



The European Satellite Navigation Programmes

EGNOS and Galileo

Dominic HAYES, European Commission

WG-A Meeting, Olsztyn, July 2012

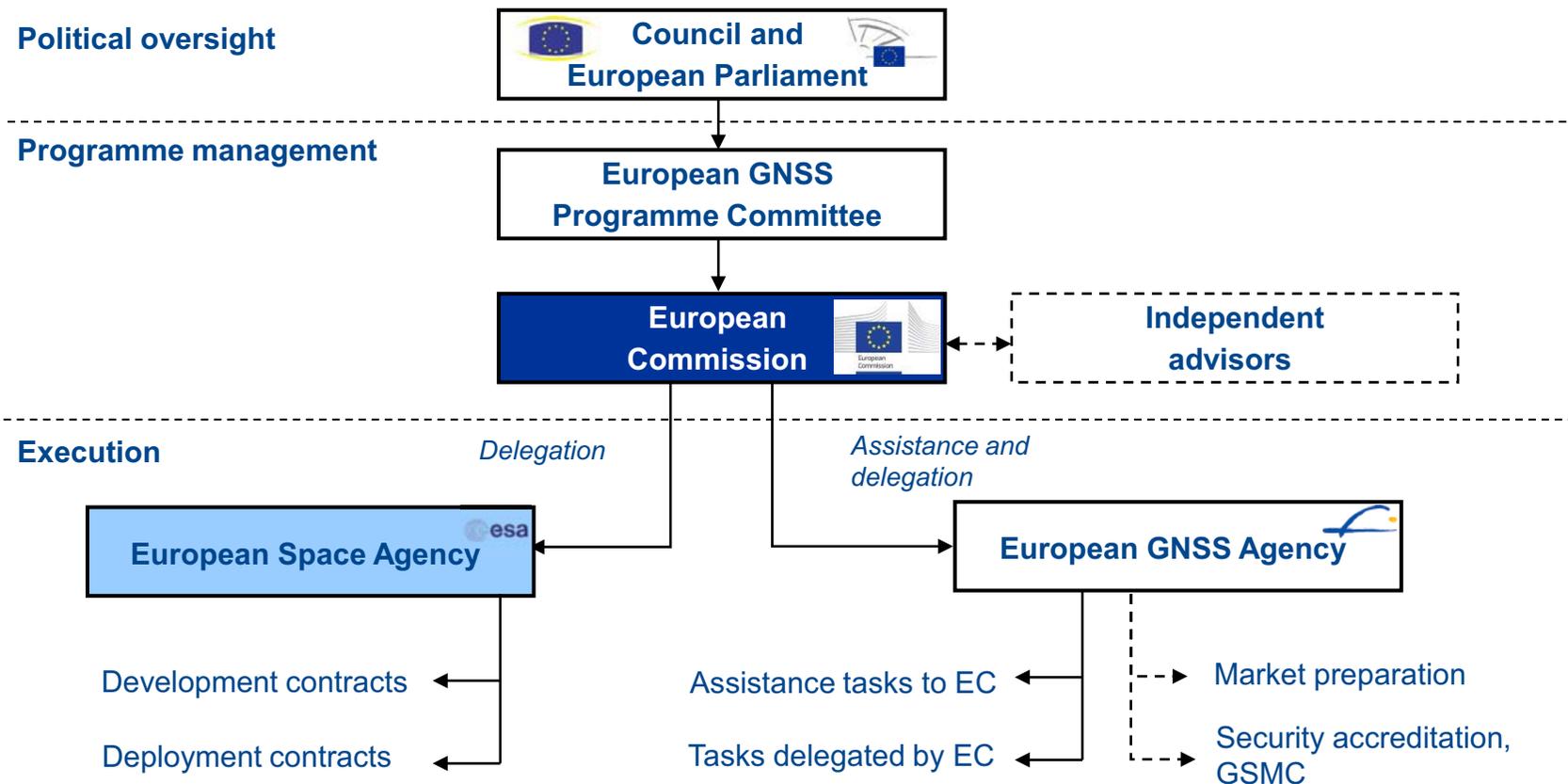




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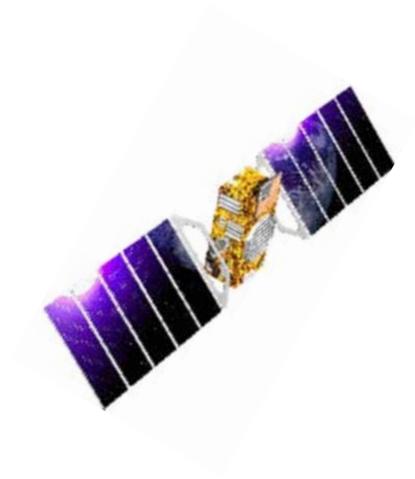


