

August
2015

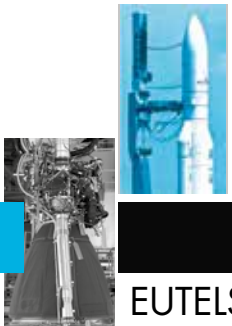


VA 225



EUTELSAT 8 West B
Intelsat 34





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EUTELSAT 8 West B - Intelsat 34



ARIANE 5: MORE THAN 30 YEARS AT THE SERVICE OF TWO MAJOR OPERATORS

On its seventh launch of the year and fourth Ariane 5 launch from the Guiana Space Center in French Guiana, Arianespace will orbit satellites for two global leaders in satellite telecommunications: EUTELSAT 8 West B for the operator EUTELSAT Communications, and Intelsat 34 for the operator Intelsat.

This latest mission by the Ariane 5 heavy launcher once again shows how its top-flight capabilities perfectly match the launch service needs of the world's leading operators and manufacturers. Building on its proven reliability and availability, Arianespace maintains its position as the global benchmark in launch services.

EUTELSAT 8 West B and Intelsat 34 will be the 513th and 514th satellites launched by Arianespace.

EUTELSAT 8 West B

EUTELSAT 8 West B will be the 30th satellite orbited by Arianespace for the private operator EUTELSAT. With a fleet of 37 satellites, EUTELSAT is one of the world's leading space telecommunications operators. EUTELSAT is the leading operator in Europe, North Africa and the Middle East, and third worldwide in terms of revenues. It has entrusted its satellites to Arianespace for over 30 years, starting with the launch of its first satellite, Eutelsat-1-F1, in June 1983.

Fitted with 40 active Ku-band transponders, EUTELSAT 8 West B will be positioned at 8° West, and will provide in particular high-definition and ultra-high-definition direct TV broadcast services to North Africa and the Middle East. The satellite is also equipped with ten C-band transponders, allowing it to provide telecommunications services in Africa and the eastern part of South America.

Built by Thales Alenia Space (TAS) using a Spacebus 4000 C4 platform, EUTELSAT 8 West B is the 143rd satellite built by TAS (and its predecessors), to be orbited by Arianespace.

Intelsat 34

Intelsat's relationship with Arianespace began in October 1983 with the launch of Intelsat 507. Intelsat 34 marks the 55th Intelsat satellite orbited into space by Arianespace and represents over 30 years of a trusted partnership. As the world's leading provider of satellite services in terms of revenues and in-orbit capacity, Intelsat's fleet of approximately 50 satellites delivers high performance connectivity solutions for media, fixed and mobile broadband infrastructure, enterprise and government and military applications.

Intelsat 34 will provide services for Latin America media customers in C-band and host a leading Brazilian DTH platform in Ku-band. It will also provide Ku-band infrastructure for aeronautical and maritime service providers delivering mobility services over the North Atlantic routes.

Intelsat 34 will replace Intelsat 805 and Galaxy 11.

Built by Space Systems Loral (SSL) using the SSL 1300 platform, Intelsat 34 is the 51st geostationary platform built by SSL (and its predecessors), to be orbited by Arianespace.



CONTENTS

The Launch:

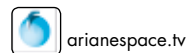
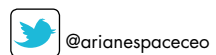
- > Mission VA 225 PAGE 1-2
- > EUTELSAT 8 West B PAGE 3
- > Intelsat 34 PAGE 4

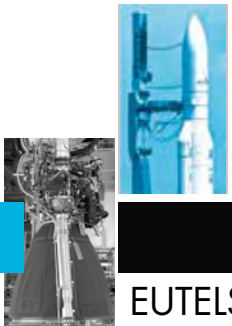
Further information:

- > Ariane 5-ECA launch vehicle PAGE 5
- > Launch campaign PAGE 6
- > Countdown and flight PAGE 7
- > VA 225 mission profile PAGE 8
- > Arianespace & the Guiana Space Center PAGE 9

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VA 225

EUTELSAT 8 West B - Intelsat 34

MISSION DESCRIPTION

The 4th Arianespace launch of the year will place the EUTELSAT 8 West B and Intelsat 34 satellites into a geostationary transfer orbit.

