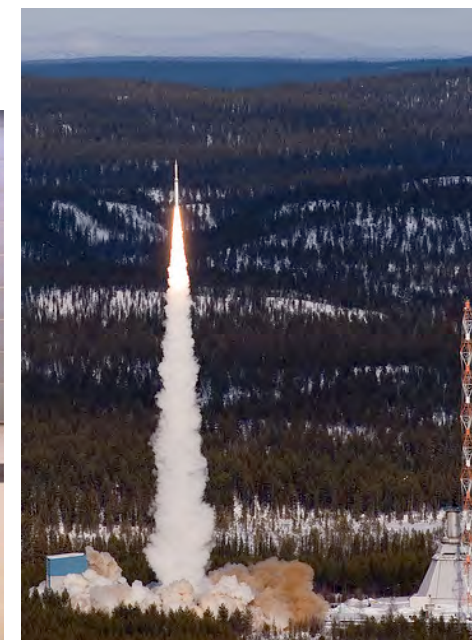
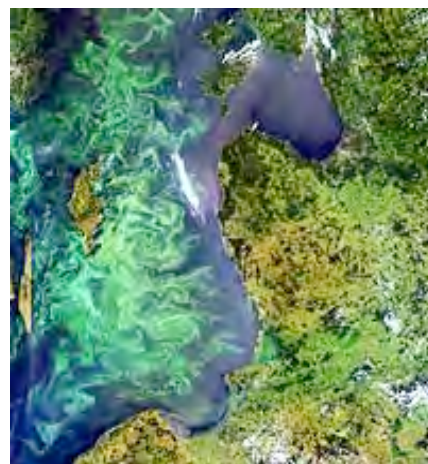
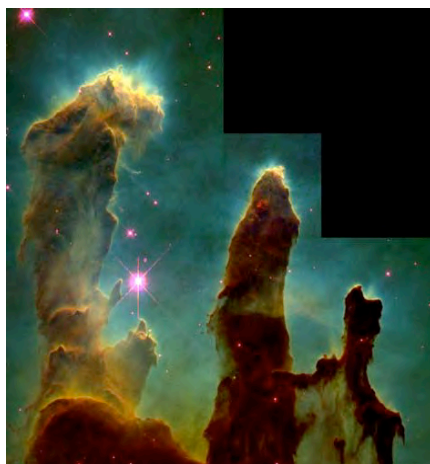


# Rymdstyrelsen

Olle Norberg  
Generaldirektör



# SNSB – Rymdstyrelsen

Agency under the Ministry of  
Education and Research

18 employees + Christer

Funding: 900 Mkr/year

Admin cost: 26 Mkr/year



Christer Fuglesang on  
secondment from ESA to  
SNSB (20%) and KTH (80%)







→ SERVING EUROPEAN  
COOPERATION  
AND INNOVATION

[www.esa.int](http://www.esa.int)

European Space Agency

## 20 MEMBER STATES AND GROWING



**ESA has 20 Member States: 18 states of the EU (AT, BE, CZ, DE, DK, ES, FI, FR, IT, GR, IE, LU, NL, PT, PL, RO, SE, UK) plus Norway and Switzerland.**

Eight other EU states have Cooperation Agreements with ESA: Estonia, Slovenia, Hungary, Cyprus, Latvia, Lithuania, Malta and the Slovak Republic. Bulgaria is negotiating a Cooperation Agreement. Discussions are ongoing with Croatia.

Canada takes part in some programmes under a long-standing Cooperation Agreement.

