

# this is esa

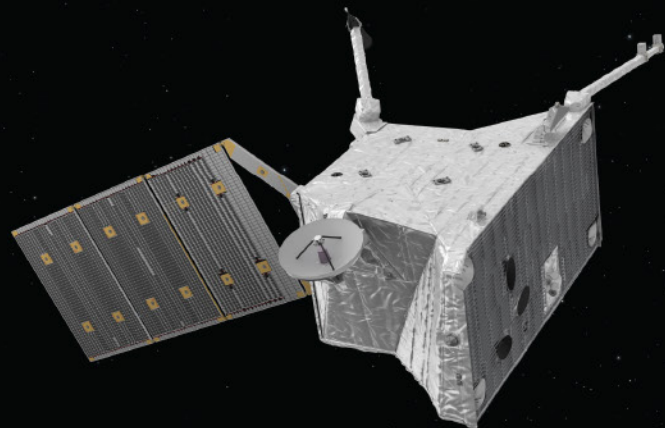


**ESA  
Member  
States:**  
Austria  
Belgium  
Czech Republic  
Denmark  
Estonia  
Finland  
France  
Germany  
Greece  
Hungary  
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Luxembourg  
Netherlands  
Norway  
Poland  
Portugal  
Romania  
Spain  
Sweden  
Switzerland  
United Kingdom

**Long-standing  
Cooperating State:**  
Canada

**Associate  
Members:**  
Latvia  
Lithuania  
Slovakia  
Slovenia

**Cooperating  
States in Europe:**  
Bulgaria  
Croatia  
Cyprus  
Malta



# WE ARE ESA

▲ Artist's impression of BepiColombo's Mercury Planetary Orbiter in orbit around Mercury

**We are the European Space Agency,** dedicated to the peaceful exploration and use of space for the benefit of everyone. Established in 1975, we now have 22 Member States and for more than 40 years we have promoted European scientific and industrial interests in space.

- ESA is Europe's comprehensive space agency, active across every area of the space sector and bringing its benefits to people in everyday life, as well as to businesses.
- Our Member States work together, sharing financial and scientific resources to achieve the best results. Through Europe's Spaceport in Kourou, we provide independent access to space for scientific and commercial missions.
- ESA's diverse activities are all part of a clear vision for Europe in space. Space is the future and through ESA we are all part of it.

“

**We are ESA. We make space work for everyone. We build and launch rockets and satellites, train astronauts, watch over Earth, explore space and try to answer the big science questions about the Universe.**”

# WATCHING OVER EARTH

Satellites provide a unique perspective on our planet. From space it is easier to see the effects of climate change, the extent of flooding and forest fires – or simply if it will rain today!

The weather satellites we build with partners, such as Eumetsat, provide improved weather forecasts that benefit everyone and are a vital tool for agricultural and transportation industries.

We use Earth observation satellites to monitor the health of our planet and to understand how it works. Satellite data and images help us to see the bigger picture regarding global change. Scientists and governments can use this data to understand, protect and manage our environment, safeguarding Earth for future generations.

# CONNECTING THE WORLD

Communication brings the world closer. ESA helps to make this global conversation possible with satellite technology. We also support the industries and innovations that will shape the telecommunications of the future.

Satellites make possible many of the technologies we use every day. Satellite TV, weather forecasts and internet access in remote areas, all work thanks to satellites in space.

ESA has been at the heart of Europe's satellite communications from the outset and continues to be at the forefront today. We develop new telecommunications systems and nurture European innovation, bringing industry, science and space technology together.