The launcher will be carrying a total payload of 9,922 kg.

The launch will be from Ariane Launch Complex No. 3 (ELA 3) in Kourou, French Guiana.

Targeted orbit

Perigee altitude : 252 km

Apogee altitude : 35,845 km

Inclination : 4.7 degrees

Liftoff is planned on **Thursday, August 20, 2015**

as soon as possible within the following launch windows:

- Between 05:10 pm and 06:56 pm, Kourou time
- Between 04:10 pm and 05:56 pm, Washington DC time
- Between 08:10 pm and 09:56 pm, Universal Time (UTC)
- Between 10:10 pm and 11:56 pm, Paris time.

The launch at a glance

The launcher's attitude and trajectory are totally controlled by the two onboard computers, located in the Ariane 5 vehicle equipment bay (VEB).

About seven seconds after start of the ignition of the main stage cryogenic engine at T-0, the two solid-propellant boosters are ignited, enabling liftoff. The launcher first climbs vertically for 6 seconds, then rotates towards the East. It maintains an attitude that ensures the axis of the launcher remains parallel to its velocity vector, in order to minimize aerodynamic loads throughout the entire atmospheric phase, until the solid boosters are jettisoned.

The fairing protecting the payload is jettisoned at T+220 seconds.

Once this first part of the flight is completed, the onboard computers optimize the trajectory in real time, minimizing propellant consumption to bring the launcher first to the intermediate orbit targeted at the end of the main stage propulsion phase, and then the final orbit at the end of the flight of the cryogenic upper stage.

The main stage falls back off the coast of Africa in the Atlantic Ocean (in the Gulf of Guinea). On orbital injection, the launcher will have attained a velocity of approximately 9,365 meters/second, and will be at an altitude of 643.2 kilometers.

Payload configuration

High payload (CUH): EUTELSAT 8 West B

Mass at liftoff 5,782 kg.

Orbital position: 8° West

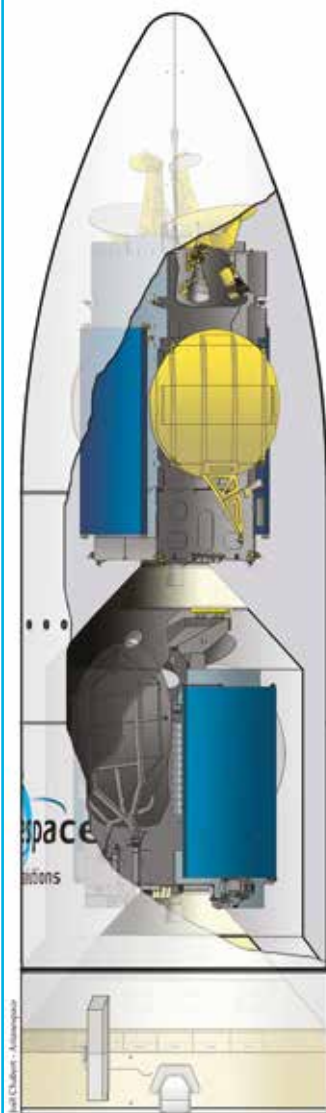
Low payload (CUB): Intelsat 34

Mass at liftoff 3,300 kg.

Orbital position: 304.5° East

Long fairing

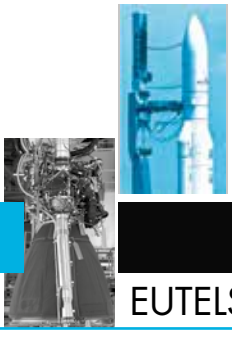
Long SYLDA (SYstème de Lancement Double Ariane)



Mission length

The nominal length of the mission (from liftoff to separation of the satellites) is

41 minutes and 54 seconds.