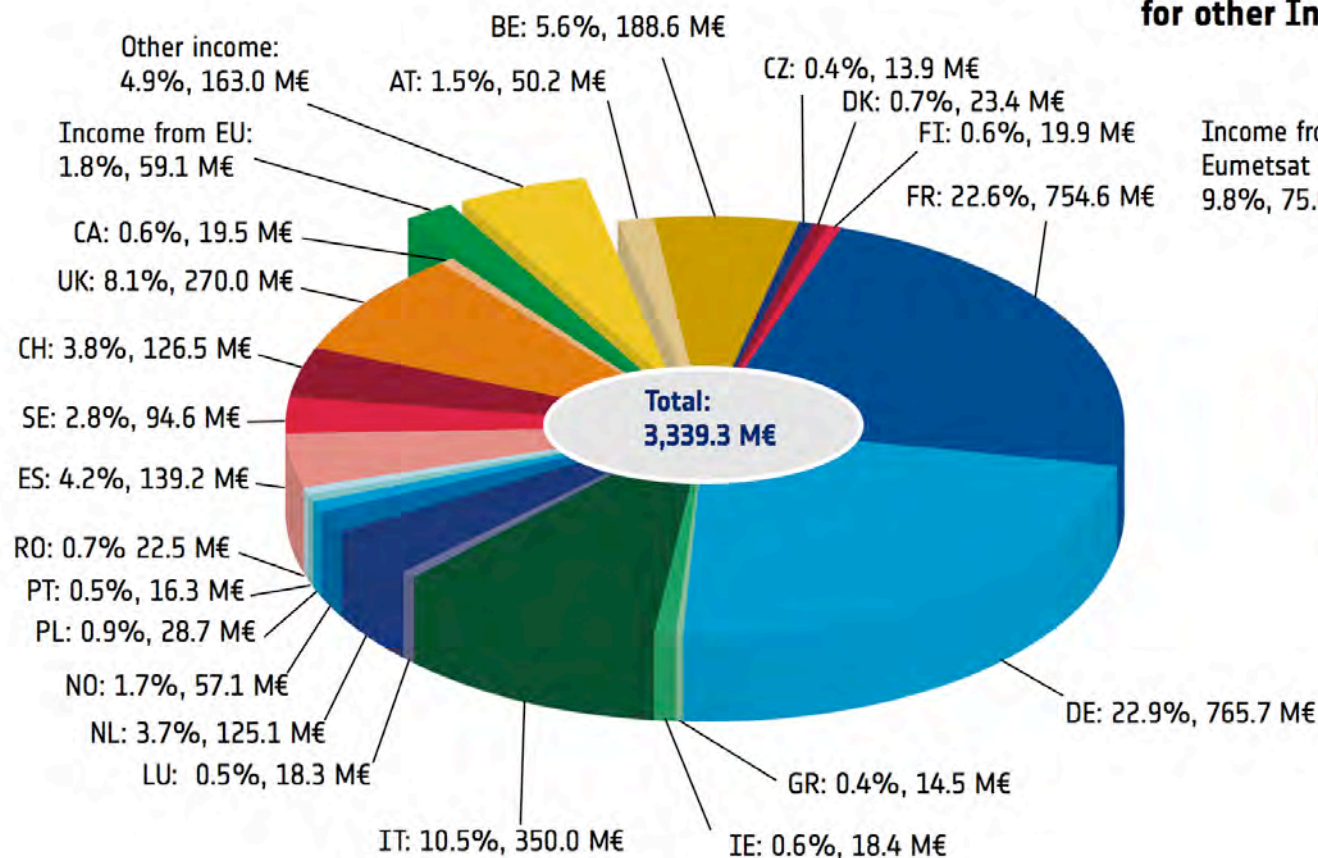




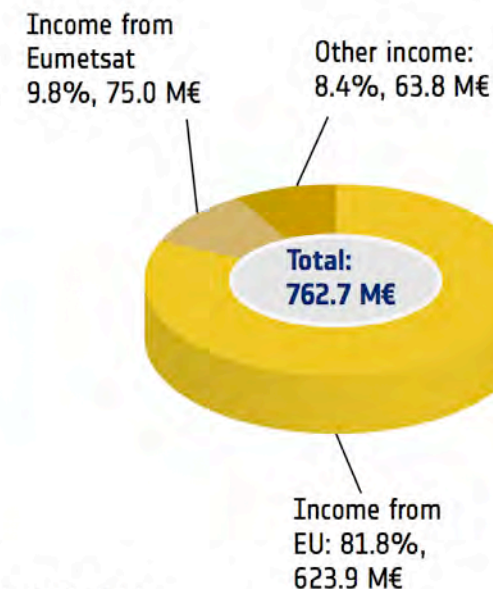
# ESA BUDGET FOR 2014



## ESA Activities and Programmes

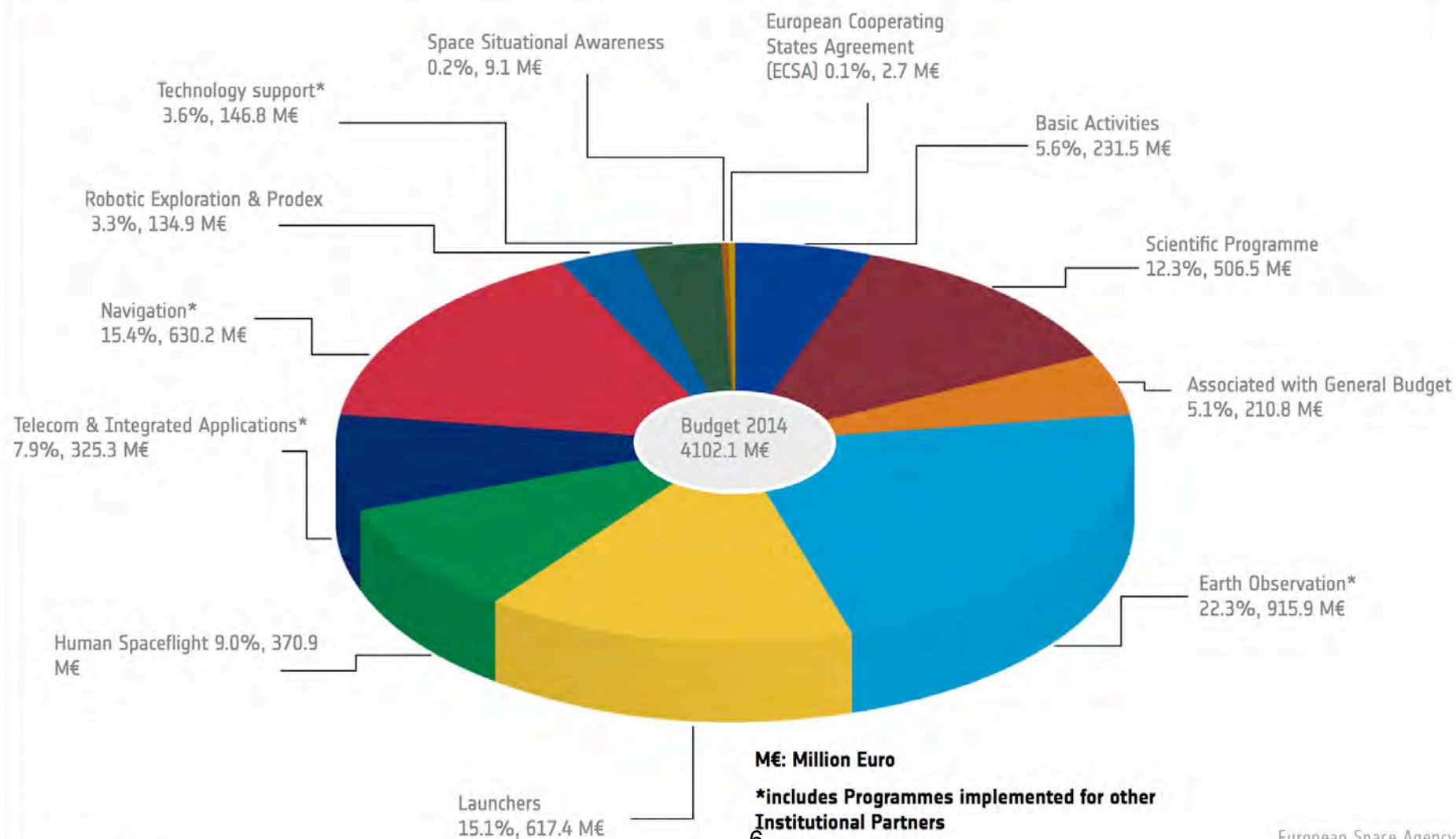


## Programmes implemented for other Institutional Partners



**TOTAL ESA BUDGET FOR 2014: 4102.1 M€**

# ESA 2014 BUDGET BY DOMAIN





# ESA Ministerial Council 2014

- Luxembourg, 2 December 2014
- 3 main issues:
  - ESA-EU relation
  - ISS
  - Launchers