SATELLITES CAN  
SPOT WAVES

**30**  
METRES TALL

**COPERNICUS**

EUROPE'S  
EARTH OBSERVATION  
PROGRAMME:  
**16 000 GB**  
OF DATA  
EVERY DAY



**1 billion**  
people live less than  
**10 metres**  
above sea level

Global sea level  
**+9.1 cm** since  
the early 1990s

**SATELLITES**

Help to monitor  
climate change  
and sea level



**TV**



**RADIO**



**SATNAV  
FOR CARS**



**CASH  
MACHINES**



**SMARTPHONES  
AND 5G**



**BROADBAND  
INTERNET**



**AIR TRAFFIC  
MANAGEMENT**

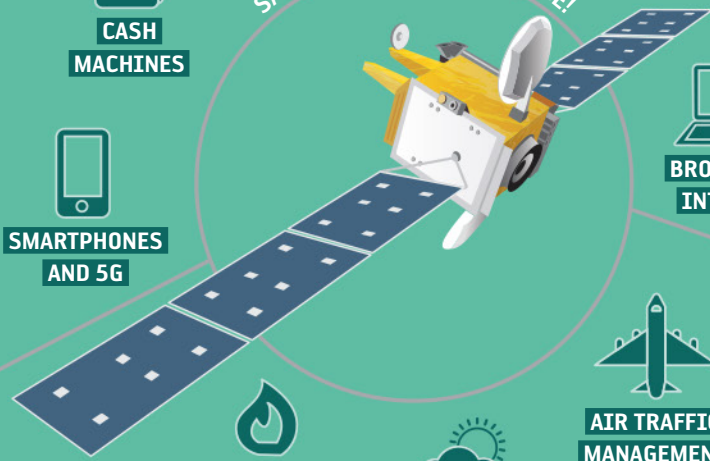


**DISASTER  
ALERTS**



**WEATHER  
FORECASTING**

SATELLITES AT YOUR SERVICE!

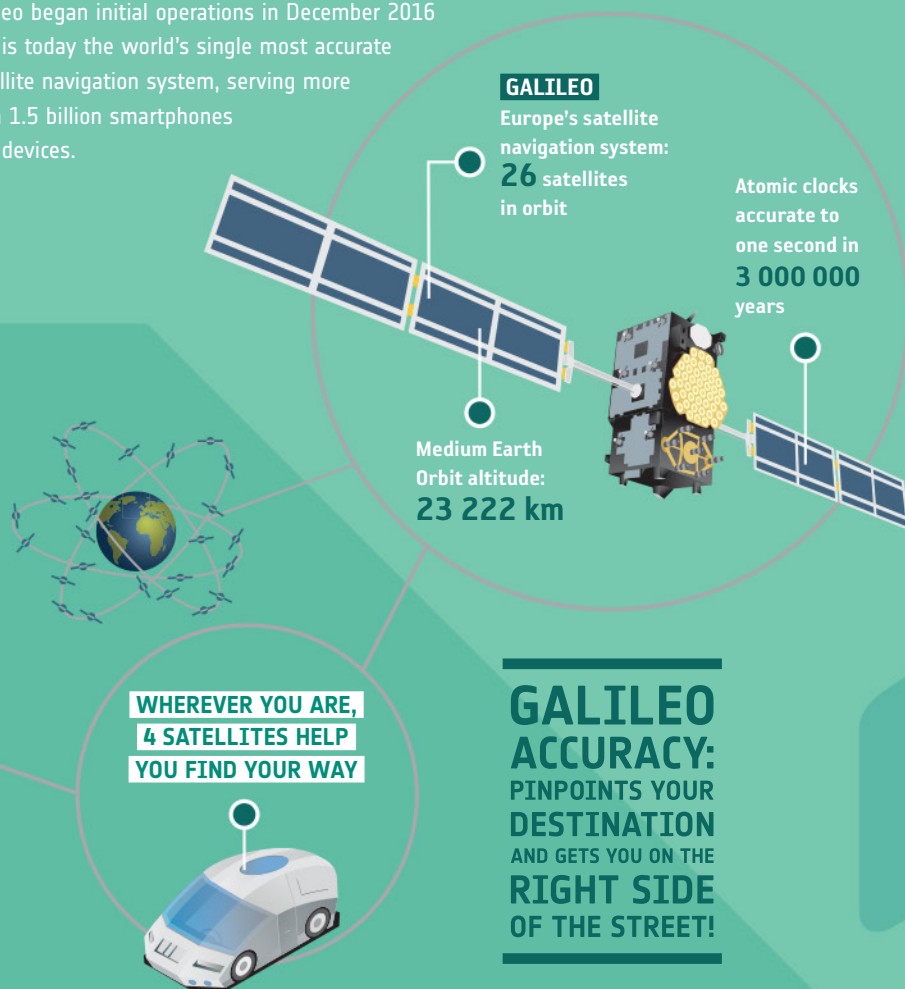


# NAVIGATING THE GLOBE

In ancient times, people used the stars for navigation. Today, we can use a constellation of European satellites in space. Thanks to satellites, it's easy to find out where you are on the map – and how to get wherever you want to go.

