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Space Exploration Technologies Corp. commonly referred to as SpaceX , is an American spacecraft manufacturer , launch service provider , defense contractor and satellite communications company headquartered in Hawthorne, California . The company was founded in 2002 by Elon Musk with the goal of reducing space transportation costs and ultimately developing a sustainable colony on Mars. The company currently operates the Falcon 9 and Falcon Heavy rockets along with the Dragon and Starship spacecraft.

SpaceX uses a high degree of vertical integration in the production of its rockets and rocket engines. SpaceX builds its rocket engines , rocket stages , spacecraft , principal avionics and all software in-house in their Hawthorne facility, which is unusual for the space industry.

SpaceX is responsible for the transportation of NASA astronauts to and from the ISS. The NASA contracts started as part of the Commercial Crew Development (CCDev) program, aimed at developing commercially operated spacecraft capable of delivering astronauts to the ISS. The first contract was awarded to SpaceX in 2011, followed by another in 2012 to continue development and testing of its Dragon 2 spacecraft.

The company has also been described as having a work culture that pushes employees to work excessively, and was described as fostering a burnout culture. According to a memo by Blue Origin , a rival aerospace company, SpaceX expected very long work hours, work on weekends, and limited use of holidays.

SpaceX is developing a fully reusable super-heavy lift launch system known as Starship . It comprises a reusable first stage, called Super Heavy , and the reusable Starship second stage space vehicle. The system is intended to supersede the company's existing launch vehicle hardware by the early 2020s.

In January 2015, SpaceX announced it would be entering the satellite production business and global satellite internet business. The first satellite facility is a 30,000 sq ft (2,800 m²) office building located in Redmond, Washington . As of January 2017, a second facility in Redmond was acquired with 40,625 sq ft (3,774.2 m²) and has become a research and development laboratory for the satellites. In July 2016, SpaceX acquired an additional 8,000 sq ft (740 m²) office space in Irvine, California to focus on satellite communications.

SpaceX Headquarters is located in the Los Angeles suburb of Hawthorne, California . The large three-story facility, originally built by Northrop Corporation to build Boeing 747 fuselages, houses SpaceX's office space, mission control, and Falcon 9 manufacturing facilities.

SpaceX is headquartered in Hawthorne, California , which also serves as its primary manufacturing plant. The company operates a research and major operation in Redmond, Washington , owns a test site in Texas and operates three launch sites, with another under development. SpaceX also operates regional offices in Texas, Virginia, and Washington, D.C. SpaceX was incorporated in the state of Delaware .

SpaceX is the first private company to develop a liquid-propellant rocket that has reached orbit; to launch, orbit, and recover a spacecraft; to send a spacecraft to the International Space Station ; and to send astronauts to the International Space Station. It is also the first organization of any type to achieve a vertical propulsive landing of an orbital rocket booster and the first to reuse such a booster. The company's Falcon 9 rockets have landed and reflown more than 200 times . As of December 2023, SpaceX has around \$180 billion valuation.

In 2017, SpaceX formed a subsidiary, The Boring Company , and began work to construct a short test tunnel on and adjacent to the SpaceX headquarters and manufacturing facility, using a small number of SpaceX employees, which was completed in May 2018, and opened to the public in December 2018. During 2018, The Boring Company was spun out into a separate corporate entity with 6% of the equity going to SpaceX, less than 10% to early employees, and the remainder of the equity to Elon Musk.

In June 2015, SpaceX announced that they would sponsor a Hyperloop competition , and would build a 1.6 km (0.99 mi) long subscale test track near SpaceX's headquarters for the competitive events. The company has held the annual competition since 2017.

In April 2011, as part of its second-round Commercial Crew Development (CCDev) program, NASA issued a \$75 million contract for SpaceX to develop an integrated launch escape system for Dragon in preparation for human-rating it as a crew transport vehicle to the ISS. NASA awarded SpaceX a fixed-price Space Act Agreement (SAA) to produce a detailed design of the crew transportation system in August 2012.

In December 2022, SpaceX announced Starshield, a program to incorporate military or government entity payloads on board a Starlink-derived satellite bus. The Space Development Agency is a key customer procuring satellites for a space-based missile defense system.

The area has one of the largest concentrations of space sector headquarters, facilities, and/or subsidiaries in the U.S., including Boeing / McDonnell Douglas main satellite building campuses, The Aerospace Corporation, Raytheon, NASA's Jet Propulsion Laboratory, United States Space Force's Space Systems Command at Los Angeles Air Force Base, Lockheed Martin, BAE Systems, Northrop Grumman, and AECOM, etc., with a large pool of aerospace engineers and recent college engineering graduates.

