



The European GNSS Programmes EGNOS and Galileo

6th ICG Conference
Pieter De Smet
European Commission
5 September 2011

Directorate-General
for Enterprise
and Industry



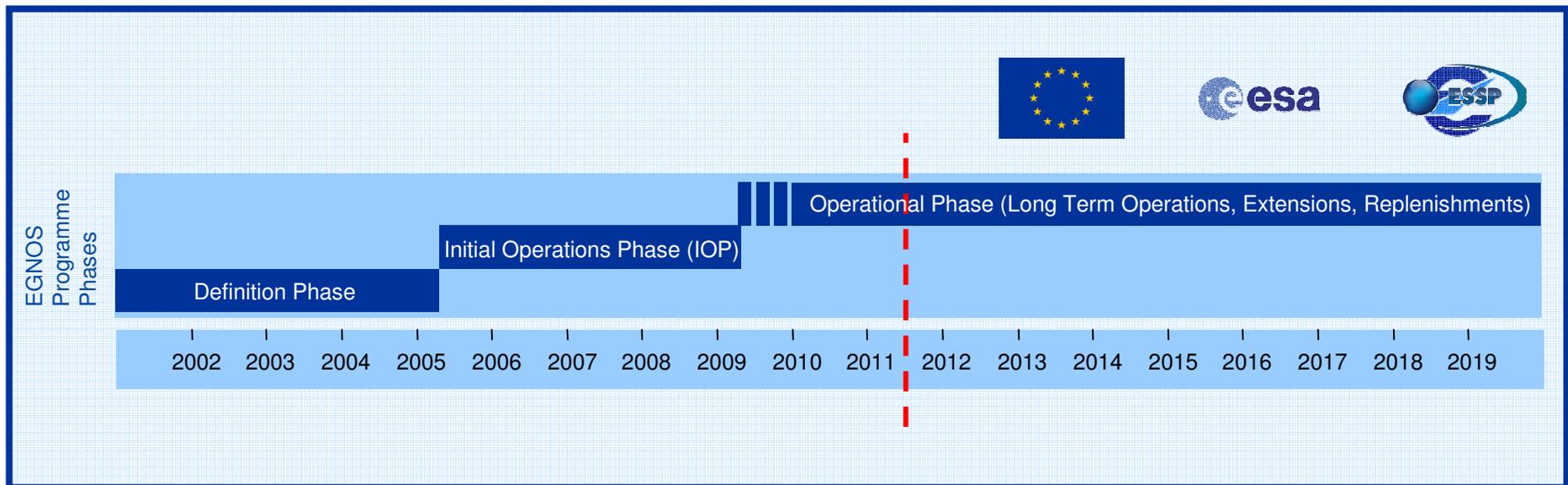
Navigation solutions powered by Europe

- ★ **1. State of Play of EGNOS**
- ★ **2. State of Play of Galileo**

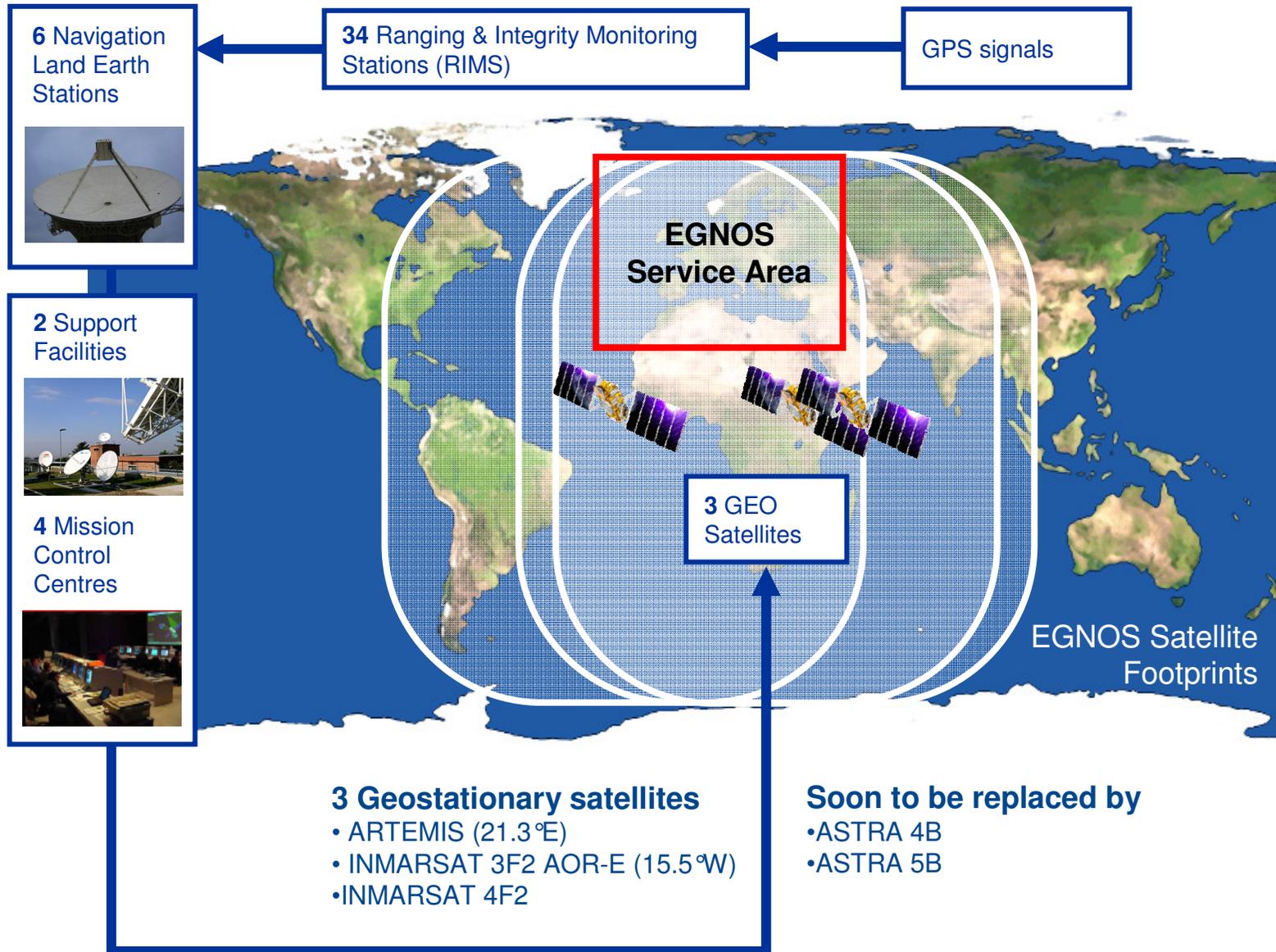
EGNOS

‘It’s there, use it’