Working with the European Commission, ESA has built Galileo – an independent global satellite navigation system for Europe. With 26 satellites and a network of ground stations around the world, Galileo provides precise global positioning information.

Galileo began initial operations in December 2016 and is today the world's single most accurate satellite navigation system, serving more than 1.5 billion smartphones and devices.



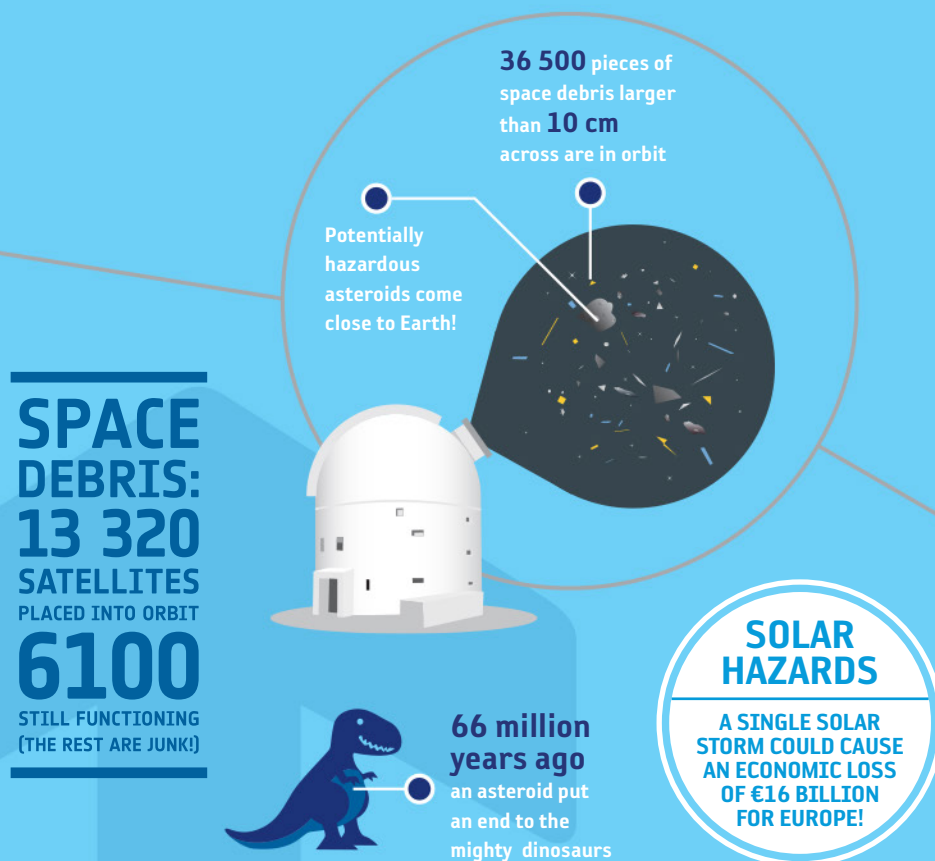
## MONITORING & SAFEGUARDING

# MAKING SPACE SAFER

We help to make spaceflight safer and more sustainable, providing warnings about hazards, such as space debris, asteroids and extreme space weather.

Our teams help spacecraft to avoid collisions with space debris. We're also building high-tech telescopes to scan the night sky for asteroids. In partnership with European industries, we are working on a future mission to monitor our Sun. This will provide advance warning of flares and other hazardous solar activity that can affect vital satellite services like navigation, as well as power grids on the ground.

Through our Clean Space initiative, we're developing sustainable technologies and pioneering new techniques to deorbit dead satellites.