VA 225

EUTELSAT 8 West B - Intelsat 34



EUTELSAT 8 West B



Customer	EUTELSAT
Prime contractor	Thales Alenia Space
Mission	Direct-to-home television broadcast services HD and Ultra HD
Mass	At liftoff 5,782 kg
Stabilization	3 axis
Dimensions	5.5 x 2 x 2.2 m
Platform	Spacebus 4000 C4
Payload	40 Ku-Band transponders and 10 C-Band transponders
Onboard power	15 kW (end of life)
Design life	15 years
Orbital position	8° west
Coverage area	Ku-band : North Africa and Middle East for Direct to Home television Services C-band : African continent and Eastern South America

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VA 225

EUTELSAT 8 West B - Intelsat 34

Intelsat 34



Customer	Intelsat
Prime contractor	SSL
Mission	Communication
Mass	At liftoff 3,300 kg
Stabilization	3 axis
Dimensions	5.6 x 3.5 x 3 m
Platform	SSL-1300
Payload	24x36 MHz Ku-band units; 24x36 MHz C-band units
Onboard power	10 kW (end of life)
Design life	15 years
Orbital position	304.5° East
Coverage area	Ku-band: North Atlantic Ocean Region for maritime and aeronautical applications; Brazil C-band: Americas, Western Europe, Africa

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VA 225

EUTELSAT 8 West B - Intelsat 34

ARIANE 5-ECA LAUNCH VEHICLE

54.8 m

Fairing

- (RUAG Space)
- ▼ 17 m
- ▼ Mass: 2.4 t

EUTELSAT 8 West B

- (EUTELSAT)
- ▼ Mass: 5,782 kg

Intelsat 34

- (Intelsat)
- ▼ Mass: 3,300 Kg

Vehicle Equipment Bay

- (Airbus Defence and Space)
- ▼ Height: 1.13 m
- ▼ Mass: 970 kg.

ESC-A - Cryogenic upper stage

- (Airbus Defence and Space)
- ▼ Height: 4.71 m
- ▼ Mass: 19 t

EPC - Cryogenic main stage

- (Airbus Defence and Space)
- ▼ Height: 31 m
- ▼ Mass: 188 t

EAP - Solid Rocket Boosters

- (Airbus Defence and Space)
- ▼ Height: 31.6 m
- ▼ Mass: 277 t approx.

Vulcain 2 Engine

- (Snecma)
- ▼ Thrust: 1,390 kN (in vacuum)
- ▼ 540 sec of propulsion

780 tons

(total mass at liftoff)

ACU - Payload adaptor (2)

- (RUAG Space or Airbus Defence and Space)
- ▼ Mass: approx. 140 kg each

SYLDA - Internal structure

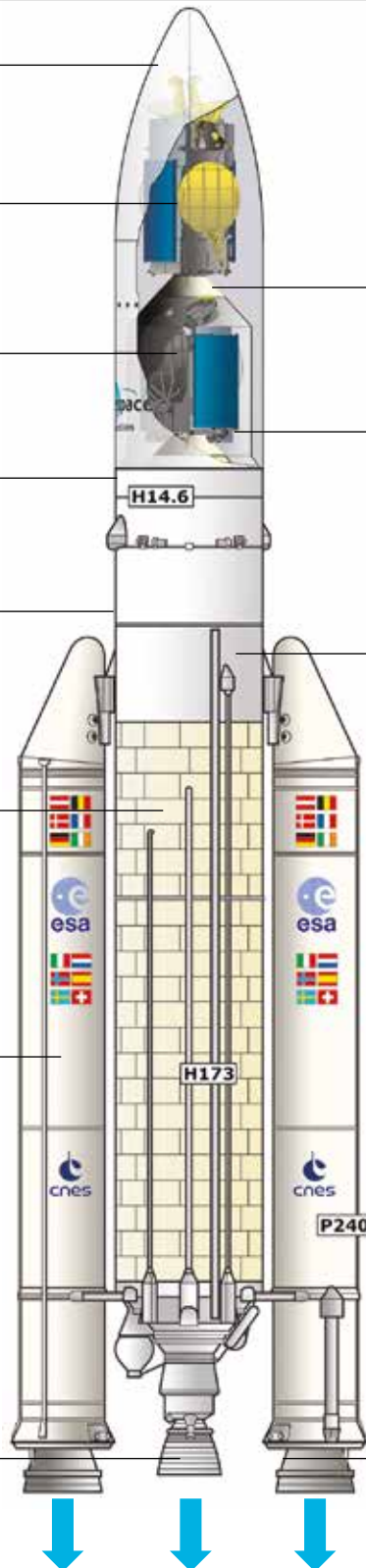
- (Airbus Defence and Space)
- ▼ 7 versions (Height: 4.9 to 6.4 m)
- ▼ Mass: 400 to 530 kg.