# ESA and EU – increasing co-operation

**Cornerstones in the co-operation are Galileo, EGNOS and Copernicus**

- |             |   |
|-------------|---|
| <b>2000</b> | <b>EU Ministerial Council and ESA Council: similar resolutions pave the way for a common space policy</b> |
| <b>2004</b> | <b>Framework agreement about space co-operation</b>   |
| <b>2007</b> | <b>Common space policy</b>  |
| <b>2009</b> | <b>Lisbon treaty</b>  |
| <b>2012</b> | <b>Political intent to co-operate closer</b>  |
| <b>2014</b> | <b>Discussions about a new relation</b>   |





# GALILEO: “MADE IN EUROPE”



Putting Europe at the forefront of this strategically and economically important sector, **Galileo** will provide a highly accurate, guaranteed global positioning service under civilian control. The full Galileo system will consist of 30 satellites and the associated ground infrastructure. Galileo is a joint initiative between ESA and the European Union.

**GIOVE-A** (2005–12) Galileo test satellite

**GIOVE-B** (2008–12) validated technologies

**Galileo IOV** (2011/12) In-orbit Validation satellites (2+2 satellites)

**FOC** (2014) – Full Operational Capability (30 satellites). Early services with 18 satellites available end 2015.



# GLOBAL MONITORING FOR A SAFER WORLD



**Copernicus:** an Earth observation programme for global monitoring for environment and security.

Led by the **European Commission** in partnership with ESA and the **European Environment Agency**, and responding to Europe's need for geo-spatial information services, it will provide autonomous and independent access to information for policy-makers, particularly for environment and security issues. ESA is implementing the space component: developing the **Sentinel** satellite series, its ground segment and coordinating data access.

ESA has started a **Climate Change Initiative**, for storage, production and assessment of essential climate data.



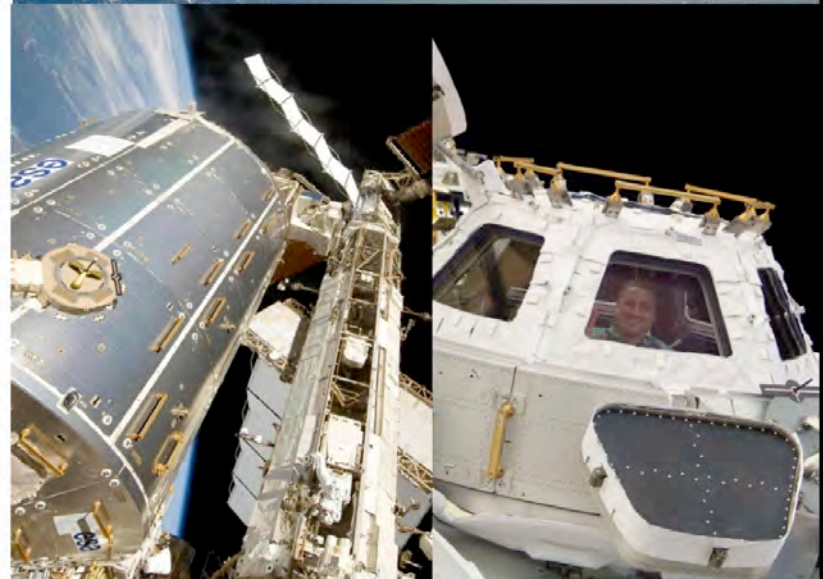


# INTERNATIONAL SPACE STATION (ISS)



The ISS unites USA, Russia, Japan, Canada and Europe in one of the largest partnerships in the history of science. Crews of up to six astronauts conduct research into life and physical sciences and applications, and prepare for future human exploration missions.

Europe's two key contributions are the **Columbus** laboratory and the **Automated Transfer Vehicle (ATV)**. Columbus provides a substantial part of the ISS's research capability, specialising in fluid physics, materials science and life sciences. Europe has also provided almost 50% of the pressurised part of the ISS, including **Cupola**, **Node-2** and **Node-3**.



# AUTOMATED TRANSFER VEHICLE (ATV)



ATV is an autonomous spacecraft for resupplying and reboosting the ISS. Each ATV carries up to 7.7 tonnes of cargo and fuel to the ISS.