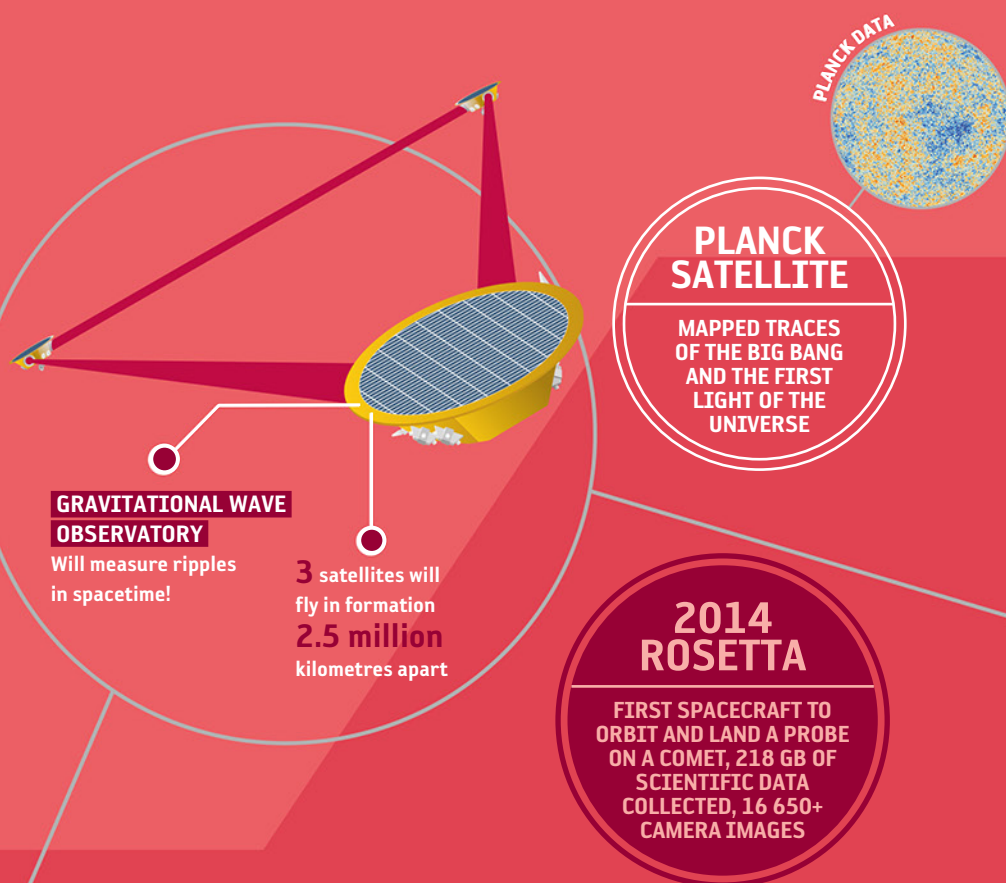


# AMAZING NEW SCIENCE

Space provides us with an incredible opportunity to experiment, discover and innovate. Discoveries made by ESA scientists have practical applications here on Earth as well as in space.

Science is the foundation for everything we do. As well as astronomy, planetary science and astrophysics, ESA scientists work on growing food in space, searching for life on Mars or finding ways to measure climate change.

We plan future science missions well in advance. It can take decades to build and fly a probe to explore another planet!