HM-7B engine

- (Snecma)
- ▼ Thrust: 67 kN (in vacuum)
- ▼ 945 sec of propulsion

Propellants (in metric tons) at T-O

- H** : Cryogenic
- P** : Solid



13,000 kN at Lift-off
(at T+7.3 sec.)

MPS - Solid Rocket Motor (SRM)

- (Europropulsion)
- ▼ Average thrust: 5,060 kN
- ▼ Maximum thrust: 7,080 kN (in vacuum)
- ▼ 130 sec of propulsion





VA 225



EUTELSAT 8 West B - Intelsat 34



LAUNCH CAMPAIGN: ARIANE 5 - EUTELSAT 8 West B - Intelsat 34

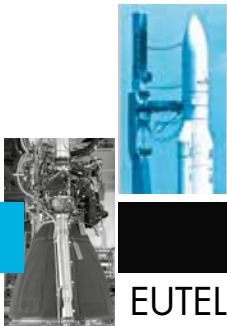
EUTELSAT 8 West B - Intelsat 34 and launch vehicle campaign calendar

Date	Satellite activities	Launch vehicle activities
June 23, 2015		Campaign start review EPC erection EAP transfer and positioning
June 25, 2015		EPC/EAP integration
June 29, 2015		ESC-A erection and equipment bay integration
July 17, 2015	Arrival in Kourou of EUTELSAT 8 West B, beginning of preparation in building S5C	
July 20, 2015	Arrival in Kourou of Intelsat 34, beginning of preparation in building S5C	
July 21, 2015	Intelsat 34 fitcheck	
July 25, 2015	EUTELSAT 8 West B transfer to S5B	
July 27, 2015	EUTELSAT 8 West B fitcheck in building SB	
July 28-31, 2015	EUTELSAT 8 West B filling operations	
July 31, 2015	Intelsat 34 transfer to S5A	
August 3-6, 2015	Intelsat 34 filling operations	
August 3, 2015		BIL-BAF transfer
August 5, 2015	EUTELSAT 8 West B integration on adaptor ACUH	
August 6, 2015	EUTELSAT 8 West B transfer to Final Assembly Building (BAF)	
August 7, 2015	EUTELSAT 8 West B integration on SYLDA	
August 8, 2015	Intelsat 34 integration on ACUB	

EUTELSAT 8 West B - Intelsat 34 launch vehicle campaign final calendar

Date	Satellite activities	Launch vehicle activities
Monday, August 10, 2015	Intelsat 34 transfer to Final Assembly Building (BAF) and Fairing EUTELSAT 8 West B	
Tuesday, August 11, 2015	Intelsat 34 integration on launcher	
Wednesday, August 12, 2015	Intelsat 34 encapsulation and composite integration with EUTELSAT 8 West B on launcher	
Thursday, August 13, 2015		Completion of composite integration on launcher
Friday, August 14, 2015		ESC-A final preparations and launch rehearsal
Tuesday, August 18, 2015		Arming of launch vehicle and launch readiness review (RAL) and Final preparation of launcher
Wednesday, August 19, 2015		Rollout from BAF to Launch Zone, launch vehicle connections and filling of the EPC liquid helium tank
Thursday, August 20, 2015		Start of launch countdown, EPC filling with liquid oxygen and liquid hydrogen





VA 225

EUTELSAT 8 West B - Intelsat 34



▶ COUNTDOWN AND FLIGHT

The countdown comprises all final preparation steps for the launcher, the satellites/spacecraft and the launch site. If it proceeds as planned, the countdown leads to the ignition of the main stage engine, then the two boosters, for a liftoff at the targeted time.

