11 September 2015
- 26 satellites to be launched by 2018

One big step…

- ★ The final review of Galileo In Orbit Validation Phase was successfully concluded in the beginning of 2014
- ★ The programme is now in its full operational capability phase



Galileo implementation plan

Galileo is implemented in a step-wise approach

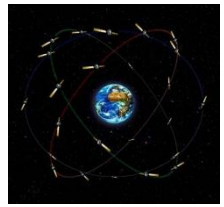
By 2020 Galileo will be:

- ★ fully deployed and recognised
- ★ adopted by the widest user communities
- ★ a civilian infrastructure delivering robust positioning and timing services with high degree of performances

Full Operational Capability
Full services, 30 satellites

Initial Operational Capability
Initial services

2016

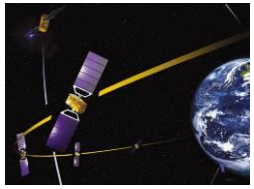


In-Orbit Validation
4 fully operational satellites and ground segment

2013

GIOVE A/B
2 test satellites

2005/2008



Galileo System Testbed v1
Validation of critical algorithms

2003

Galileo intends to deliver high quality and reliable services to the world and plans to continue introducing innovative features over time

- In the near future, most communities will be targeting service levels only available through multi-constellation services

- It is therefore important to:
  - -Continue improving signal compatibility and service interoperability with other providers
  - -Cooperate for multi-constellation service provision

★ GNSS Cooperation between The European Union & China

The Commission priorities

- Deploying the infrastructure
- Providing services as they come on stream
- Establishing Galileo in the market

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Thank you for your attention

http://ec.europa.eu/galileo
http://ec.europa.eu/egnos