

SPACEX

AsiaSat

PRESS KIT | AUGUST 2014  
**ASIASAT 6  
FALCON 9 LAUNCH**



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# SpaceX AsiaSat 6 Press Kit

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## HIGH RESOLUTION PHOTOS

SpaceX will post high-resolution photographs after the mission at: [spacex.com/media](http://spacex.com/media)

## MORE RESOURCES ON THE WEB

For SpaceX coverage, visit:

[spacex.com](http://spacex.com)  
[twitter.com/elonmusk](https://twitter.com/elonmusk)  
[twitter.com/spacex](https://twitter.com/spacex)  
[facebook.com/spacex](https://facebook.com/spacex)  
[plus.google.com/+SpaceX](https://plus.google.com/+SpaceX)  
[youtube.com/spacex](https://youtube.com/spacex)

For AsiaSat coverage, visit:

[www.asiasat.com](http://www.asiasat.com)

## WEBCAST INFORMATION

The launch will be webcast live, with commentary from SpaceX corporate headquarters in Hawthorne, CA, at [spacex.com/webcast](http://spacex.com/webcast). The official SpaceX webcast will begin approximately 20 minutes before launch, at 12:30 a.m. EDT.

# SpaceX AsiaSat 6

## Mission Overview



### Overview

SpaceX’s customer for its AsiaSat 6 mission is the satellite communications provider Asia Satellite Telecommunications Company Limited (AsiaSat). In this flight, the Falcon 9 rocket will deliver the AsiaSat 6 satellite to a 185 x 35786 km geosynchronous transfer orbit at 25.3 degrees.

The AsiaSat 6 launch window will open at approximately 12:50 a.m. EDT from Space Launch Complex 40 at Cape Canaveral Air Force Station, Florida.

If all goes as planned, the AsiaSat 6 satellite will be deployed approximately 32 minutes after liftoff.

### Satellite Payload

#### AsiaSat 6

This mission will launch the AsiaSat 6 satellite, a Space Systems/Loral (SSL) 1300 satellite designed for high power and region-wide connectivity. It carries two beams—one global beam and one regional beam, providing region-wide coverage over Asia, Australasia, Central Asia, and the Pacific Islands, with optimized power and look angles over the Pacific Rim countries. The satellite has a design life of 15 years and will be positioned at the nominal orbital location of 120 degrees East.

Equipped with high-power amplifiers, AsiaSat 6’s C and Ku-band frequencies payload will provide a superior satellite platform of exceptional quality and reliability for video distribution and broadband networks in the region. Thaicom Public Company Limited, Thailand’s leading satellite operator, is a partner of AsiaSat on AsiaSat 6 and will be using half of the satellite’s capacity to provide services under the name of THAICOM 7.

### Always a Challenging Mission

All spaceflight is incredibly complicated. Every component of the mission must operate optimally. Hardware, avionics, sensors, software and communications must function together flawlessly. If any aspect of the mission is not successful, SpaceX will learn from the experience and try again.

### Prelaunch

Months before a Falcon 9 launch, both rocket stages are transported to SpaceX’s development facility in McGregor, Texas for testing, and then trucked individually to SpaceX’s hangar at Space Launch Complex 40 at the Cape Canaveral Air Force Station in Cape Canaveral, Florida. SpaceX’s payload fairing and the satellite payload are shipped separately to the launch site. In the days leading up to launch, the spacecraft is processed and encapsulated within the fairing, and the rocket stages are integrated.

The final major preflight test is a static fire, when Falcon 9’s nine first-stage engines are ignited for a few seconds, with the vehicle held securely to the pad.



In the 24 hours prior to launch, Falcon 9 and its payload are transported to the launch pad and raised vertically. All ground personnel leave the pad in preparation for fueling of the launch vehicle.

### Launch Sequence

A little less than four hours before launch, the fueling process begins with liquid oxygen first, then RP-1 kerosene propellant. The plume coming off the vehicle during countdown is gaseous oxygen being vented from the tanks; this venting also necessitates topping off the liquid oxygen throughout the countdown.

Terminal countdown begins at T-10 minutes, at which point all systems are autonomous. The SpaceX Launch Director at the Cape Canaveral Air Force Station gives a final go for launch at T-2 minutes and 30 seconds. At T-2 minutes, the Air Force Range Control Officer confirms the physical safety of the launch area and provides the final range status. Just before liftoff, the launch pad’s water deluge system, dubbed “Niagara,” is activated.

Seconds before launch, the first stage’s nine Merlin engines ignite. The rocket computer commands the launch mount to release the vehicle for flight, and at T-0 Falcon 9 lifts off, putting out 1.3 million pounds of thrust.



