

ariane 5

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ARIANE 5: EUROPE'S RIDE TO SPACE

Ariane 5 was Europe's principal launch system for more than a quarter century, flying 117 times since 1996. Notable payloads include ESA's comet-chasing Rosetta mission, a dozen of Europe's Galileo navigation satellites – orbited by just three launches – and the James Webb Space Telescope.

This heavy launcher more than doubled the mass-to-orbit capacity of its predecessor, Ariane 4, which flew from 1988 until 2003 as a favourite of the telecommunications industry with its need to put large payloads into very high geosynchronous orbits. Ariane 5's capacity enabled it to orbit two large telecommunications satellites on a single launch, or to push very large payloads into deep space.

Where Ariane 1, 2 and 3 (1979-1989) and Ariane 4 (1988-2003) were closely related, the larger and more powerful Ariane 5 was developed essentially as an all-new launch system. From 1985, ESA Member States initiated this programme with a view to participating in the International Space Station (ISS) and also launching Hermes, a European crewed spaceplane concept. The Hermes project was later abandoned, though Ariane 5's legacy includes having delivered to the ISS Europe's series of five Automated Transfer Vehicle resupply craft.

The development of the Ariane series of launch vehicles is an expression of Europe's realisation, dating to the 1960s, that participation in the new space age demanded an independent capability to access space. Several European countries thus joined forces to develop a launch vehicle; this project, called Europa, was ultimately unsuccessful but in 1975 the European Launcher Development Organisation created to oversee it was merged with the European Space Research Organisation to create ESA, which initiated the Ariane programme.

In launch, that spirit of cooperation ultimately delivered Ariane 5 in its several iterations, along with the smaller Vega series. ESA continues this work with its Member States and industrial partners to exploit new technologies and meet new market realities with another all-new vehicle, Ariane 6.