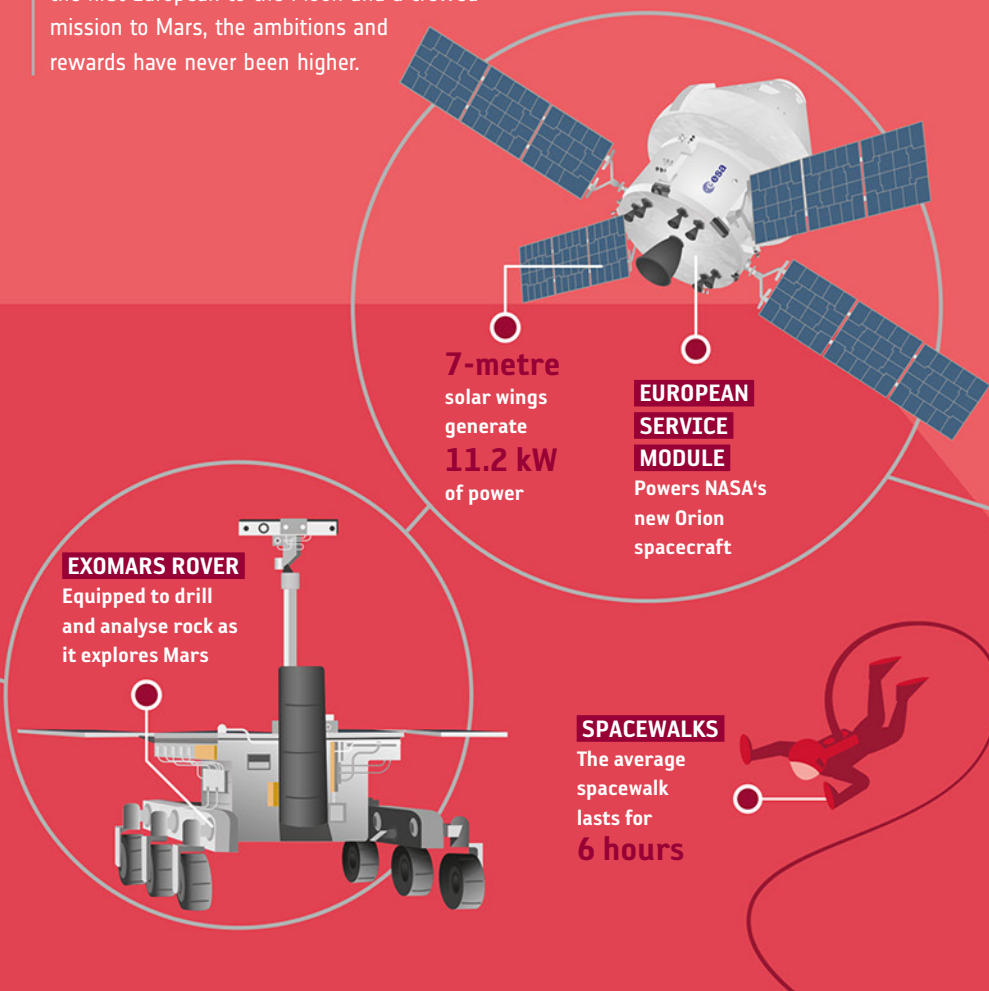


# EXPLORING SPACE

Exploring space is humankind's greatest adventure. Each voyage of discovery extends our knowledge, helping to answer the big questions about the Universe.

ESA has been deeply involved with space exploration for more than 40 years, helping to expand the frontiers of knowledge with robotic and crewed missions.

We have the technology and experience to keep Europe at the heart of a new age of space exploration, venturing beyond Earth orbit. With plans to send the first European to the Moon and a crewed mission to Mars, the ambitions and rewards have never been higher.