### Flight

Early in the flight, the vehicle will pass through the area of maximum aerodynamic pressure—max Q. This is the point when mechanical stress on the rocket peaks due to a combination of the rocket’s velocity and resistance created by the Earth’s atmosphere.

Approximately 176 seconds into flight, the first-stage engines are shut down, an event known as main-engine cutoff, or MECO. Four seconds after MECO, the first and second stages will separate. Eight seconds later, the second stage’s single Merlin vacuum engine ignites to begin a nearly 6-minute burn to bring the satellite to a parking orbit. The fairing that protects the payload is deployed early in this burn. Approximately 17 minutes after injection into the parking orbit, the second stage will relight for just under one minute to carry the payload to its geosynchronous transfer orbit. AsiaSat 6 will be deployed approximately 32 minutes into flight.

# AsiaSat 6 Mission Timeline

Times are subject to change.

## LAUNCH DAY

### COUNTDOWN

#### Hour:Min:Sec

#### Events

- 10:00:00	Vehicle is powered on
- 4:00:00	Commence loading RP-1 (rocket grade kerosene)
- 3:20:00	Commence loading liquid oxygen (LOX)
- 3:15:00	LOX and RP-1 loading complete
- 0:10:00	Falcon 9 terminal count autosequence started
- 0:02:00	SpaceX Launch Director verifies go for launch
- 0:02:00	Range Control Officer (USAF) verifies range is go for launch
- 0:01:00	Command flight computer to begin final prelaunch checks. Turn on pad deck and Niagara water
- 0:00:40	Pressurize propellant tanks
- 0:00:03	Engine controller commands engine ignition sequence to start
0:00:00	Falcon 9 liftoff

### LAUNCH

#### Hour:Min

#### Events

0:03	1st stage engine shutdown/main engine cutoff (MECO)
0:03	1st and 2nd stages separation
0:03	2nd stage engine start
0:03	Fairing separation
0:09	2nd stage engine cutoff-1 (SECO-1)
0:26	2nd stage engine restart
0:27	2nd stage engine cutoff-2 (SECO-2)
0:32	AsiaSat 6 satellite deployed

# Falcon 9 Rocket

Falcon 9 is a two-stage rocket designed from the ground up by SpaceX for the reliable and cost-efficient transport of satellites and SpaceX’s Dragon spacecraft.

## QUICK FACTS

**Made in America.** All of Falcon 9’s structures, engines, separation systems, ground systems, and most avionics were designed, manufactured, and tested in the United States by SpaceX.

**21st-century rocket.** As the first rocket completely developed in the 21st century, Falcon 9 was designed from the ground up for maximum reliability, achieving 100% of primary mission objectives on all flights to date.

**Designed for maximum reliability.** Falcon 9 features a simple two-stage design to minimize the number of stage separations. (Historically, the main causes of launch failures have been stage separations and engine failures.) With nine engines on the first stage, Falcon 9 is capable of safely completing its mission even in the event of an engine shutdown.

**Statistics.** Falcon 9 topped with SpaceX fairing is 224.4 feet (68.4 meters) tall and 12 feet in diameter (the fairing is 17 feet in diameter). Its nine first-stage Merlin engines generate 1.3 million pounds of thrust at sea level, rising to 1.5 million pounds of thrust as Falcon 9 climbs out of the Earth’s atmosphere.

**In demand.** SpaceX has nearly fifty missions on its manifest, with launches for both commercial and government clients.

**Designed to safely transport crew.** Like the Dragon spacecraft, Falcon 9 was designed from the outset to transport crew to space.

**Mission success.** Falcon 9 has achieved 100% primary mission success on its flights to date, including routine flights to the International Space Station and most recently the successful August 2014 launch of the AsiaSat 8 satellite.

**Why “Falcon”?** Falcon 9 is named for the Millennium Falcon in the “Star Wars” movies. The number 9 refers to the nine Merlin engines that power Falcon 9’s first stage; one Merlin vacuum engine powers the second stage.



## ADVANCED TECHNOLOGY

### First Stage

Falcon 9 tanks are made of aluminum-lithium alloy, a material made stronger and lighter than aluminum by the addition of lithium. Inside the two stages are two large tanks each capped with an aluminum dome, which store liquid oxygen and rocket-grade kerosene (RP-1) engine propellants.

The tanks and domes are fabricated entirely in-house by SpaceX. Sections of aluminum are joined together using SpaceX's custom-made friction stir welders to execute the strongest and most reliable welding technique available. The structures are painted concurrent with the welding process.