ARIANE 5 ECA LAUNCH VEHICLE 

MISSIONS 

EUROPEAN COOPERATION 

FIVE DECADES OF ARIANE 

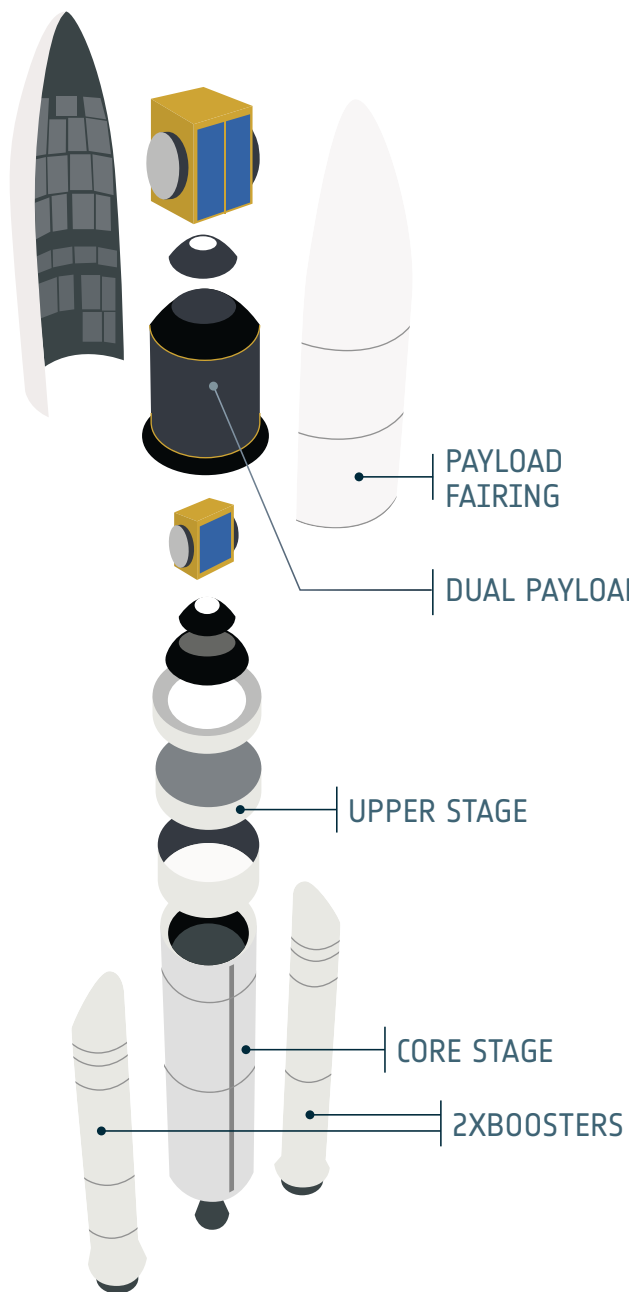
EUROPE'S SPACEPORT IN FRENCH GUIANA 

HOW TO FOLLOW 

IMAGES AND VIDEOS 

EUROPEAN SPACE AGENCY 

ARIANE 5 ECA LAUNCH VEHICLE



Height	Up to 52.5 m
Diameter*	5.4 m
Mass at liftoff	780 t
Stages	3
Thrust at liftoff	15 120 kN
Payload mass**	>11 t

*core stage, fairing
 **geostationary transfer orbit

Stages	Propellant mass	Thrust
2xBoosters*	240 t each	7 080 kN each
Core stage**	175 t	960 kN
Upper stage: HM7B***	14.7 t	67 kN

*EAP (Etage d'Accélération à Poudre)
 **EPC (Etage Principal Cryotechnique); Vulcain-2 engine, LOX-LH
 ***ESC-A (Etage Supérieur Cryotechnique de type A); HM7B engine, LOX-LH

Ariane 5 ECA is the most powerful version of Ariane 5, with an increased propellant load in its solid booster stages and increased core stage cryogenic fuel capacity to feed its Vulcain 2 main engine.

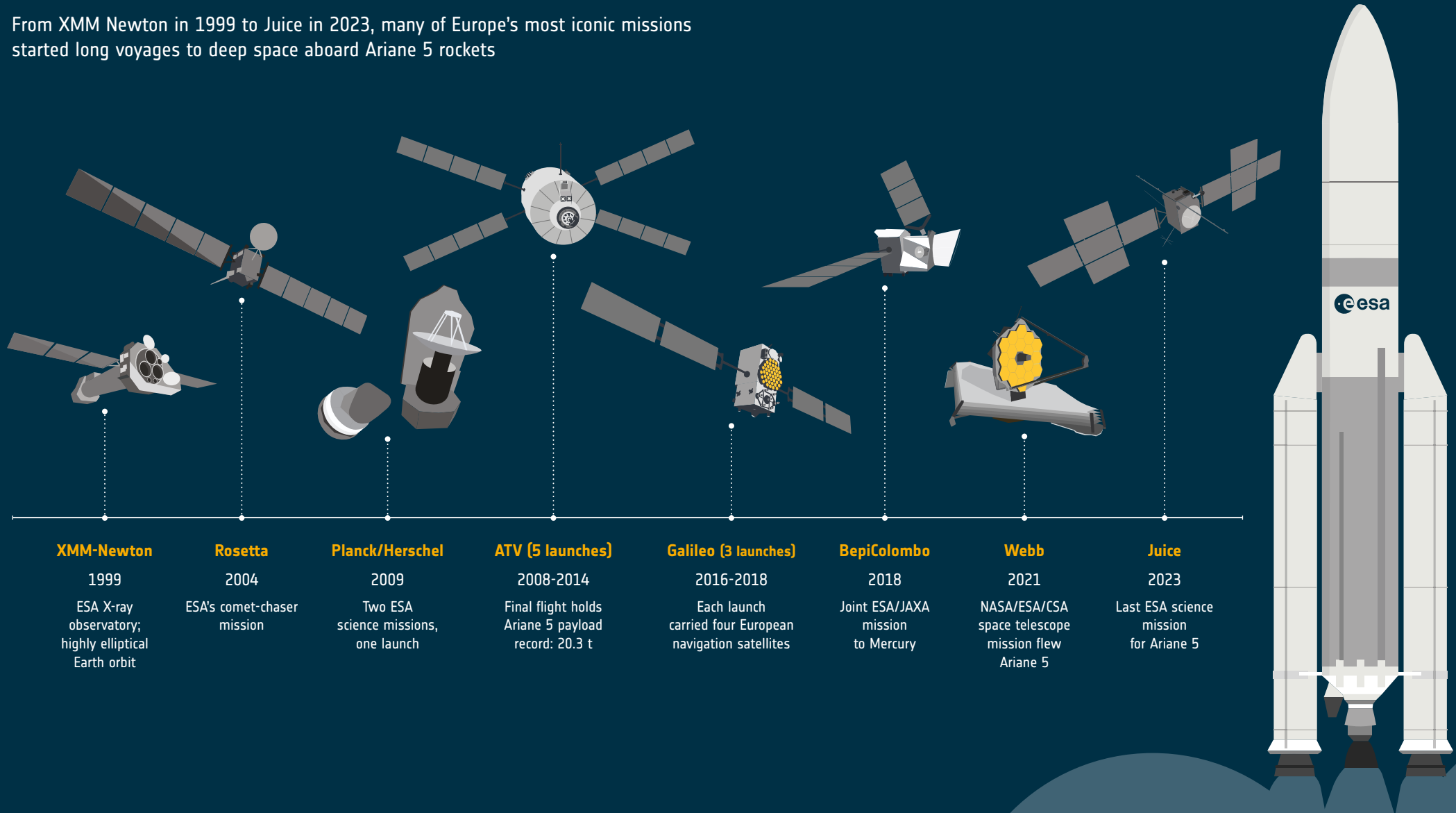
Ariane 5 ECA's cryogenic upper stage was developed around the HM7B engine, thrust frame and liquid oxygen tank of Ariane 4's third stage.