EGNOS is delivering a free Open Service since October 2009 and a Safety-of-Life Service for aviation since March 2011



EGNOS System Architecture and Service Area

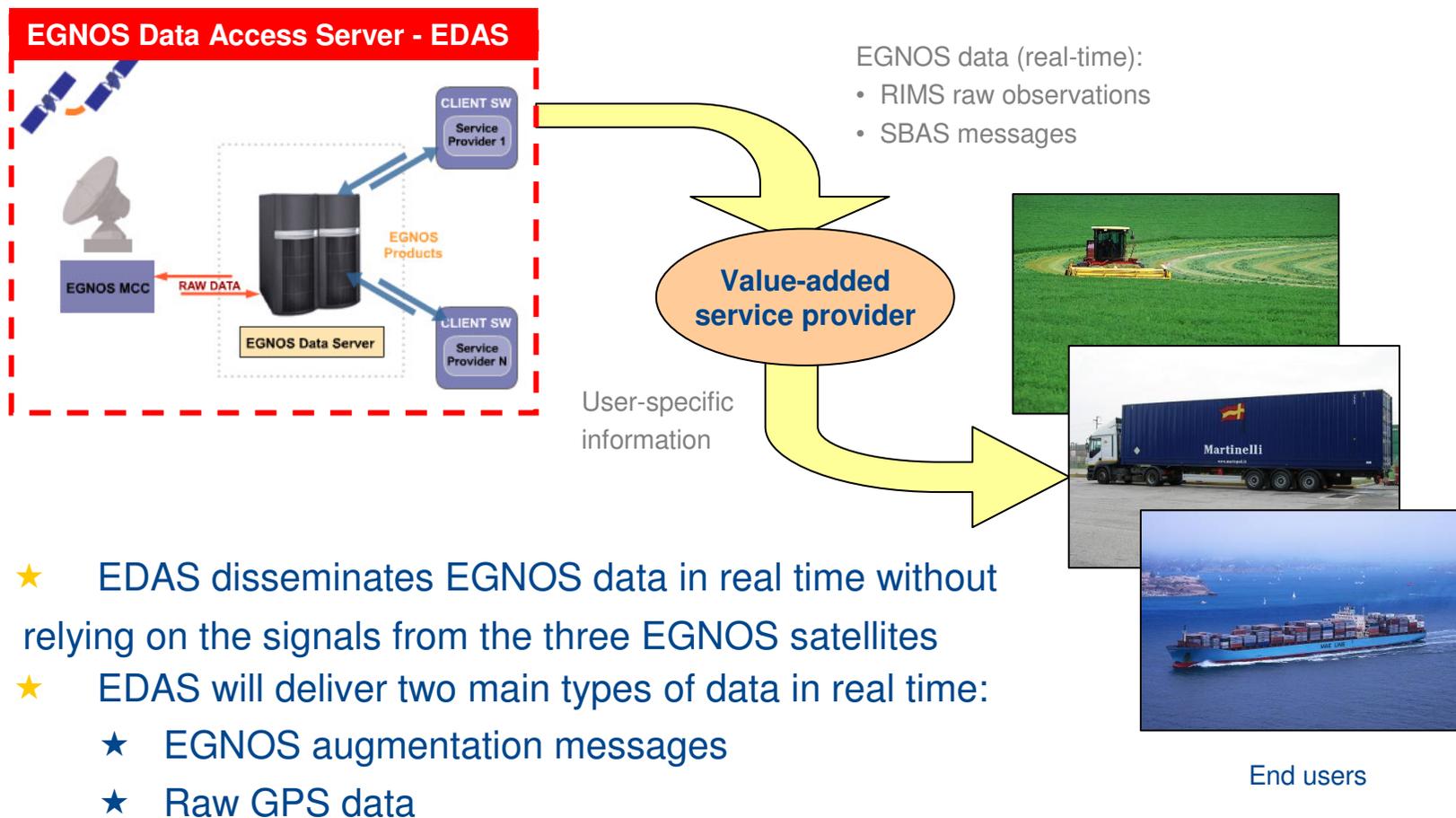


EGNOS will deliver its services on a long-term basis (>20 years)

Service	Characteristics	Service Status	
Open Service	accuracy ~1m, free	available since October 2009	
Safety of Life Service	accuracy ~1m, compliant to aviation standards	Available since March 2011	
Commercial Service (EDAS)	accuracy <1m, corrections are provided by terrestrial networks	experimental service since 2008; official service to be made available in 2012	