Falcon 9's first stage incorporates nine Merlin engines. After ignition, a hold-before-release system ensures that all engines are verified for full-thrust performance before the rocket is released for flight. Then, with thrust greater than five 747s at full power, the Merlin engines launch the rocket to space. Unlike airplanes, a rocket's thrust actually increases with altitude. Falcon 9 generates 1.3 million pounds of thrust at sea level but gets up to 1.5 million pounds of thrust in the vacuum of space. The first stage engines are gradually throttled near the end of first-stage flight to limit launch vehicle acceleration as the rocket's mass decreases with the burning of fuel.

### Interstage

The interstage, which connects the first and second stages, is a composite structure made of sheets of carbon fiber and an aluminum honeycomb core, and it holds the release and separation system. Falcon 9 uses an all-pneumatic stage separation system for low-shock, highly reliable separation that can be tested on the ground, unlike pyrotechnic systems used on most launch vehicles.

### Second Stage

The second stage, powered by a single Merlin vacuum engine, delivers Falcon 9's payload to the desired orbit. The second stage engine ignites a few seconds after stage separation, and can be restarted multiple times to place multiple payloads into different orbits.

Like the first stage, the second stage is made from a high-strength aluminum-lithium alloy, using most of the same tooling, materials, and manufacturing techniques. This commonality yields significant design and manufacturing efficiencies.

### Merlin 1D Engine

The Merlin engine that powers the first stage of Falcon 9 is developed and manufactured in-house by SpaceX. Burning liquid oxygen and rocket-grade kerosene propellant, a single Merlin engine generates 654 kilonewtons (147,000 pounds) of thrust at liftoff, rising to 716 kilonewtons (161,000 pounds) as it climbs out of Earth's atmosphere. Merlin's thrust-to-weight ratio exceeds 150, making the Merlin the most mass-efficient booster engine ever built, while still maintaining the structural and thermal safety margins needed to carry astronauts.



Falcon 9 is the only vehicle currently flying with engine out capability. The nine-engine architecture on the first stage is an improved version of the design employed by the Saturn I and Saturn V rockets of the Apollo program, which had flawless flight records in spite of engine losses.

High-pressure liquid oxygen and kerosene propellant are fed to each engine via a single-shaft, dual-impeller turbopump operating on a gas generator cycle. Kerosene from the turbopump also serves as the hydraulic fluid for the thrust vector control actuators on each engine, and is then recycled into the low-pressure inlet. This design eliminates the need for a separate hydraulic power system, and eliminates the risk of hydraulic fluid depletion. Kerosene is also used for regenerative cooling of the thrust chamber and expansion nozzle.

### Octaweb

The Octaweb thrust structure houses the nine Merlin 1D engines at the base of the Falcon 9 first stage. To form the structure, sheet metal is welded together and engines are placed into the nine slots. The eight engines surrounding one center engine simplify the design and assembly of the engine section, reducing production time from about three months to a matter of weeks.

The layout also provides individual protection for each engine, and further protects other engines in case of an engine failure. It significantly reduces both the length and weight of the Falcon 9 first stage. This design also allows the first stage to survive reentry and return to Earth post-launch, with the eventual goal of rapidly refurbishing and reflying the stage.



### Reliability

This flight represents the twelfth flight of the Falcon 9, following eleven successful missions.

An analysis of launch failure history between 1980 and 1999 by the Aerospace Corporation showed that 91% of known failures can be attributed to three causes: engine failure, stage-separation failure, and, to a much lesser degree, avionics failure. Because Falcon 9 has nine Merlin engines clustered together to power the first stage, the vehicle is capable of sustaining certain engine failures and still completing its mission. This is an improved version of the architecture employed by the Saturn I and Saturn V rockets of the Apollo program, which had flawless flight records despite the loss of engines on a number of missions. With only two stages, Falcon 9 limits problems associated with separation events.

The in-house design and production of much of Falcon 9's avionics helps ensure compatibility among the rocket engines, propellant tanks, and electronics. In addition, SpaceX has a complete hardware simulator of the avionics in its Hawthorne factory. This simulator, utilizing electronics identical to those on the rocket, allows SpaceX to check nominal and off-nominal flight sequences and validate the data that will be used to guide the rocket.

SpaceX uses a hold-before-release system—a capability required by commercial airplanes, but not implemented on many launch vehicles. After the first-stage engines ignite, Falcon 9 is held down and not released for flight until all propulsion and vehicle systems are confirmed to be operating normally. An automatic safe shutdown occurs and propellant is unloaded if any issues are detected.