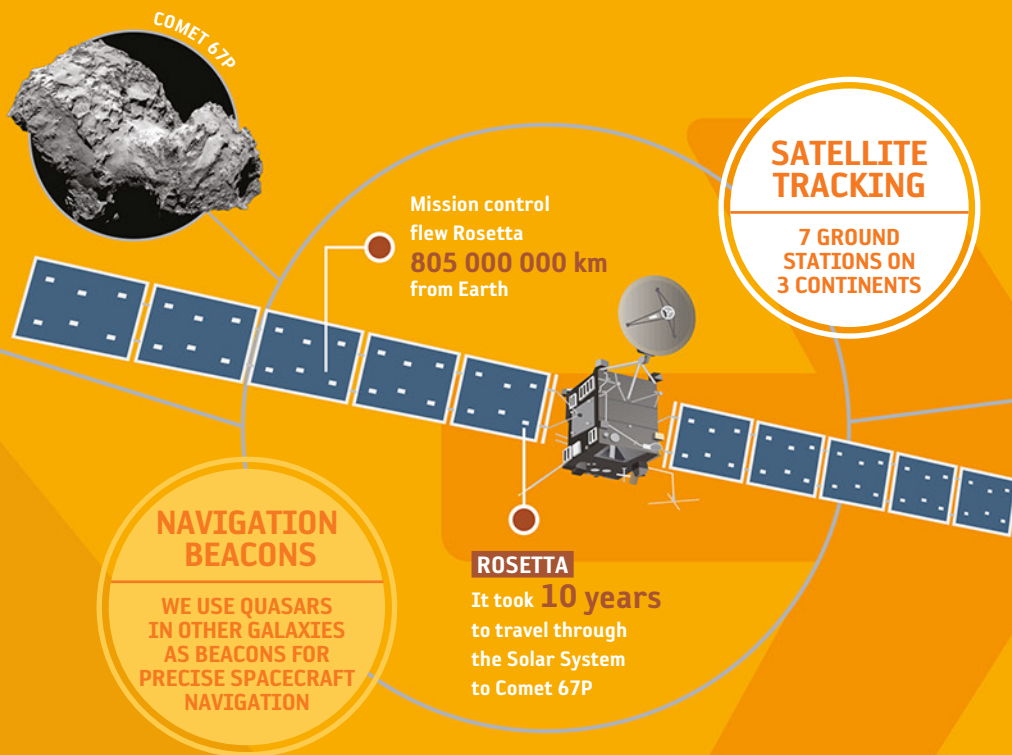
# OPERATING SPACECRAFT

ESA mission controllers fly spacecraft that watch our planet, study the Universe, or travel billions of kilometres to explore the Solar System. We fly amazing space missions, voyaging to the edge of human knowledge.

We've flown more than 80 missions, including Rosetta, which landed Philae on comet 67P, and Huygens, which touched down on Saturn's moon Titan!

We operate a worldwide network of ground stations, including deep-space dishes in Australia, Spain and Argentina that keep us in contact with missions anywhere.

Our experts design and build ground systems, monitor space debris and navigate spacecraft anywhere that scientists dream of exploring.

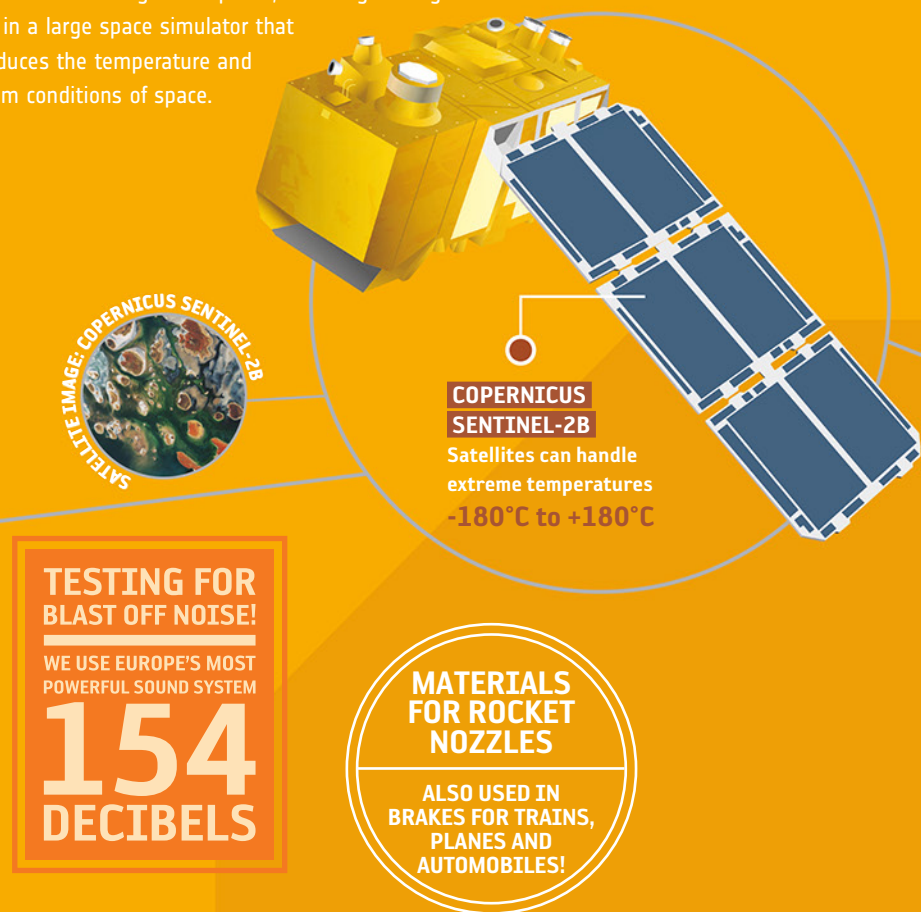


# PIONEERING TECHNOLOGY

To build technology that can handle the harsh environment of space, our engineers push the boundaries of what is possible. Technological innovations then trickle down to benefit industries on the ground.