The GNSS Regulation entrusts the European Commission with the role of programme manager



Galileo implementation plan

**Galileo is implemented
in a step-wise approach**



Galileo System Testbed v1
Validation of critical algorithms
2003



GIOVE A/B
2 test satellites
2005/2008



In-Orbit Validation
4 fully operational satellites
and ground segment
2012



Initial Operational Capability
Early services for OS, SAR
Pilot project for PRS and demonstrator for CS
2014



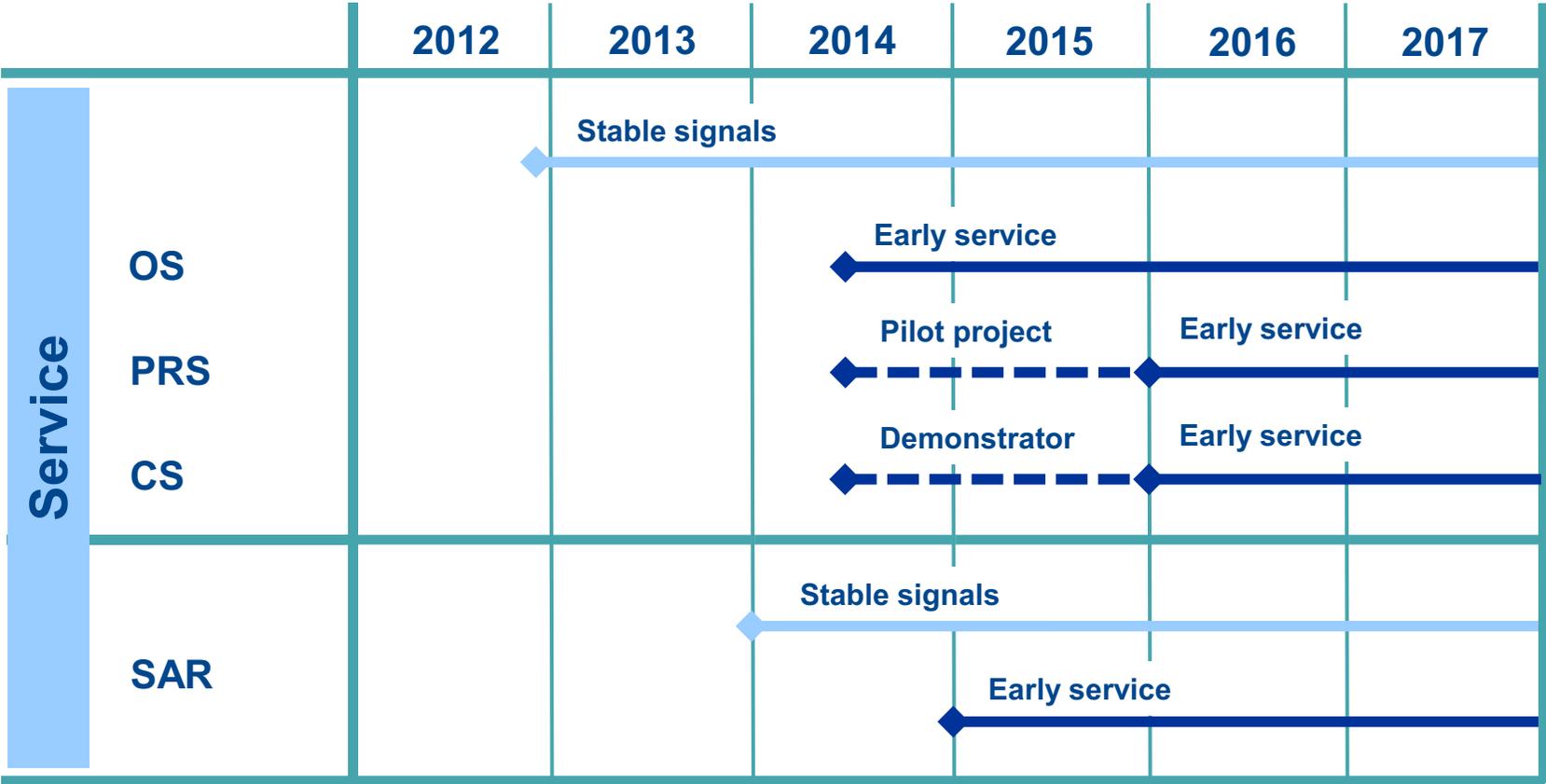
Full Operational Capability
Full services, 30 satellites
2018