# SpaceX Fairing

The payload fairing sits atop Falcon 9 for the delivery of satellites to destinations in low-Earth orbit (LEO), geosynchronous transfer orbit (GTO) and beyond. SpaceX designed and developed its 5-meter fairing and manufactures every unit in Hawthorne, Calif. With an all-pneumatic deployment system (like Falcon 9’s interstage), the fairing experiences low shock and can be tested on the ground.

The fairing is a composite structure made of sheets of carbon fiber and an aluminum honeycomb core. Large enough to carry a city bus, the fairing stands 17’ in diameter and 43’ tall and is designed to reliably meet all mission requirements.



There are two halves to the fairing. One side is passive, and one is active with all actively controlled systems.

Structurally, the lower joint connects the fairing to the payload attach fitting and the 2<sup>nd</sup> stage. There is a vertical seam connecting the two fairing halves. The same latch mechanism is used in 14 locations along the vertical seam. Four pushers that share similar design components with the stage separation system separate the fairing halves at deployment.

Falcon 9 uses an all-pneumatic stage separation system for low-shock, highly reliable separation that can be tested on the ground, unlike pyrotechnic systems used on most launch vehicles.

# SpaceX Facilities

## SPACE LAUNCH COMPLEX 40, CAPE CANAVERAL AIR FORCE STATION

### Cape Canaveral, Florida

SpaceX’s Space Launch Complex 40 at Cape Canaveral Air Force Station is a world-class launch site that builds on strong heritage: The site at the north end of the Cape was used for many years to launch Titan rockets, among the most powerful rockets in the US fleet. SpaceX took over the facility in May 2008.



The center of the complex is composed of the concrete launch pad/apron and flame exhaust duct. Surrounding the pad are four lightning towers, fuel storage tanks, and the integration hangar. Before launch, Falcon 9’s stages and the payload are housed inside the hangar, where the payload is encapsulated within the fairing. A crane/lift system moves Falcon 9 into a transporter-erector system and the payload and fairing are mated to the rocket. The vehicle is rolled from hangar to launch pad on fixed rails shortly before launch to minimize exposure to the elements.

SpaceX Launch Control, also at Cape Canaveral, is responsible for operating the Falcon 9 throughout the launch countdown.

## SPACEX HEADQUARTERS

### Hawthorne, California

SpaceX’s rockets and spacecraft are designed and manufactured at the company’s headquarters in Hawthorne, California – a complex that spans nearly one million square feet.



## ROCKET DEVELOPMENT FACILITY

### McGregor, Texas

Engines and structures are tested at a 900-acre state-of-the-art rocket development facility in McGregor, Texas.



## SPACE LAUNCH COMPLEX 4E, VANDENBERG AIR FORCE BASE

### Lompoc, California

SpaceX's Space Launch Complex 4E at Vandenberg Air Force Base in California is used for launches to high inclination and polar orbits, and will support launches of the Falcon Heavy.





# SpaceX Company Overview

SpaceX designs, manufactures, and launches the world's most advanced rockets and spacecraft. The company was founded in 2002 by Elon Musk to revolutionize space transportation, with the ultimate goal of enabling people to live on other planets. Today, SpaceX is advancing the boundaries of space technology through its Falcon launch vehicles and Dragon spacecraft.

## Transforming the Way Rockets Are Made

SpaceX's proven designs are poised to revolutionize access to space. Because SpaceX designs and manufactures its own rockets and spacecraft, the company is able to develop quickly, test rigorously, and maintain tight control over quality and cost. One of SpaceX's founding principles is that simplicity and reliability are closely coupled.

## Making History

SpaceX has gained worldwide attention for a series of historic milestones. It is the only private company ever to return a spacecraft from low-Earth orbit, which it first accomplished in December 2010. The company made history again in May 2012 when its Dragon spacecraft attached to the International Space Station (ISS), exchanged cargo payloads, and returned safely to Earth—a technically challenging feat previously accomplished only by governments. SpaceX has since completed three of 12 official resupply missions. SpaceX is now working to develop the first reusable rocket, and successfully returned a first stage from space for the first time in history in April 2014.



## Advancing the Future

Under a \$1.6 billion contract with NASA, SpaceX will fly at least 9 more cargo supply missions to the ISS for a total of 12—and in the near future, SpaceX will carry crew as well. Dragon was designed from the outset to carry astronauts and now, under a \$440 million agreement with NASA, SpaceX is making modifications to make Dragon crew-ready.

SpaceX is the world's fastest-growing provider of launch services. Profitable and cash-flow positive, the company has nearly 50 launches on its manifest, representing nearly \$5 billion in contracts. These include commercial satellite launches as well as NASA missions.