EDAS: EGNOS Data Access Server

The EGNOS commercial service (EDAS) will be made available in 2012



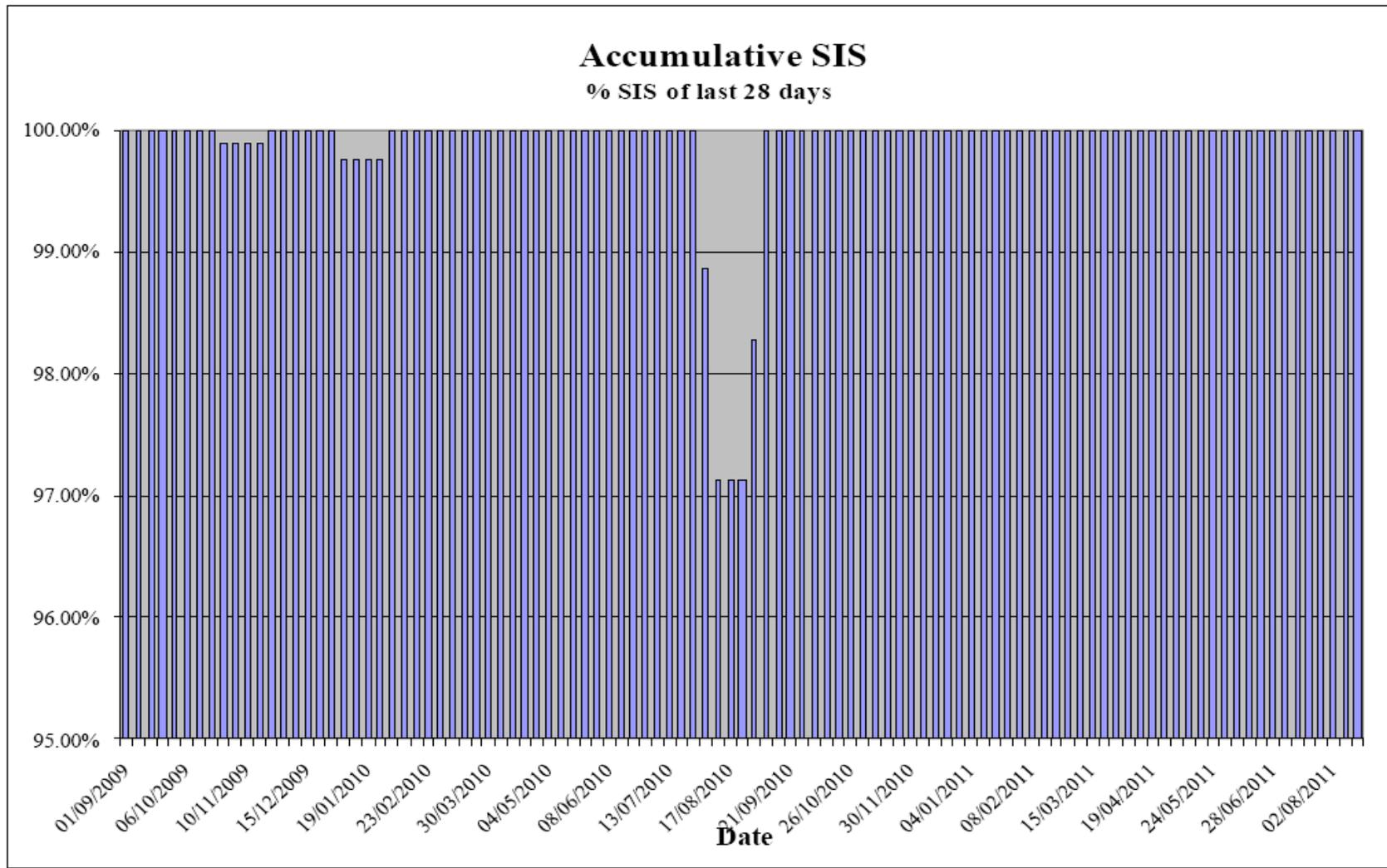
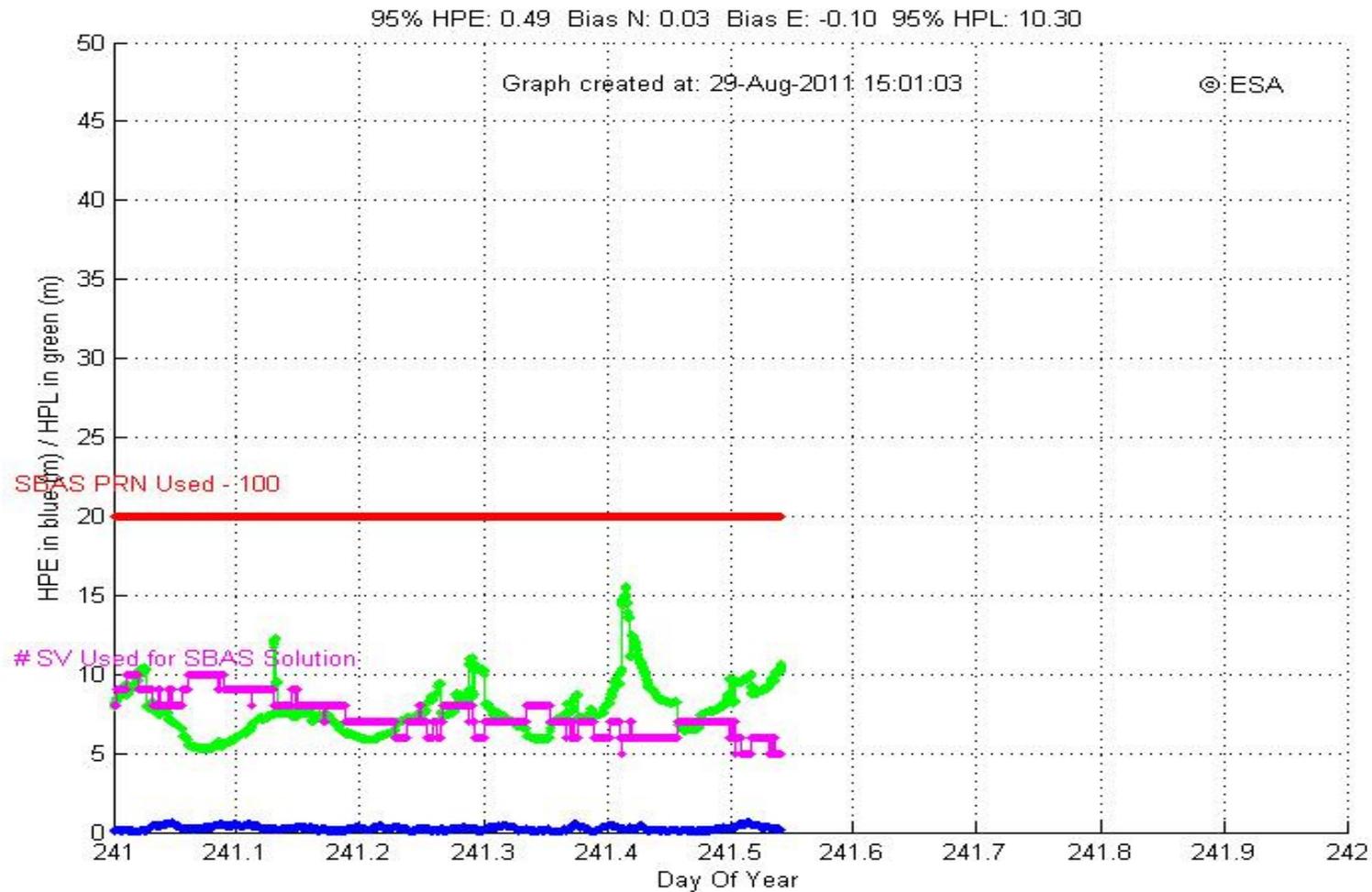