The ECA variant (Evolved Cryogenic, model A) has carried out most Ariane 5 missions since 2006, flying exclusively since 2019. Its payload capacity to geostationary transfer orbit (GTO) exceeds 11 tonnes.

Ariane flights are numbered, from the first launch of Ariane 1 in 1979, with the prefix VA, from the French 'Vol Ariane': VA261 for Ariane 5's final flight.

ARIANE 5: ESA'S HEAVY LIFT WORKHORSE

From XMM Newton in 1999 to Juice in 2023, many of Europe's most iconic missions started long voyages to deep space aboard Ariane 5 rockets



ARIANE 5 PARTNERS

The Ariane 5 success story rests on longstanding cooperation between ESA and Europe's space industry. ESA owns and manages the Ariane 5 programme, defining its performance objectives and evolution.

Prime contractor ArianeGroup can trace its heritage to Europe's earliest rocket programmes. To deliver the Ariane 5 programme, this joint venture between aerospace industry leaders Airbus and Safran oversees contributions from industrial partners in participating ESA Member States.

www.ariane.group

Launch service provider Arianespace is a subsidiary of ArianeGroup, which holds 74% of its share capital, with the balance held by 15 other shareholders from the European launcher industry.

www.arianespace.com

French space agency CNES (Centre National d'Etudes Spatiales) is responsible for maintaining the operational condition of Europe's Spaceport in French Guiana and for modernising its facilities in anticipation of future vehicles. At the spaceport, CNES manages operations, the reception of satellites, launch vehicle monitoring and tracking, range security and environmental protection.