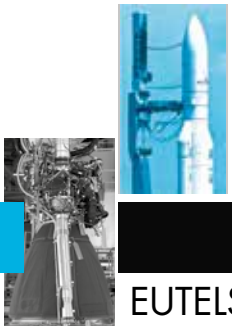
The countdown culminates in a synchronized sequence, which is managed by the control station and onboard computers starting at T-7 minutes.

If an interruption in the countdown means that T-0 falls outside the nominal liftoff window, then the launch will be delayed by one, two or more days, depending on the problem involved, and the solution developed.

TIME	EVENT
- 11 h 30 mn	Start of final countdown
- 07 h 30 mn	Check of electrical systems
- 04 h 50 mn	Start of filling of main cryogenic stage with liquid oxygen and hydrogen
- 03 h 20 mn	Chilldown of Vulcain main stage engine
- 01 h 10 mn	Check of connections between launcher and telemetry, tracking and command systems
- 7 mn	"All systems go" report, allowing start of synchronized sequence
- 4 mn	Tanks pressurized for flight
- 1 mn	Switch to onboard power mode
- 05 s	Cryogenic arm opening command
- 04 s	Onboard systems take over
- 03 s	Two inertial reference systems switch to flight mode

T-O	Ignition of the cryogenic main stage engine (EPC)
+ 07 s	Ignition of solid boosters (EAP)
+ 07 s	Liftoff
+ 12 s	End of vertical climb, beginning of pitch motion
+ 17 s	Beginning of roll maneuver
+ 2 mn 24 s	EAP separation
+ 3 mn 21 s	Fairing jettisoned
+ 7 mn 44 s	Acquisition by Natal tracking station
+ 8 mn 51 s	End of EPC thrust phase
+ 8 mn 57 s	EPC separation
+ 9 mn 06 s	Ignition of ESC-A stage
+ 13 mn 34 s	Acquisition by Ascension tracking station
+ 18 mn 26 s	Acquisition by Libreville tracking station
+ 23 mn 09 s	Acquisition by Malindi tracking station
+ 24 mn 58 s	End of ESC-A thrust phase / Injection
+ 28 mn 19 s	EUTELSAT 8 West B satellite separation
+ 30 mn 40 s	Sylda 5 separation
+ 41 mn 54 s	Intelsat 34 satellite separation
+ 01 h 8 mn 16 s	End of Arianespace mission





VA 225

EUTELSAT 8 West B - Intelsat 34



ARIANE 5 ECA MISSION PROFILE

The launcher's attitude and trajectory are entirely controlled by the two onboard computers in the Ariane 5 vehicle equipment bay (VEB).

The synchronized sequence starts 7 minutes before ignition (T-0). It is primarily designed to perform the final operations on the launcher prior to launch, along with the ultimate checks needed following switchover to flight configuration. As its name indicates, the sequence is fully automatic, and is performed concurrently by the onboard computer and by two redundant computers at the ELA 3 launch complex until T-4 seconds. The computers command the final electrical operations (startup of the flight program, servocontrols, switching from ground power supply to onboard batteries, etc.) and associated checks. They also place the propellant and fluid systems in flight configuration and perform associated checks. In addition, they handle the final ground system configurations, namely:

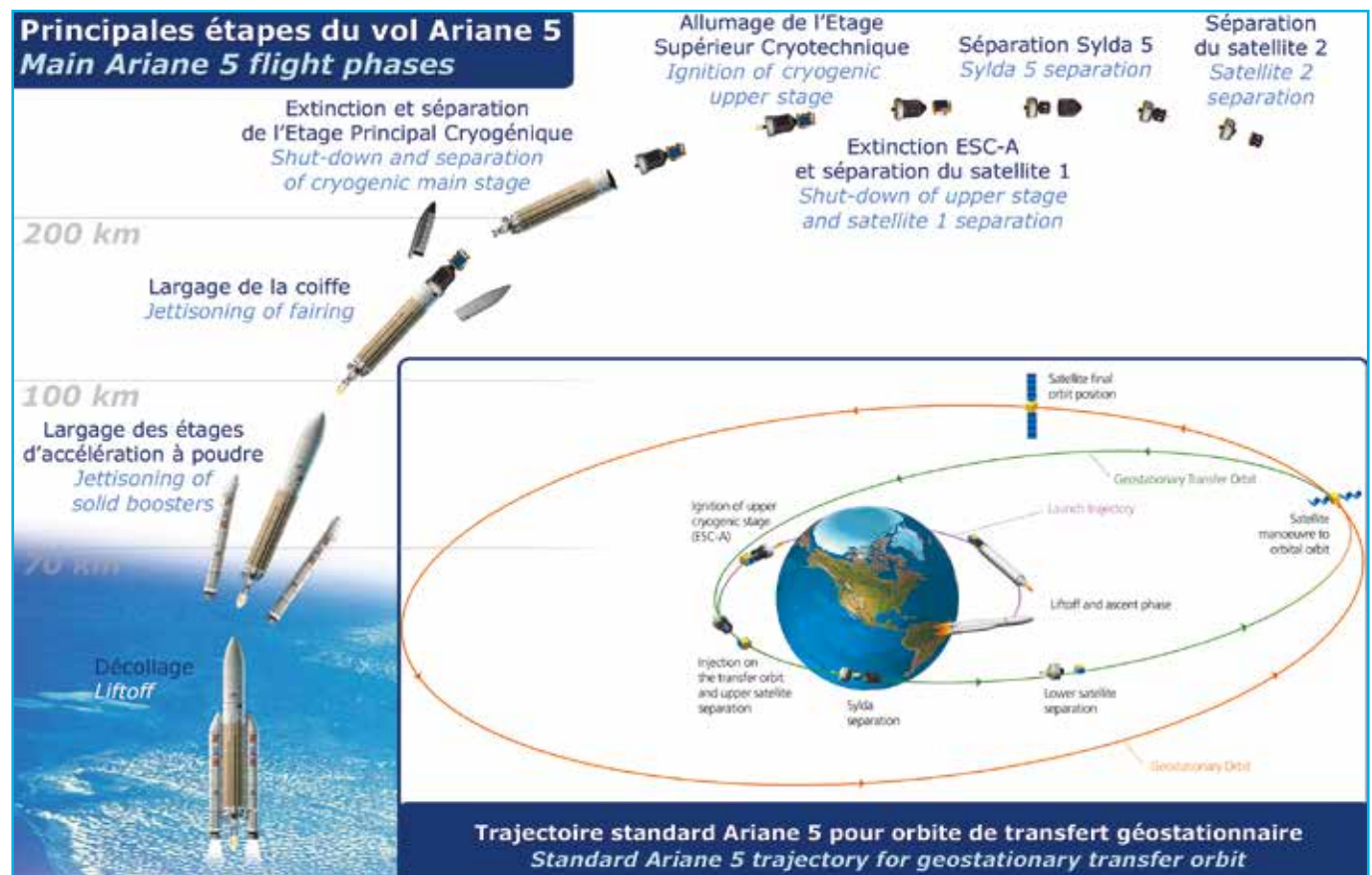
- Startup of water injection in the flame trenches and jet guide (T-30 sec).
- Hydrogen aspiration for chilldown of the Vulcain engine in the jet guide (T-18 sec).
- Burnoff of hydrogen used for chilldown (T-5.5 sec).

At T-4 seconds, the onboard computer takes over control of final engine startup and liftoff operations. It:

- Starts the ignition sequence for the Vulcain main stage engine (T-0).
- Checks engine operation (from T+4.5 to T+7.3 sec).
- Commands ignition of the solid boosters for immediate liftoff at T+7.3 seconds.

Any shutdown of the synchronized sequence after T-7 minutes automatically places the launcher back in its T-7 minutes configuration.