Galileo services provision timeline



Early services will be provided from 2014 with a gradual transition towards full services as more satellites become available



Early services for OS and SAR will be provided from 2014

Open Service (OS)	Freely accessible service for positioning 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 SoL service is currently being re-profiled

Safety of Life Service (SoL)	Provides vital integrity information for life-critical applications	
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Galileo is taking off



- ★ First 2 **operational satellites** launched 21 October 2011 (in addition to the two test satellites launched in 2005 and 2008)
- ★ New satellites transmitted E1 signals 10 December 2011, and E5, E5a and E5b signals 14 December
 - ★ (existing E1, E5, E6 signals from GIOVE-A since December 2005)
- ★ The launch of the next two Galileo satellites, completing the IOV quartet, is scheduled for **October 2012**.
- ★ All **industrial contracts** necessary to ensure early Galileo services in 2014 have been signed
- ★ To **accelerate Galileo's deployment** and to further contain costs, the following contracts were signed on 2 February 2012:
 - ★ Additional order for 8 satellites
 - ★ Adaptation of Ariane-5 for Galileo (4 sats/launch)
 - ★ Booking of one Ariane-5



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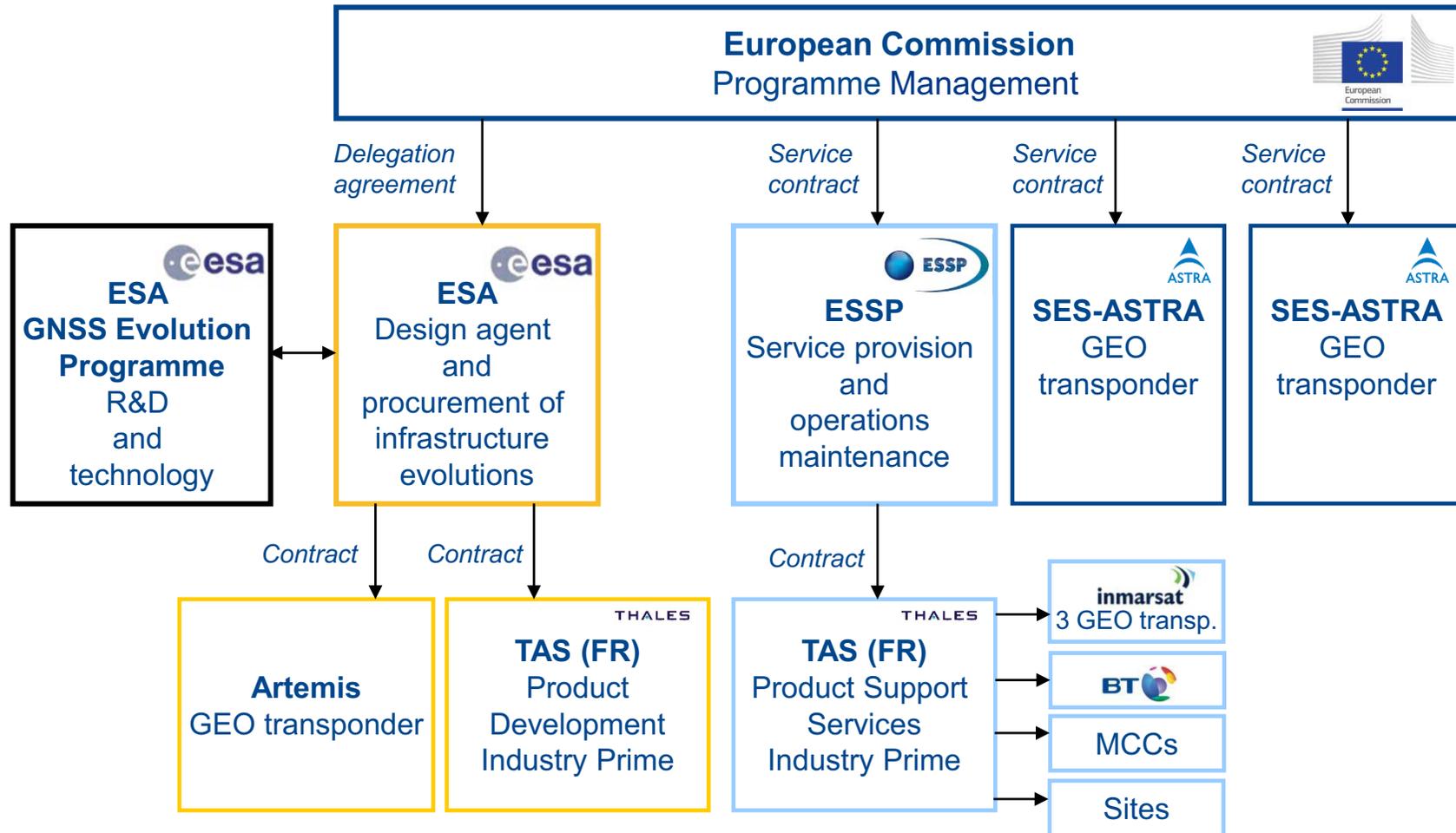
EGNOS