www.cnes.fr

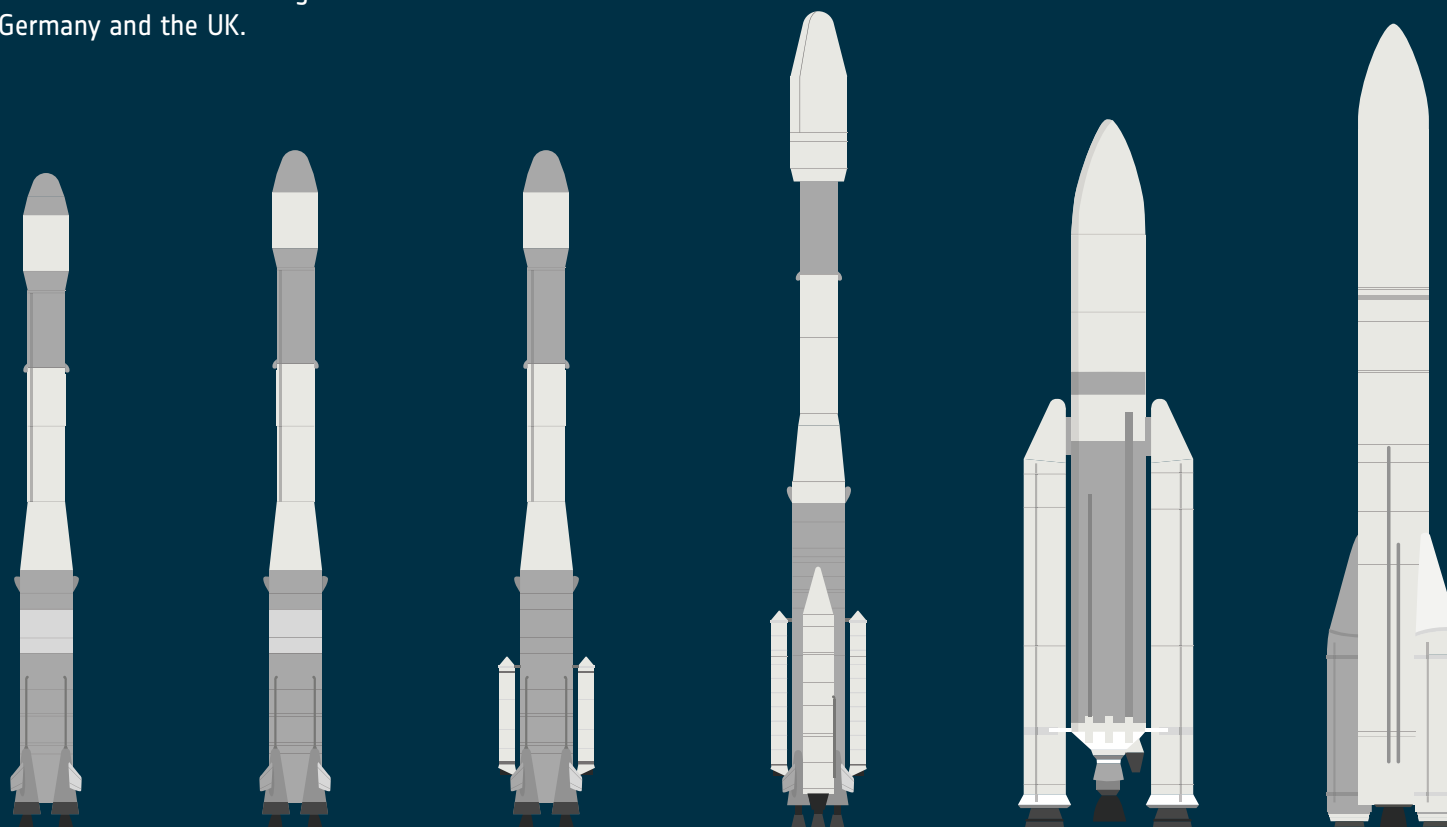


Participating States in the Ariane 5 programme include:

-  AUSTRIA
-  BELGIUM
-  DENMARK
-  FRANCE
-  GERMANY
-  IRELAND
-  ITALY
-  THE NETHERLANDS
-  NORWAY
-  SPAIN
-  SWEDEN
-  SWITZERLAND

FIVE DECADES OF ARIANE

Development of the European Space Agency's Ariane series of rockets began in 1973 as a multinational effort led initially by France, Germany and the UK.