ATV *Jules Verne* (2008)

ATV *Johannes Kepler* (2011)

ATV *Edoardo Amaldi* (2012)

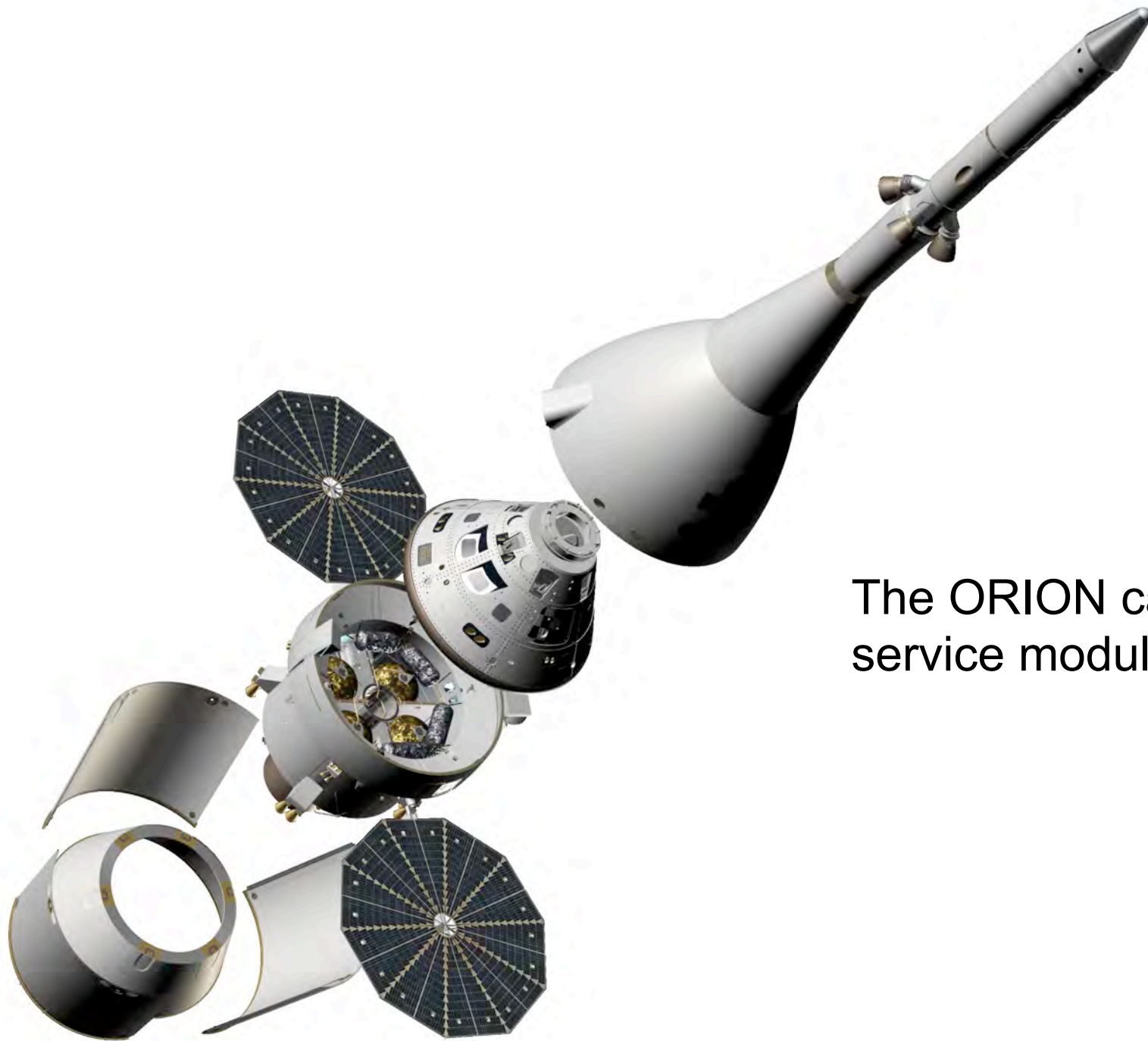
ATV *Albert Einstein* (2013)

ATV *Georges Lemaître* (2014)

To offset ESA obligations towards ISS partners, ESA is developing an ATV-derived Service Module for the NASA Multi-Purpose Crew Vehicle **Orion** (first launch in 2017; uncrewed lunar flyby).







The ORION capsule, with  
service module from ESA



## NASA's new launcher for exploration, Space Launch System (SLS)





# THE EUROPEAN LAUNCHER FAMILY



The launchers developed by ESA guarantee European access to space. Their development is an example of how space challenges European industry and provides precious expertise.