Currently under development is the Falcon Heavy, which will be the world's most powerful rocket. All the while, SpaceX continues to work toward one of its key goals—developing reusable rockets, a feat that will transform space exploration by radically reducing its cost.



## Key SpaceX Milestones

- **March 2002** SpaceX is incorporated
- **March 2006** First flight of SpaceX's Falcon 1 rocket
- **August 2006** NASA awards SpaceX \$278 million to demonstrate delivery and return of cargo to ISS
- **September 2008** Falcon 1, SpaceX's prototype rocket, is the first privately developed liquid-fueled rocket to orbit Earth
- **December 2008** NASA awards SpaceX \$1.6 billion contract for 12 ISS cargo resupply flights
- **July 2009** Falcon 1 becomes first privately developed rocket to deliver a commercial satellite into orbit
- **June 2010** First flight of SpaceX's Falcon 9 rocket, which successfully achieves Earth orbit
- **December 2010** On Falcon 9's second flight and the Dragon spacecraft's first, SpaceX becomes the first commercial company to launch a spacecraft into orbit and recover it successfully
- **May 2012** SpaceX's Dragon becomes first commercial spacecraft to attach to the ISS, deliver cargo, and return to Earth
- **August 2012** SpaceX wins \$440 million NASA Space Act Agreement to develop Dragon to transport humans into space
- **October 2012** SpaceX completes first of 12 official cargo resupply missions to the ISS, beginning a new era of commercial space transport
- **September 2013** First flight of SpaceX's upgraded Falcon 9 rocket, with successful reentry of the first stage booster
- **December 2013** First flight of Falcon 9 to geosynchronous transfer orbit
- **April 2014** SpaceX successfully lands Falcon 9 first stage in Atlantic Ocean

## Profile

SpaceX is a private company owned by management and employees, with minority investments from Founders Fund, Draper Fisher Jurvetson, and Valor Equity Partners. The company has more than 3,000 employees with its headquarters in Hawthorne, California; launch facilities at Cape Canaveral Air Force Station, Florida, and Vandenberg Air Force Base, California; a rocket development facility in McGregor, Texas; and offices in Houston, Texas; Chantilly, Virginia; and Washington, DC.

For more information, including SpaceX's Launch Manifest, visit the SpaceX website at [www.spacex.com](http://www.spacex.com).

## SpaceX Leadership

### ELON MUSK

#### CEO and Chief Designer



As CEO and Chief Designer, Elon Musk oversees development of rockets and spacecraft for missions to Earth orbit and ultimately to other planets. The SpaceX Falcon 1 was the first privately developed liquid-fueled rocket to reach orbit. In 2008, SpaceX won a NASA contract to use its Falcon 9 rocket and Dragon spacecraft to commercially provide the cargo transport function of the space shuttle, which was retired in 2011. In 2010, SpaceX became the first commercial company to successfully recover a spacecraft from Earth orbit with its Dragon spacecraft. And in 2012, SpaceX's Dragon spacecraft became the first commercial vehicle to successfully attach to the International Space Station and return cargo to Earth.

Prior to SpaceX, Elon cofounded PayPal, the world's leading Internet payment system, and served as the company's Chairman and CEO. Before PayPal, Elon cofounded Zip2, a provider of Internet software to the media industry.

He has a Bachelor of Science in physics from the University of Pennsylvania and a Bachelor of Arts in business from the Wharton School.

**GWYNNE SHOTWELL**  
**President and Chief Operating Officer**



As President and COO of SpaceX, Gwynne Shotwell is responsible for day-to-day operations and for managing all customer and strategic relations to support company growth. She joined SpaceX in 2002 as Vice President of Business Development and built the Falcon vehicle family manifest to nearly 50 launches, representing nearly \$5 billion in revenue.

Prior to joining SpaceX, Gwynne spent more than 10 years at the Aerospace Corporation where she held positions in Space Systems Engineering & Technology as well as Project Management. Gwynne was subsequently recruited to be Director of Microcosm’s Space Systems Division, where she served on the executive committee and directed corporate business development.

Gwynne participates in a variety of STEM (Science, Technology, Engineering and Mathematics)-related programs, including the Frank J. Redd Student Scholarship Competition. Under her leadership the committee raised more than \$350,000 in scholarships in 6 years.