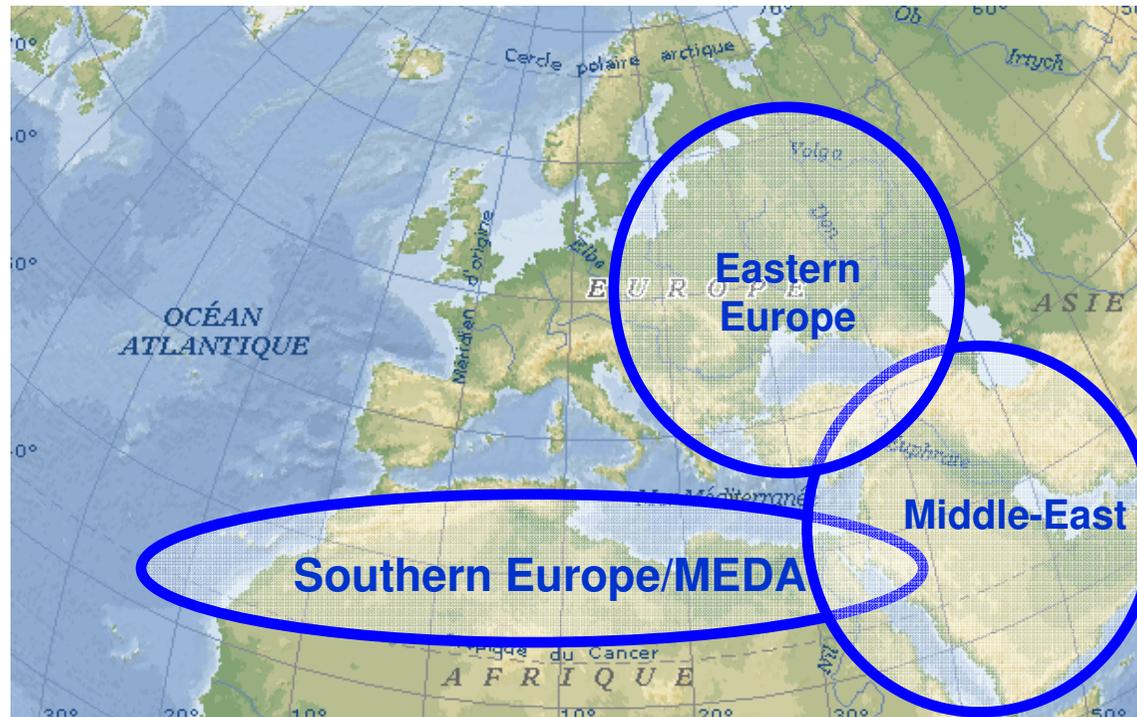
Figure 3 - Operational SIS Broadcast since September 1st 2009



- ★ With around 1 m (blue line), the measured Horizontal Precision Error for the centre of Europe is consistently better than the requirements

HPE in blue: Horizontal Precision Error, HPL in green: Horizontal Protection Level

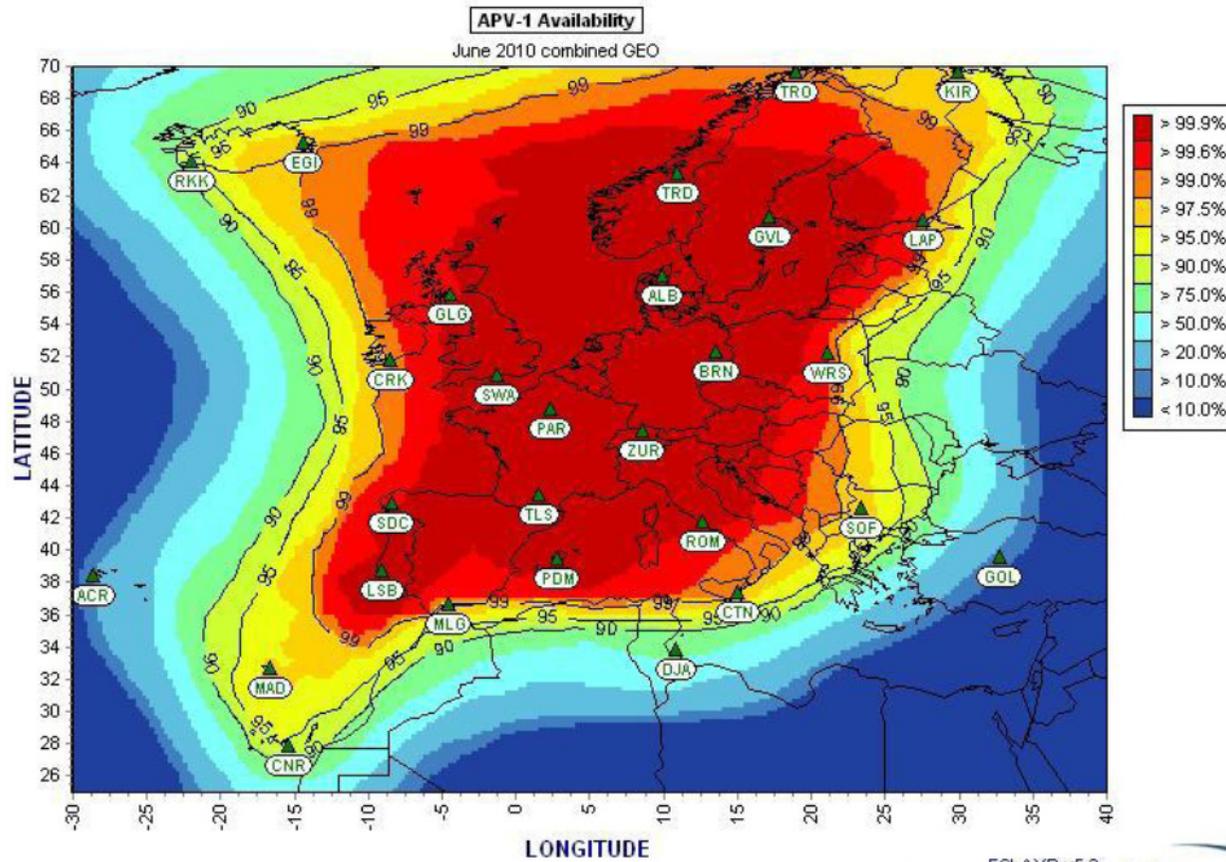
Plans to extend the use of EGNOS are being considered



Depending on the extension area, technical implementation may vary from:

- ★ Homogeneous extension with deployment of additional RIMS
- ★ Regional infrastructure including additional processing capabilities

The deployment of additional RIMS in Eastern Europe, Southern Europe, Northern Africa and the Middle East will increase the availability area of APV-1