ESA's world-class laboratories turn science into innovation. We develop hardware and software for use in space and on the ground. In space there is no easy way to fix a technical glitch, so everything we build has to be incredibly reliable.

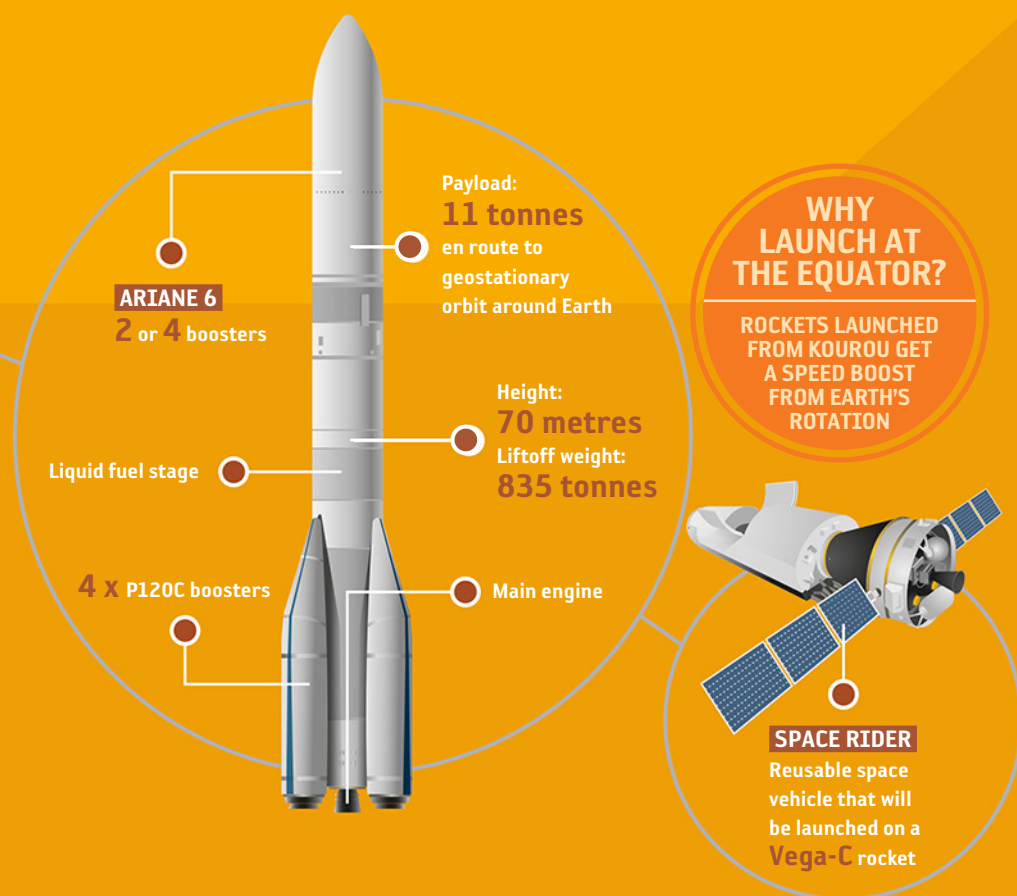
Space technology gets rigorously tested. Our engineers put new satellites through their paces, including testing them in a large space simulator that reproduces the temperature and vacuum conditions of space.