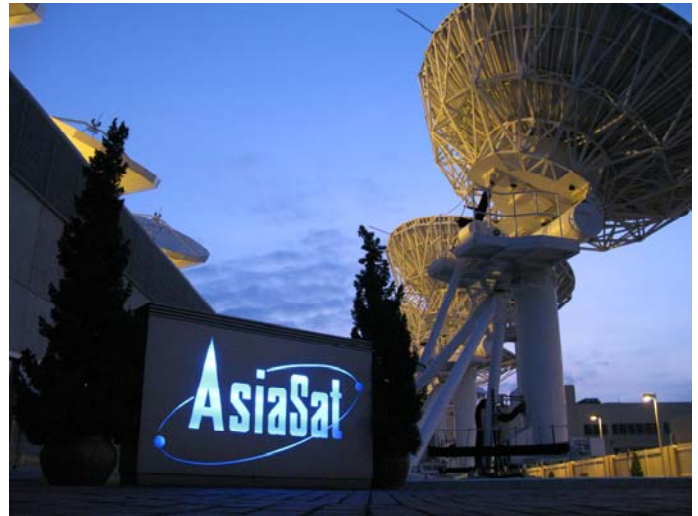
Gwynne received, with honors, a Bachelor of Science and a Master of Science in mechanical engineering and applied mathematics from Northwestern University.

# AsiaSat Company Overview

Asia Satellite Telecommunications Company Limited (AsiaSat), the leading satellite operator in Asia, serves over two-thirds of the world’s population with its five in-orbit satellites, AsiaSat 3S, AsiaSat 4, AsiaSat 5, AsiaSat 7 and AsiaSat 8.

AsiaSat provides services to a diverse range of clients in the world, including international, regional and national broadcasters, news agencies, telecommunications and broadband services providers, as well as corporations and governments for satellite-based networks.

Since 1990, AsiaSat has been at the forefront of Asian satellite television. Today, AsiaSat operates Asia's most popular TV distribution platforms for South Asian, East Asian, European, Middle Eastern and international programming. Over 450 television and radio channels are delivered by AsiaSat’s satellites offering access to over 710 million TV households across the Asia-Pacific region. AsiaSat also provides telecommunications operators and end-users services such as private VSAT networks and broadband multimedia.



AsiaSat’s state-of-the-art earth station in Hong Kong.

Through its Tai Po Earth Station in Hong Kong and worldwide teleport partners, AsiaSat offers world-class value added transmission services including signal downlink, turnaround and uplink, fibre connectivity, DVB-S2/S MCPC platforms, signal encryption, playout service, equipment hosting and disaster recovery facilities.

AsiaSat has been expanding its fleet capacity and diversifying its service portfolio to meet the growing and changing needs of its clients. With new satellites AsiaSat 6 and AsiaSat 8; and AsiaSat 9 on order and planned for launch in 2017, AsiaSat with its high quality C, Ku and Ka-band capacity, is ready to serve new DTH, video broadcast, VSAT and data transmission services in the region.

AsiaSat is a wholly-owned subsidiary of Asia Satellite Telecommunications Holdings Limited, a company listed on The Stock Exchange of Hong Kong Limited (Stock Code: 1135). For more information, please visit [www.asiasat.com](http://www.asiasat.com).



AsiaSat provides 24/7 around the clock support to customers.



## AsiaSat Milestones

<b>Feb 1988</b>	AsiaSat formally established
<b>Apr 1990</b>	AsiaSat 1, Asia's first privately owned regional satellite, successfully launched
<b>Nov 1995</b>	Pioneered digital broadcasting in Asia with the launch of AsiaSat 2
<b>Jun 1996</b>	Listed on The Stock Exchange of Hong Kong Limited
<b>Mar 1999</b>	AsiaSat 3S, AsiaSat 1's replacement, successfully launched
<b>Apr 2003</b>	AsiaSat 4 successfully launched to expand services in Asia from 122° E
<b>Jan 2004</b>	AsiaSat Tai Po Earth Station in Hong Kong in full operation
<b>Aug 2009</b>	AsiaSat 5, AsiaSat 2's replacement, successfully launched
<b>Nov 2011</b>	AsiaSat 6 and AsiaSat 8 projects commissioned
<b>Nov 2011</b>	AsiaSat 7, AsiaSat 3S's replacement, successfully launched
<b>May 2012</b>	AsiaSat Tai Po Earth Station completed expansion
<b>Feb 2013</b>	Entered 25 years of service in Asia
<b>Dec 2013</b>	Commissioned AsiaSat 9, AsiaSat 4's replacement
<b>Aug 2014</b>	AsiaSat 8 successfully launched to co-locate with AsiaSat 7

## AsiaSat Leadership

**William David Wade**  
**President and Chief Executive Officer**



Mr. William David Wade was appointed as the President and Chief Executive Officer of AsiaSat on August 1, 2010. Prior to assuming his role as Chief Executive Officer, Mr. Wade had served as AsiaSat's Deputy Chief Executive Officer for 17 years.