ECLAYR v5.2
Produced by ESSP SAS



APV: Approach with vertical guidance

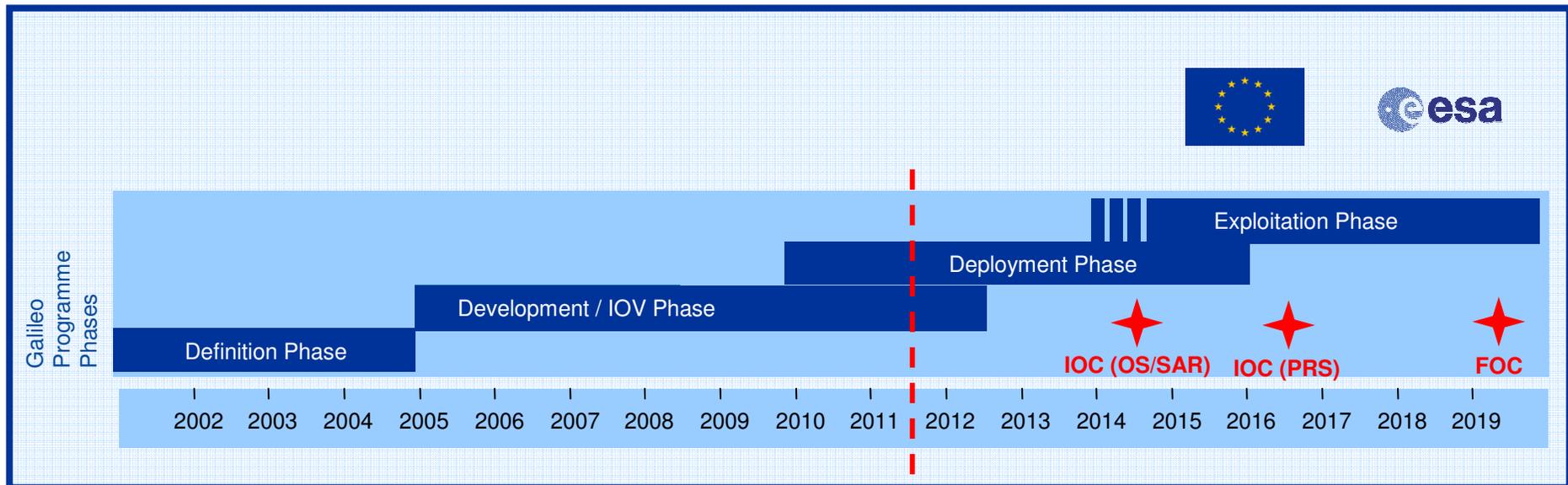
EGNOS has entered into its operational phase

- ★ Transfer of management of the EGNOS program and assets to the European Union in April 2009
- ★ Long-term service provision contract was signed in September 2009 with ESSP
- ★ **Open Service** declaration took place in October 2009
- ★ Certification of ESSP as air navigation services provider in July 2010
- ★ **Safety-of-Life Service** declaration took place on 2 March 2011
- ★ Seventeen approach (APV) procedures put in place in the EU in 2011



Navigation solutions
powered by Europe

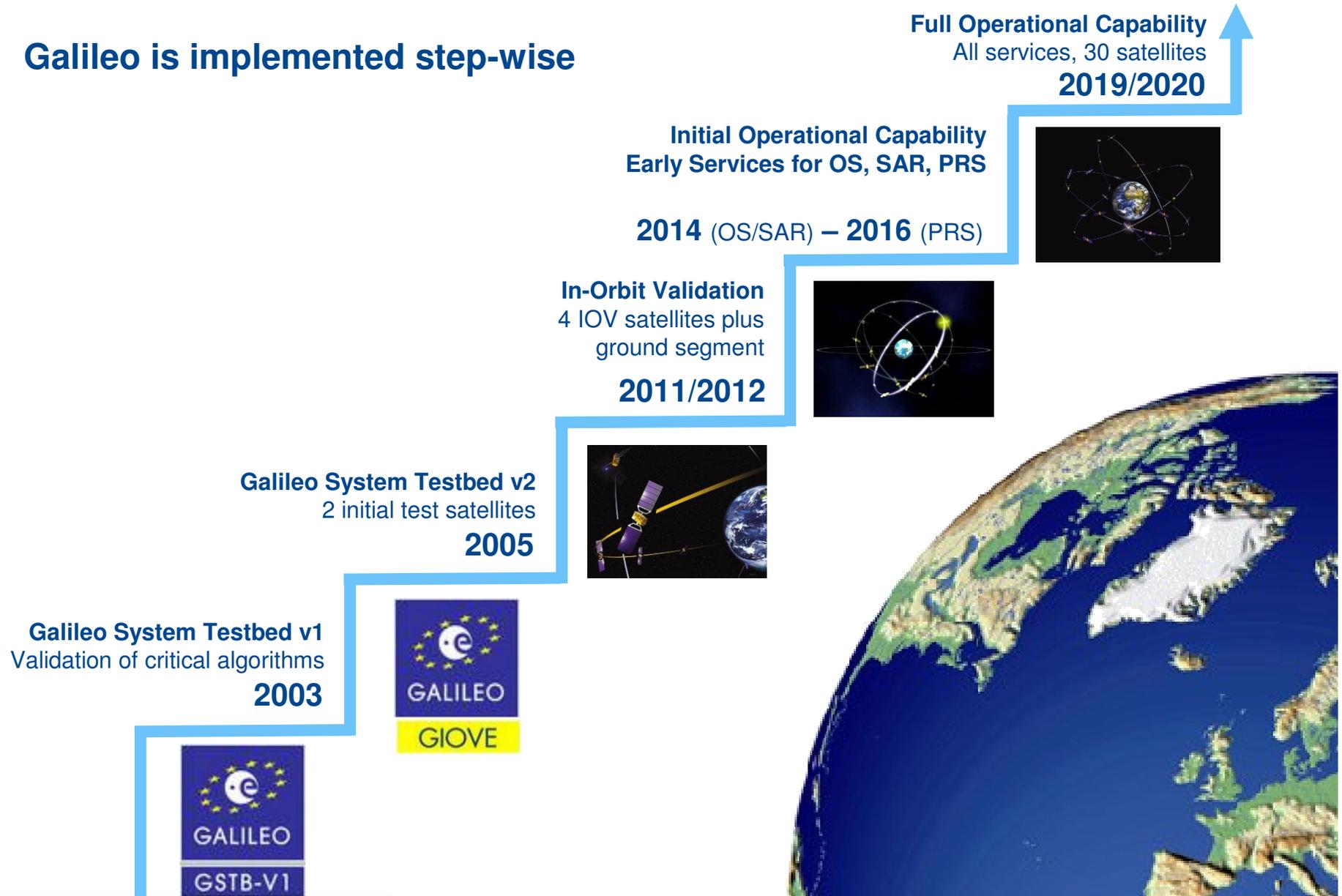
Galileo is moving from the development phase (IOV) to the deployment phase