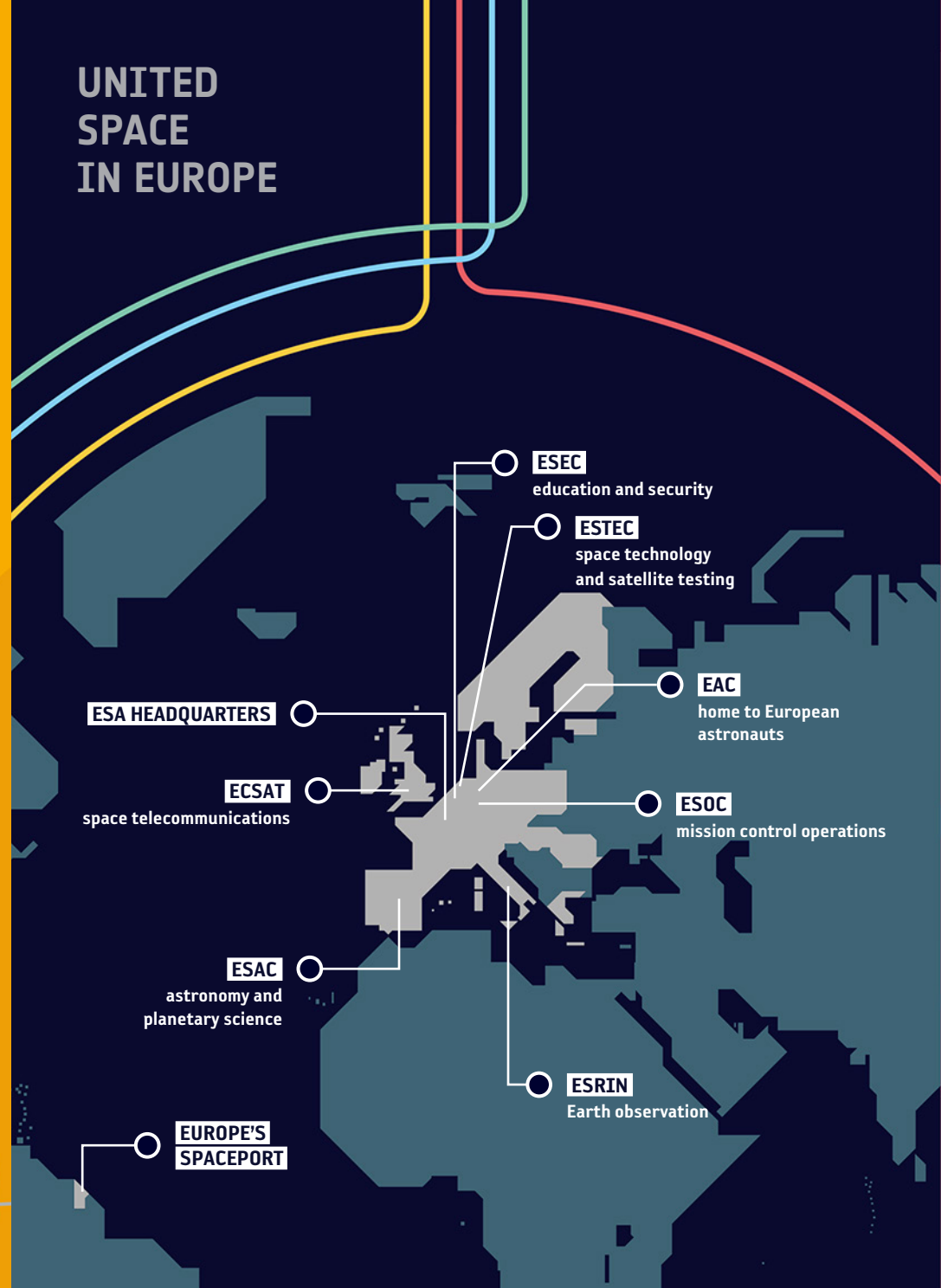
# TRAVELLING TO SPACE

From Europe's Spaceport in French Guiana, we launch rockets that carry satellites into orbit. We provide Europe with independent access to space and are developing launchers and space vehicles for the future.

Making access to space simple and reliable is at the heart of ESA's vision for space transportation. With this in mind, we are constantly improving the design of our next generation of rockets: Ariane 6 and Vega-C. These launchers and the reusable Space Rider will ensure that Europe continues to have autonomous and affordable access to space.



## UNITED SPACE IN EUROPE



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