Mr. Wade has over 27 years' experience in the satellite and cable television industry. Prior to joining AsiaSat in April 1994, he was with Hutchison Whampoa, as Director of Business Development for Pan Asian Systems, and was in charge of all sales and regional operations. Mr. Wade had also served as Executive Director for Echosphere International (Echostar), where he established Echosphere's permanent Asian operations in Singapore while managing the company's activities

in Asia and the Middle East.

He speaks Mandarin and holds a Bachelor of Arts (Honors) Degree in Communications from the University of Utah, and a Master of International Management Degree from Thunderbird (the Global School of International Management).

# AsiaSat 6 Overview

## Next Generation Satellite for Asia-Pacific-Wide Connectivity

AsiaSat 6, a Space Systems/Loral (SSL) 1300 satellite, is designed for high power and region-wide connectivity.

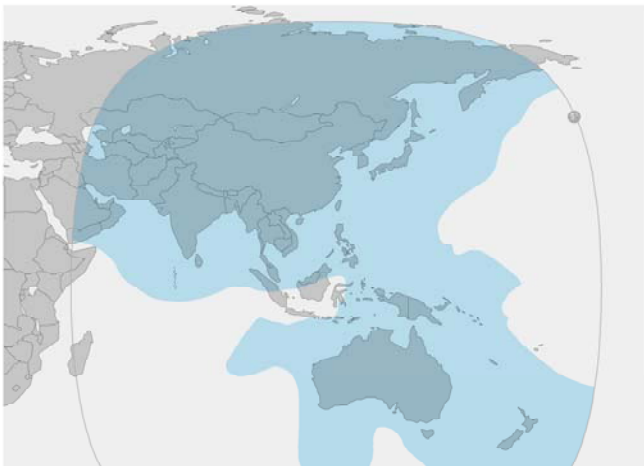
The satellite has a design life of 15 years and will be positioned at the nominal orbital location of 120°E. It carries two beams—one global beam and one regional beam, providing region-wide coverage over Asia, Australasia, Central Asia, and the Pacific Islands, with optimised power and look angles over Pacific Rim countries.



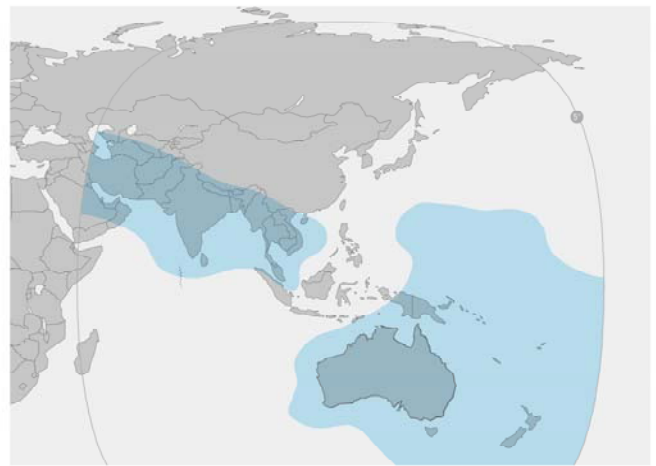
Equipped with high-power amplifiers, its C and Ku-band frequencies payload will provide a superior satellite platform of exceptional quality and reliability for video distribution and broadband networks in the region.

Thaicom Public Company Limited, Thailand’s leading satellite operator, is a partner of AsiaSat on AsiaSat 6 and will be using half of the satellite’s capacity to provide services under the name of THAICOM 7.

**AsiaSat 6 Global Beam**



**AsiaSat 6 Regional Beam**





# Thaicom Company Overview

Thaicom Public Company Limited, a leading Asian satellite operator, was established in 1991 with a unique proposition to provide integrated solutions for satellite broadcast and broadband under the international standard service. The Company houses many high profile engineering teams to provide leading-edge innovative telecommunication and satellite solutions that answer every need with a full spectrum of services. The Company was ranked #10 of the SPACENEWS 2013 Global Top Fixed Satellite Service Operators.

## **The beginning of a new era of growth for the company**

The Thaicom story is far from over, though, and this year we turn to New Frontiers with new “Birds” including THAICOM 6 and THAICOM 7 in 2014, THAICOM 8 coming in 2016, and the beginning of a new era of growth for the company.

## **New Frontiers—New Birds**

The Company has successfully launched THAICOM 6 into a 78.5 degrees East orbital slot in January 2014 co-locating with THAICOM 5, to provide additional capacity that strengthens THAICOM’s “Hotbird” position on that orbital slot, and also serve the African market by the name “Aficom-1.”