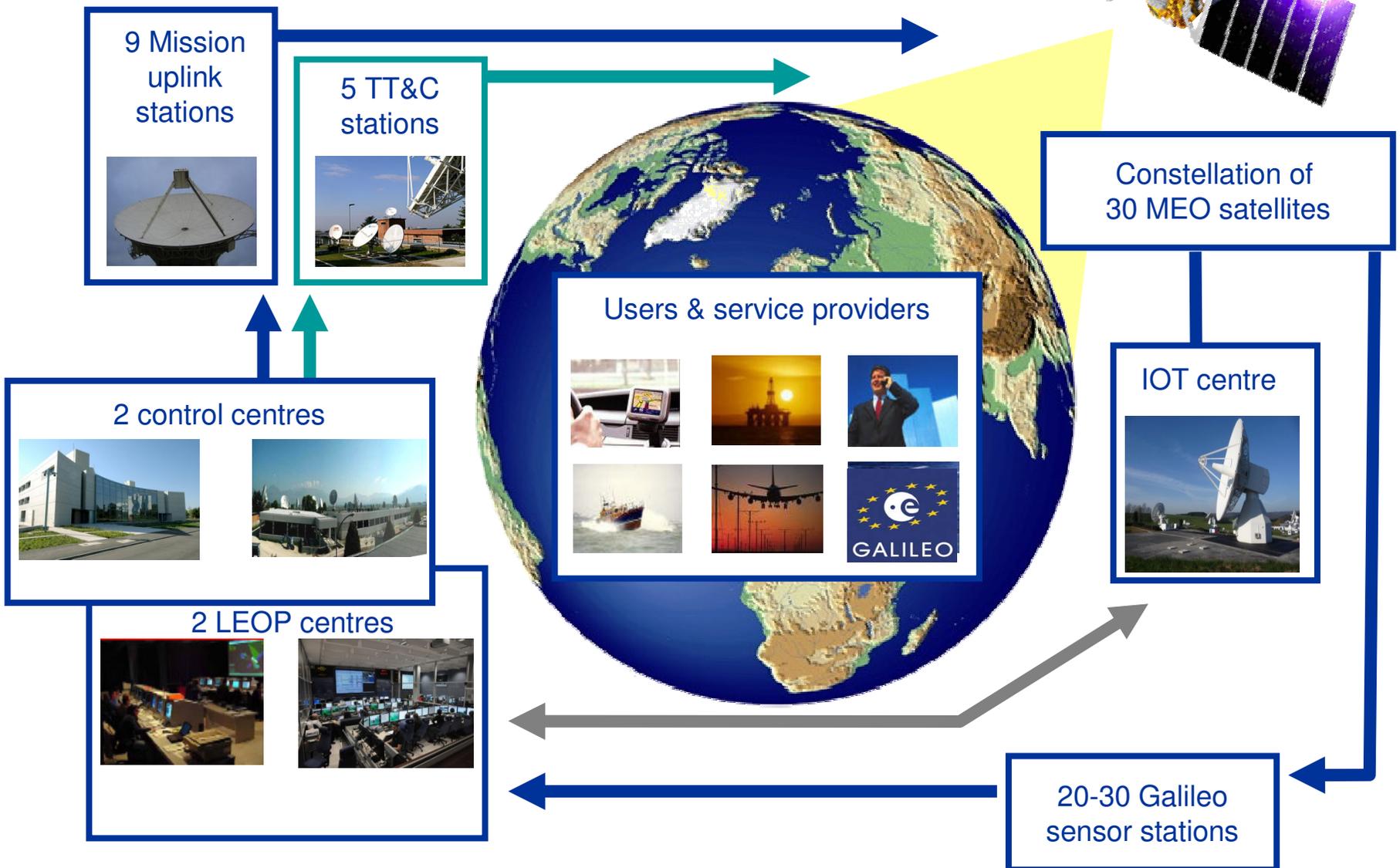
IOC: Initial Operational Capability (Early Services)
FOC: Full Operational Capability (Full Services)

Galileo Implementation Plan

Galileo is implemented step-wise



Galileo System Architecture



An early OS and an early SAR Service will be provided by 2014. An early PRS will be provided by 2016.

Open Service	Free to air, mass market, simple positioning	
Public Regulated Service	Encrypted, robust, continuous availability	
Search and Rescue Service	Near real-time, precise, return link	
Commercial Service	Encrypted, high accuracy, added-value service	

A decision to re-profile SoL has been taken

Safety of Life Service	Adds integrity to Open Service	
-------------------------------	--------------------------------	---

The decision to re-profile Galileo SoL has been taken

- ★ As of 2 March 2011 EGNOS delivers a SoL service on a regional basis, used mainly by Aviation users
- ★ Galileo/SoL foresees service provision on a global scale

But

- ★ Lack of interoperability with other existing solutions
- ★ Need to add to the complexity of Galileo system infrastructure

Lead to the decision to re-profile SoL

- ★ 2013/2014: Endorse implementation of new Galileo SoL

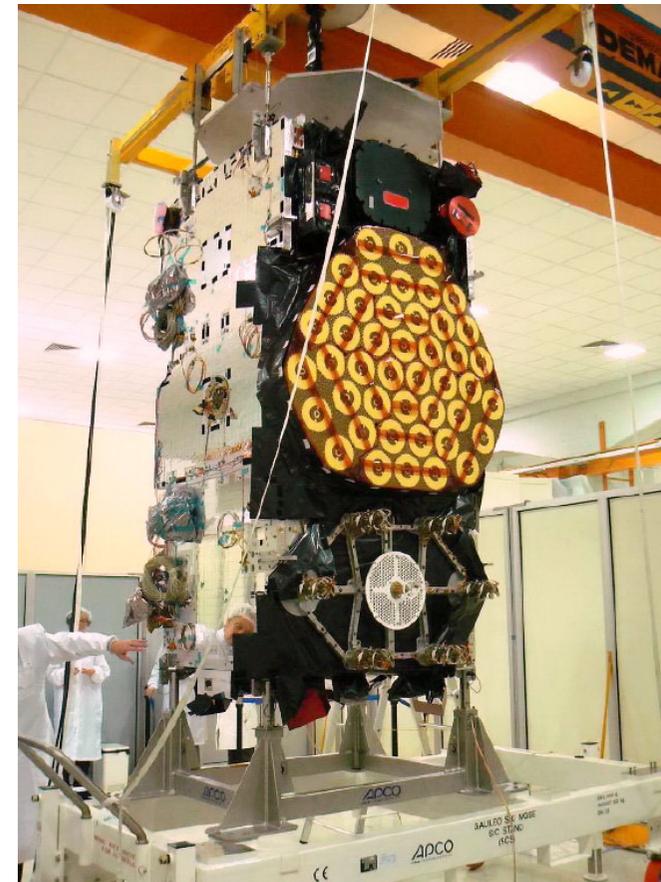
The Galileo Open Service will offer an accuracy better than 4 metres (horizontal)

Service	Horizontal Accuracy (95%) (incl. system margins)	Vertical Accuracy (95%) (incl. system margins)	Availability for global coverage	Integrity
Open Service	4 m	8 m	> 99.5%	NO
Commercial Service	Detailed performance requirements under elaboration			
Safety of Life Service	4 m	8 m	> 99.5%	YES (LPV200)
Public Regulated Service	4 m	8 m	> 99.5%	NO

Note: Guaranteed performance in the worst case situation. Actual measured performance is expected to be higher than these requirements

Galileo Satellites

The first satellites are currently being integrated and tested.