'It's there, use it'

EGNOS organisation



The European Commission is the EGNOS programme manager



GEO: Geostationary Earth Orbit MCC: Mission Control Centre

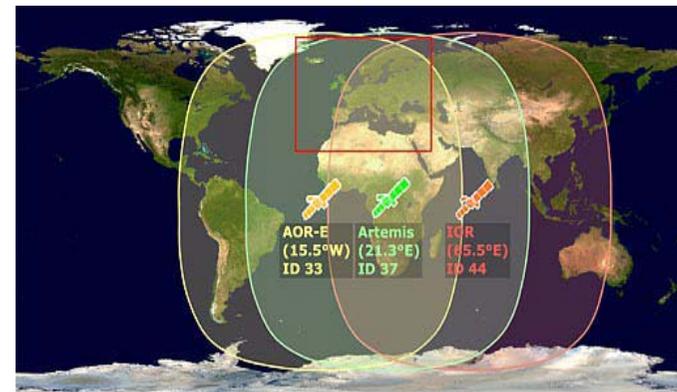
EGNOS services will be delivered on a long-term basis (> 20 years)

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	Experimental service since 2008	

EGNOS is fully operational



- ★ **EGNOS open service is operational** since October 2009
- ★ Its **Safety of Life** service has been declared operational in March 2011
- ★ In May 2011, Pau Pyrénées airport (France) became **Europe's first airport to use the EGNOS Safety of Life service** to guide in aircraft for landing
- ★ Since December 2011, the EGNOS-based LPV procedures at Alderney airport (Channel Islands) are the first in Europe able to being used for **revenue services in commercial flights**
- ★ Around **100** EGNOS approach procedures for aircraft landings already published in Europe
- ★ New EGNOS payload was launched July 2012 (hosted on SES-5 satellite)



LPV: Localizer Performance with Vertical guidance

EGNOS services will further improve over time

2012

- ★ Declare EGNOS coverage extension for 11 EU countries*
- ★ Provide early EGNOS Data Access Service (EDAS)

Medium term

- ★ Implement LPV200 service level
- ★ Extend coverage to South Africa

Long term

- ★ Make use of E5a/E5b frequencies
- ★ Implement augmentation of Galileo and potentially other GNSS

LPV: Localizer Performance with Vertical guidance
* CZ, EE, HU, IE, LV, LT, PT, RO, SK, ES, UK