**Ariane** is one of the most successful launcher series in the world, now complemented by **Vega** and **Soyuz**, launched from Europe's Spaceport in French Guiana.



16  
VEGA

SOYUZ

ARIANE 5 ECA

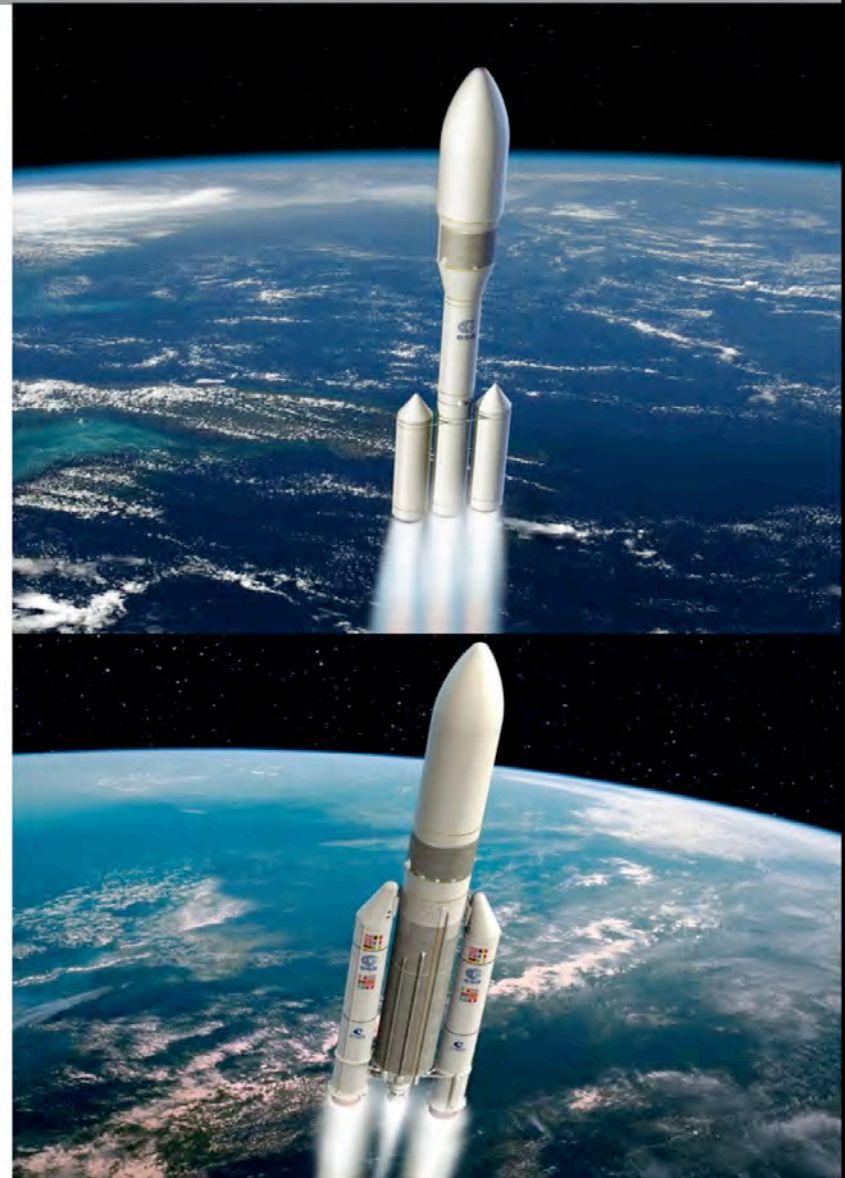
European Space Agency

# LAUNCHERS AND TECHNOLOGIES OF THE FUTURE (1)



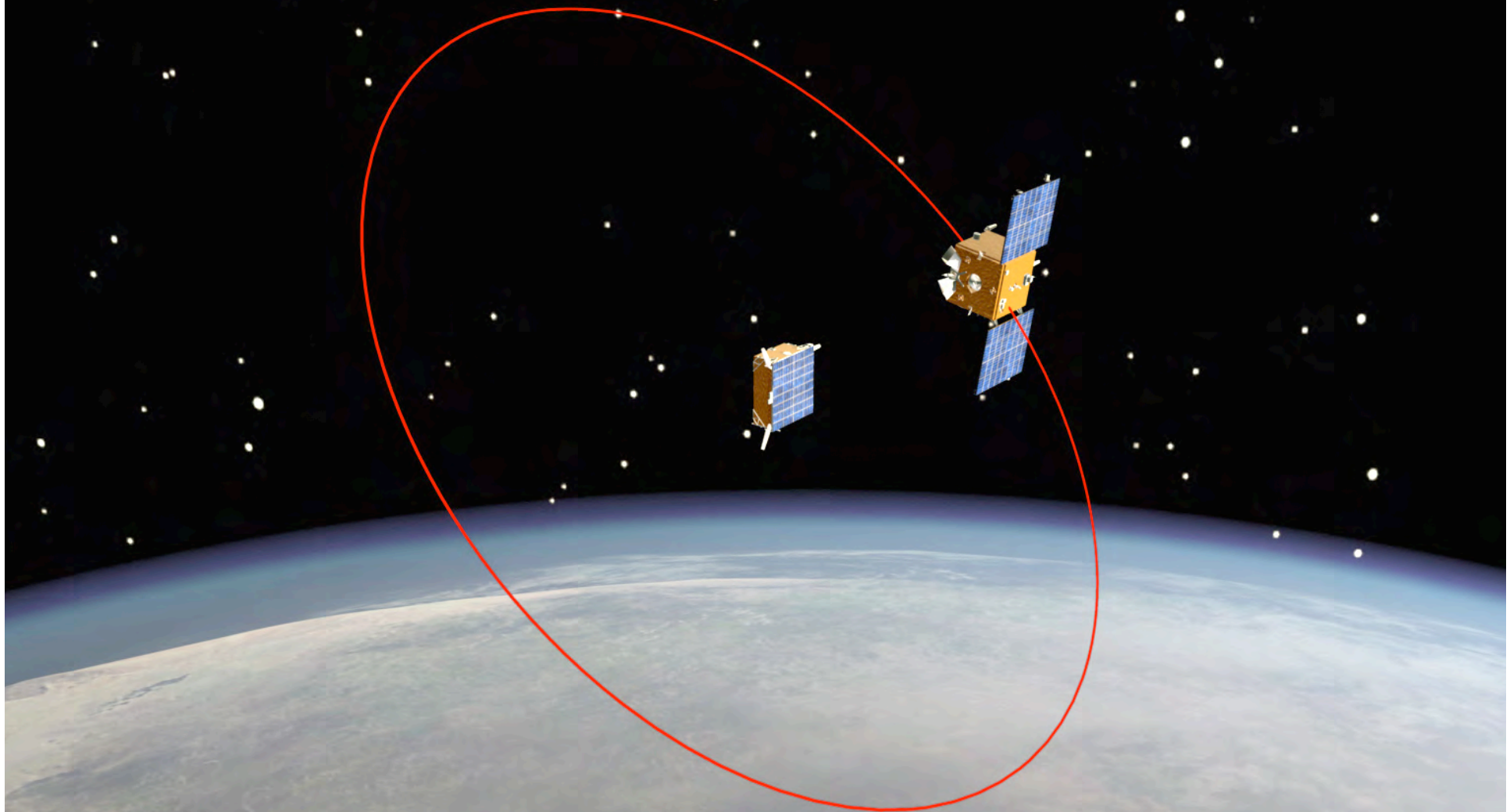
Today, European launch services are the most reliable in the world. But economically speaking, they operate in a commercial market where competitors are heavily supported by a guaranteed governmental market. To meet the challenge of competitiveness, European Ministers agreed in November 2012 to:

- definition studies for **Ariane 6**, with decision on development in 2014 on the basis of industrial offers (maiden flight, 2021).
- continue development of **Ariane 5 Mid-life Evolution**, adapted to exploit commonalities with Ariane 6, with Vinci reignitable upper stage (2017/18).





# Autonomous Formation Flying



- PRISMA final mission: Rendezvous with the "dead" french satellite Picard, a step towards in-orbit servicing and debris removal.

# Aliss study

- Atmospheric Limb Sounding Satellite
- Based on Odin science, team, instruments
- Agreement with Canada to perform a phase 0 study during 2014-2015, led by CSA.
- No funding decision by SNSB or CSA