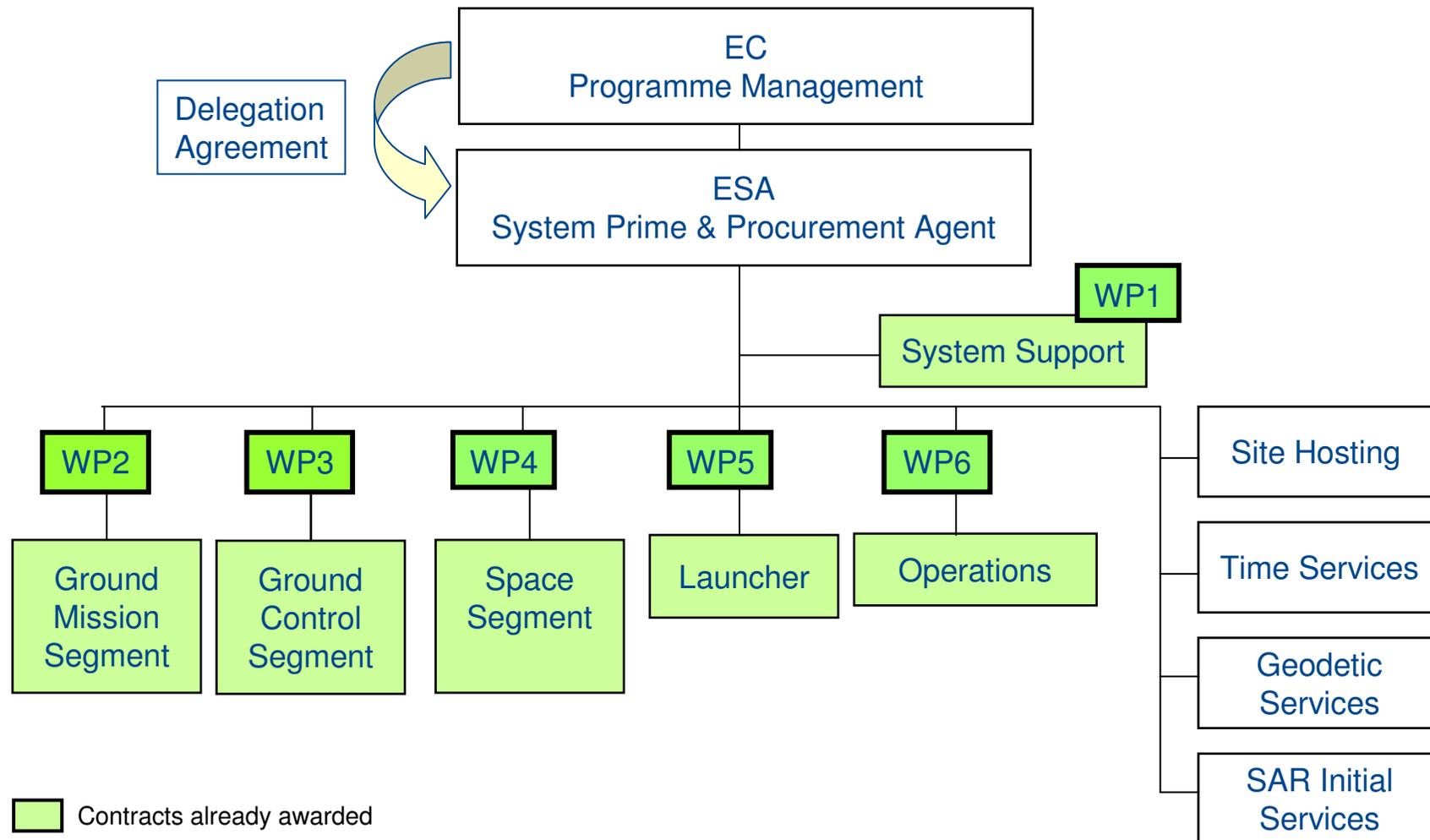
Credits: ESA

Galileo Launchpad in Kourou

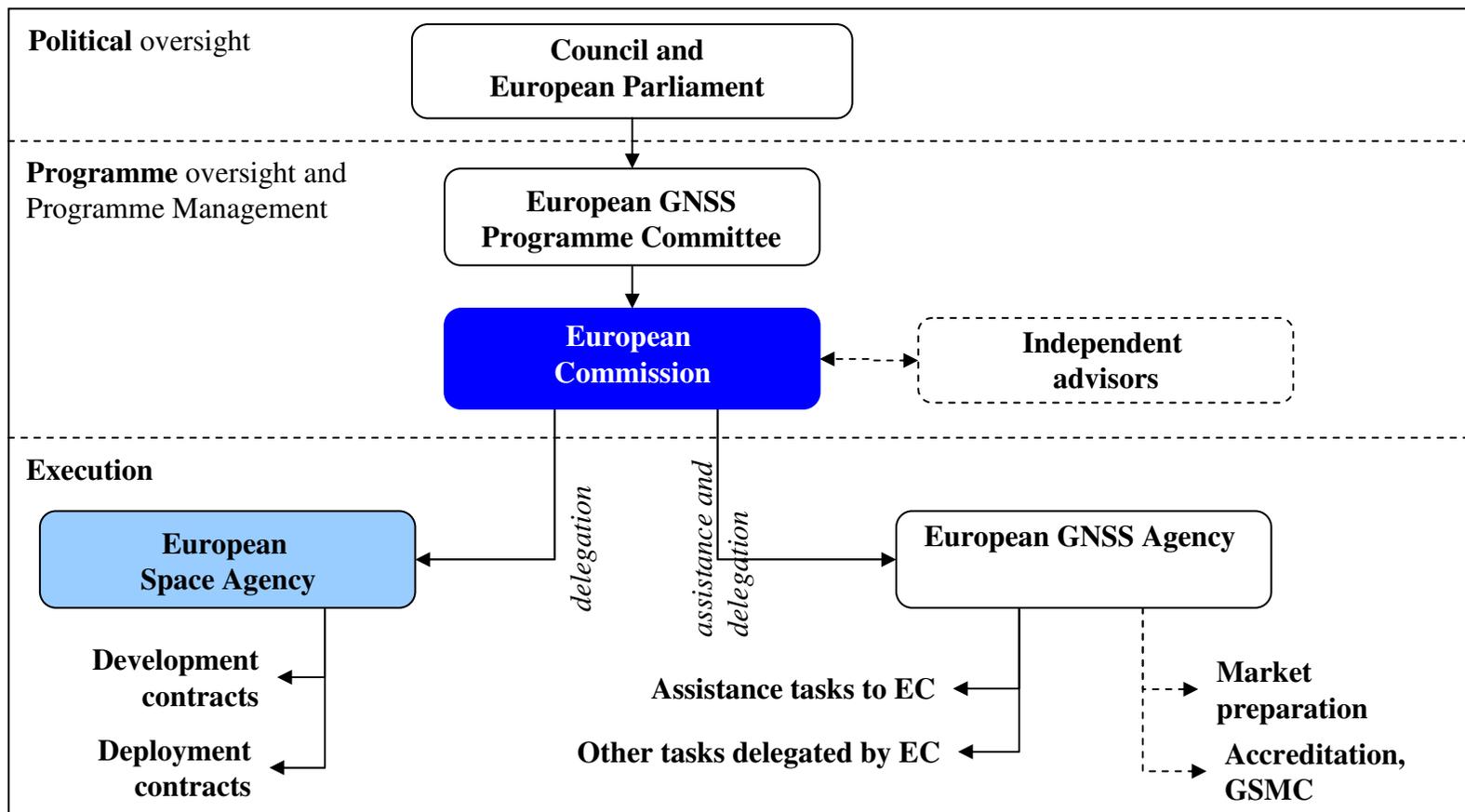
Infrastructure and launcher are getting ready for the first launch on 20 October 2011