Ariane 5-ECA trajectory





VA 225

EUTELSAT 8 West B - Intelsat 34



ARIANESPACE AND THE GUIANA SPACE CENTER

Arianespace, the first launch services company in the world

Arianespace was founded in 1980 as the world's first launch Services & Solutions company. Arianespace now has 20 shareholders from ten European countries (including Airbus Safran Launchers, CNES and all European companies participating in the production of Ariane launchers). Since the outset, Arianespace has signed more than 450 launch contracts and launched more than 500 satellites. More than two-thirds of the commercial satellites now in service worldwide were launched by Arianespace. The company posted sales of 1.399 million euros in 2014.

As of March 1, 2015, Arianespace had 322 employees, working at the company's headquarters in Evry (near Paris), the Guiana Space Center in French Guiana, where the Ariane, Soyuz and Vega launch pads are located, and offices in Washington, D.C., Tokyo and Singapore. Arianespace offers launch services to satellite operators from around the world, including private companies and government agencies. These services call on three launch vehicles:

- The Ariane 5 heavy launcher, operated from the Guiana Space Center in French Guiana.
- The Soyuz medium launcher, currently in operation at the Guiana Space Center and the Baikonur Cosmodrome in Kazakhstan.
- The Vega light launcher, also operated from the Guiana Space Center.

Building on its complete family of launchers, Arianespace has won over half of the commercial launch contracts up for bid worldwide in the past two years. Arianespace now has a backlog of more than 70 satellites to be launched.

The Guiana Space Center: Europe's Spaceport

For 40 years, the Guiana Space Center (CSG), Europe's Spaceport in French Guiana, has offered a complete array of facilities for rocket launches. It mainly comprises the following:

- CNES/CSG technical center, including various resources and facilities that are critical to launch base operations, such as radars, telecom network, weather station, receiving sites for launcher telemetry, etc.
- Payload processing facilities (EPCU), in particular the S5 facility.
- Ariane, Soyuz and Vega launch complexes, comprising the launch zones and launcher integration buildings.
- Various industrial facilities, including those operated by Regulus, Europropulsion, Air Liquide Spatial Guyane and Airbus Defence and Space, all involved in the production of Ariane 5 components. A total of 40 European manufacturers and local companies are involved in operations.

Europe's commitment to independent access to space is based on actions by three key players: the European Space Agency (ESA), French space agency CNES and Arianespace. ESA is responsible for the Ariane, Soyuz and Vega development programs. Once these launch systems are qualified, ESA transfers responsibility to the operator Arianespace. ESA has helped change the role of the Guiana Space Center, in particular by funding the construction of the launch complexes, payload processing buildings and associated facilities. Initially used for the French space program, the Guiana Space Center has gradually become Europe's own Spaceport, according to the terms of an agreement between ESA and the French government. To ensure that the Spaceport is available for its programs, ESA takes charge of the lion's share of CNES/CSG fixed expenses, and also helps finance the fixed costs for the ELA launch complexes.

The French space agency CNES has several main responsibilities at the Guiana Space Center. It designs all infrastructure and, on behalf of the French government, is responsible for safety and security. It provides the resources needed to prepare the satellites and launcher for missions. Whether during tests or actual launches, CNES is also responsible for overall coordination of operations and it collects and processes all data transmitted from the launcher via a network of receiving stations to track Ariane, Soyuz and Vega rockets throughout their trajectories.

Arianespace in Guiana

In French Guiana, Arianespace is the contracting authority in charge of operating the family of three launchers, Ariane, Soyuz and Vega.

Arianespace supervises the integration and functional checks of the Ariane launcher, built by Airbus Defence and Space as production prime contractor, in the Launcher Integration Building (BIL). It then carries out acceptance tests of the launcher at the same time as satellite preparations in the Payload Preparation Complex (EPCU), operated by the Guiana Space Center (SNES/CSG). Arianespace next oversees final assembly of the launcher and integration of satellites in the Final Assembly Building (BAF), followed by transfer of the launcher to Launch Zone No. 3 (ZL3), and then final countdown and liftoff from Launch Complex No. 3 (CDL3).

Arianespace deploys a top-flight team and technical facilities to ensure the launchers and their satellite payloads are ready for their missions. Building on this unrivalled expertise and outstanding local facilities, Arianespace is now the undisputed benchmark in the global launch services market.