And now, THAICOM 7, in partnership with AsiaSat 6’s payload, is ready to be launched into the 120 degrees East orbital slot by Space Exploration Technologies Corporation (SpaceX)’s Falcon 9 rocket. There are 14 C-Band transponders in total on THAICOM 7’s payloads, which will help fulfill demand for services in South Asia and Southeast Asia, as well as Australia and New Zealand, with clients also able to cross-connect to other regions.

THAICOM 7 will create economic opportunity for Thailand and expand the competency of the company to provide telecommunication services as well as respond to customer demand within the servicing area.

To continue our journey to serve our customers better with greater servicing capacity and footprint in the regions, the Company has started the THAICOM 8 satellite project, which will be launched in the first half of 2016. THAICOM 8 is comprised of 24 KU-band transponders and will also strengthen THAICOM’s Hot Bird platform at 78.5 degrees East. THAICOM 8 will be manufactured by Orbital Sciences Corp. and will be launched by SpaceX’s Falcon 9 rocket.

Thaicom is listed on the Stock Exchange of Thailand (SET) under the trade symbol “THCOM.” To find out more information, please visit our websites at [www.thaicom.net](http://www.thaicom.net) and [www.ipstar.com](http://www.ipstar.com).



**New Frontiers—New Solutions & New Partnerships**

New satellites and new territories are only the first steps in our mission to serve our clients better. Building on our end-to-end solutions for broadcast and media and broadband and data, and adding our portfolio of end-to-end SATCOM mobility services and solutions for air, land, and sea vehicles, Thaicom is the first operator to introduce commercial In-Flight Connectivity Service using Ku-band in Asia-Pacific this year. What’s more, we are also working to develop Ultra High Definition to serve our broadcast partners even better in the future, with more than 100 HD channels on our platforms at present.



With new services inevitably come new partnerships and acquisitions, adding to our sustained growth. We have welcomed new partners to the Company, which helps us serve our customers better and continue to work to only the highest standards to ensure the best customer experience.

**Our reputation of breaking new ground through innovative solutions and pioneering technology**

Thaicom has completed six successful satellite launches into orbit; three satellites are in operation. THAICOM 5 is a “Hotbird” broadcasting satellite at 78.5 degrees East for Thailand and South-East Asia, boarding more than 670 TV channels, coverage over Thailand and South-East Asia. We were also the first company to offer MPEG-2 video standard and Direct-to-Home TV

via satellite in Asia. THAICOM 4 (IPSTAR) is the first High Throughput Satellite in the world and is providing broadband services to 14 countries across the Asia-Pacific region. With the unique performance of THAICOM 4, the Company is enabled to provide Internet broadband services, mobile backhaul and Trunking services, and End-to-End solutions.

**Benefits of satellite technology for Sustainable Development of both business and society**

As a business leader in satellite communications, Thaicom harnesses the power of satellite technology in order to support sustainable development that is good for business as well as society as a whole.

Beyond our commitment to contribute benefit to society wherever we go, Thaicom has provided support to many countries in the region to recover their communications network when disasters occurred such as Japan, China, New Zealand and the Philippines, using our cutting-edge technology of THAICOM 4/IPSTAR satellite.

**Thaicom...Revolves Around You**

# THAICOM 7 Overview



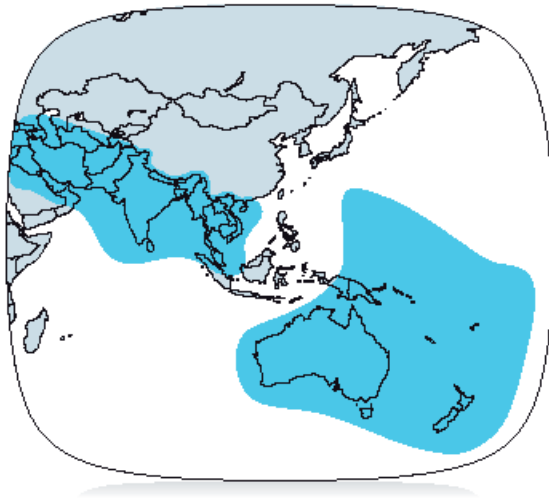
## THAICOM-7 Specifications

<b>Manufacturer:</b>	Space Systems Loral , USA
<b>Nominal Orbital Slot:</b>	120° East
<b>Design Life:</b>	15 Years
<b>Attitude Control:</b>	3-Axis Stabilized
<b>Launch Mass:</b>	Approx. 3700 kg
<b>Launch Date:</b>	2014
<b>Transponder Capacity:</b>	
<b>C-Band</b>	14x36 MHz

Technical specifications are subject to change without prior notice.

## THAICOM-7

Service Footprint



120°E