Galileo FOC Procurement



The GNSS Regulation entrusts the European Commission with the role of programme manager





EGNOS has entered its operational phase

- ★ EGNOS open service since Oct 2009
- ★ EGNOS safety-of-life service since March 2011

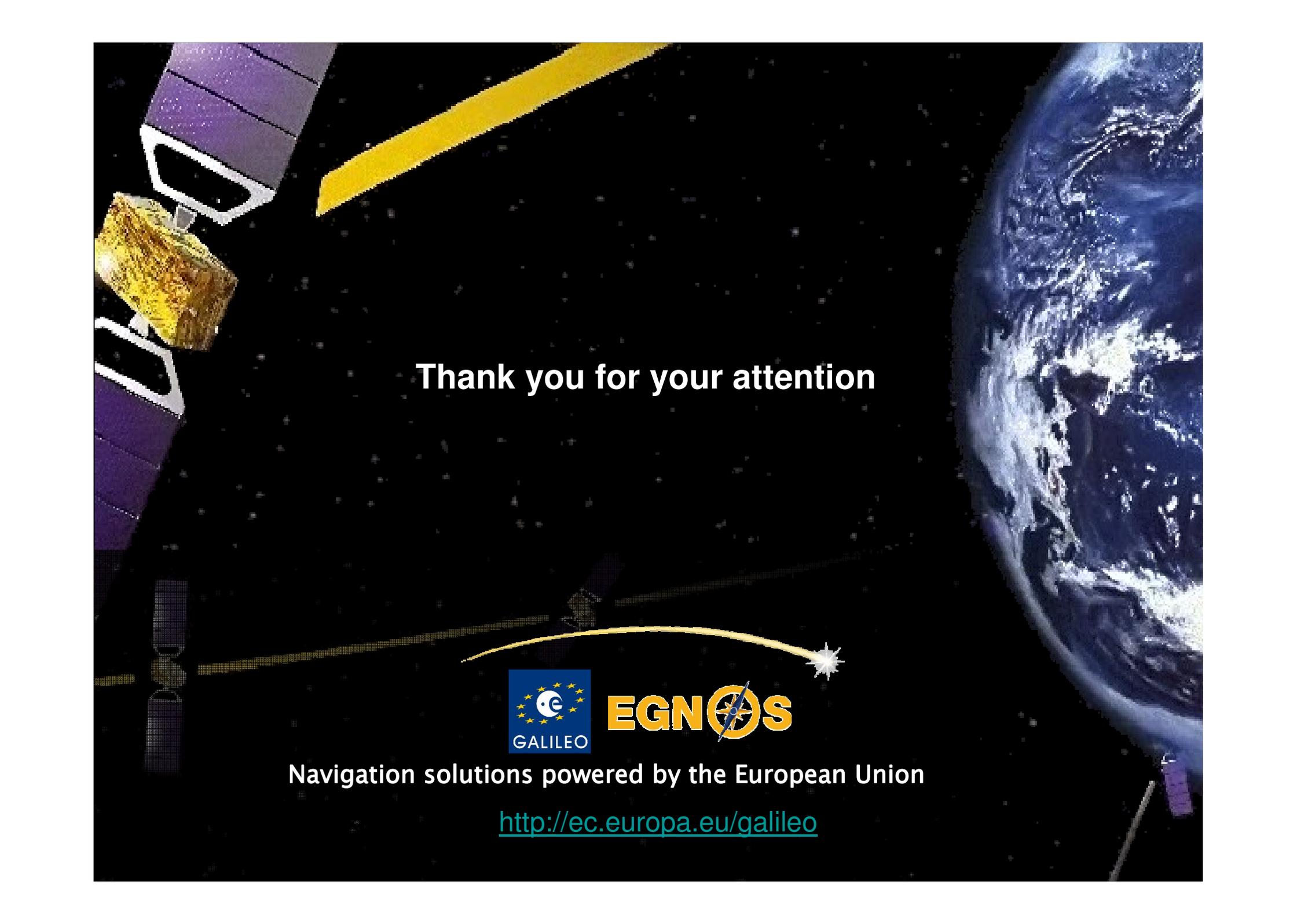


Galileo is progressing, at the crossing between the development (IOV) and deployment phases

- ★ GIOVE-A, GIOVE-B missions ongoing
- ★ FOC procurement ongoing
- ★ First operational IOV satellites in 2011
- ★ Early Galileo OS/SAR services by 2014
- ★ Early Galileo PRS service by 2016

International coordination is key

- ★ Ensure compatibility with other GNSS as a minimum
- ★ Achieve interoperability when desired

A satellite is shown in space, with the Earth visible in the background. The satellite has a yellow antenna and a purple solar panel. The Earth is blue and white, showing clouds and oceans. The text "Thank you for your attention" is centered on the image.

Thank you for your attention



EGNOS

Navigation solutions powered by the European Union

<http://ec.europa.eu/galileo>