*geostationary transfer orbit
 **44L version
 ***ECA version, dual payload
 ****A64 version, two boosters (A62 pictured)

	ARIANE 1	ARIANE 2	ARIANE 3	ARIANE 4	ARIANE 5	ARIANE 6
In service	1979-1986	1983-1989	1983-1989	1988-2003	1996-2023	2024
Flights	11	6	11	116	117	
Height	47.4 m	49 m	49 m	58.7 m	53 m***	60 m
Launchpad mass	210 t	219 t	237 t	470 t**	780 t***	900 t
Payload mass to GTO*	1.83 t	2.27 t	2.65 t	4.9 t	>11 t***	11.5 t****

EUROPE'S SPACEPORT IN FRENCH GUIANA



Europe's Spaceport in French Guiana is one of the world's ideal launch sites. Situated on French territory in South America, it is home to the ESA-developed Ariane and Vega rocket families. Its location just 500km north of the equator gives rockets launched eastward extra speed from the Earth's rotation – especially for geostationary or deep space missions – significantly increasing payload capability compared to more northerly or southerly sites. Open ocean to the north and east offers the choice of launch trajectories which avoid overflying populated areas. Additionally, this region is threatened by neither cyclones nor earthquakes. Europe's Spaceport is working towards 90% renewable energy sources by the end of 2025. The launch base and the jungle that surrounds it cover an area of 690 km² and include protected zones for an abundance of wildlife and plants.



EUROPEAN SPACE AGENCY

ESA is tasked with guiding the development of Europe's space capabilities and making sure that its investments in space benefit the citizens of Europe. An international organisation with 22 Member States, ESA coordinates its members' financial and intellectual resources to conduct programmes and activities that largely surpass the scope of action of a single European state.

ESA manages the development of Europe's current and future space transportation programmes, including Ariane 6, Vega-C and Vega-E, and Space Rider. On Ariane and Vega, ESA manages the overall programmes, while European industry builds the launch systems, with ArianeGroup (Ariane 5 and 6) and Avio (Vega-C and -E) as prime contractors. ESA Member States fund about two thirds of the total cost of running and maintaining Europe's Spaceport. ESA owns the various launch complexes, which are operated by Arianespace.

www.esa.int

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ESA Web TV: esawebtv.esa.int



Information for general public: esa.int/ariane



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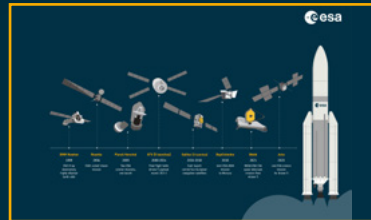
Articles



Merchandise



Ariane 5 ECA launch vehicle



Missions



Five decades of Ariane



Webb liftoff flight VA256



Europe's Spaceport



Galileo liftoff flight VA233



Rollout of Ariane 5 flight VA254

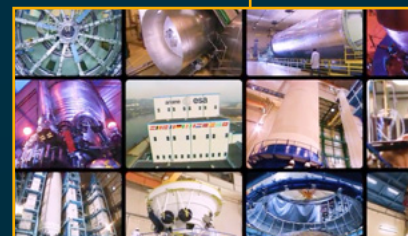


Ariane 5 liftoff flight VA254

VIDEO, B-ROLL



MTG-I1 liftoff flight VA259



25 years of Ariane 5

Other Ariane 5 video: [ESA Television](#)



THE EUROPEAN SPACE AGENCY

Established in 1975, ESA now has 22 Member States and cooperates with many others. These countries are home to more than 500 million European citizens. If you're one of them, then we're working for you.

Our mission is the peaceful exploration and use of space for the benefit of everyone. We watch over Earth, develop and launch inspiring and unique space projects, fly astronauts and push the boundaries of science and technology, seeking answers to the big questions about the Universe.

We are a family of scientists, engineers and business professionals from all over Europe, working together in a diverse and multinational environment.

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