SpaceX won demonstration and actual supply contracts from NASA for the International Space Station (ISS) with technology the company developed. SpaceX is also certified for U.S. military launches of Evolved Expendable Launch Vehicle-class (EELV) payloads. With approximately thirty missions on the manifest for 2018 alone, SpaceX represents over \$12 billion under contract.

SpaceX also designs and launches custom military satellites for the Space Development Agency as part of a new missile defense system in low Earth orbit. The constellation would give the United States capabilities to sense, target and potentially intercept nuclear missiles and hypersonic weapons launched from anywhere on Earth. Both China and Russia brought concerns to the United Nations about the program, and various organizations warn it could be destabilizing and trigger an arms race in space.

In 2006, SpaceX won a NASA Commercial Orbital Transportation Services (COTS) Phase 1 contract to demonstrate cargo delivery to the International Space Station (ISS), with a possible contract option for crew transport. Through this contract, designed by NASA to provide "seed money" through Space Act Agreements for developing new capabilities, NASA paid SpaceX \$396 million to develop the cargo configuration of the Dragon spacecraft, while SpaceX developed the Falcon 9 launch vehicle with their own resources. These Space Act Agreements have been shown to have saved NASA millions of dollars in development costs, making rocket development 4–10 times cheaper than if produced by NASA alone.

In early 2012, approximately two-thirds of SpaceX stock was owned by Musk and his seventy million shares were then estimated to be worth \$875 million on private markets, valuing SpaceX at \$1.3 billion. In May 2012, with the Dragon C2+ launch Dragon became the first commercial spacecraft to deliver cargo to the International Space Station. After the flight, the company private equity valuation nearly doubled to \$2.4 billion or \$20/share. By that time, SpaceX had operated on total funding of approximately \$1 billion over its first decade of operation. Of this, private equity provided approximately \$200 million, with Musk investing approximately \$100 million and other investors having put in about \$100 million.

SpaceX launched the first commercial mission for a private customer in 2013. In 2014, SpaceX won nine contracts out of the 20 that were openly competed worldwide. That year Arianespace requested that European governments provide additional subsidies to face the competition from SpaceX. Beginning in 2014, SpaceX capabilities and pricing also began to affect the market for launch of U.S. military payloads, which for nearly a decade had been dominated by the large U.S. launch provider United Launch Alliance (ULA). The monopoly had allowed launch costs by the U.S. provider to rise to over \$400 million over the years. In September 2014, NASA's Director of Commercial Spaceflight, Kevin Crigler, awarded SpaceX the Commercial Crew Transportation Capability (CCtCap) contract to finalize the development of the Crew Transportation System. The contract included several technical and certification milestones, an uncrewed flight test, a crewed flight test, and six operational missions after certification.

In 2005, SpaceX announced that it had been awarded an Indefinite Delivery/Indefinite Quantity (IDIQ) contract, allowing the United States Air Force to purchase up to \$100 million worth of launches from the company. Three years later, NASA announced that it had awarded an IDIQ Launch Services contract to SpaceX for up to \$1 billion, depending on the number of missions

awarded. In December 2012, SpaceX announced its first two launch contracts with the United States Department of Defense (DoD). The United States Air Force Space and Missile Systems Center awarded SpaceX two EELV-class missions: Deep Space Climate Observatory (DSCOVR) and Space Test Program 2 (STP-2). DSCOVR was launched on a Falcon 9 launch vehicle in 2015, while STP-2 was launched on a Falcon Heavy on 25 June 2019.

In 2004, SpaceX protested against NASA to the Government Accountability Office (GAO) because of a sole-source contract awarded to Kistler Aerospace . Before the GAO could respond, NASA withdrew the contract, and formed the COTS program . In 2005, SpaceX announced plans to pursue a human-rated commercial space program through the end of the decade, a program that would later become the Dragon spacecraft . In 2006, the company was selected by NASA and awarded \$396 million to provide crew and cargo resupply demonstration contracts to the ISS under the COTS program .

In early 2002, Elon Musk started to look for staff for his company, soon to be named SpaceX. Musk approached five people for the initial positions at the fledgling company, including Michael Griffin who was offered the position of Chief Engineer, Jim Cantrel and John Garvey (Cantrel and Garvey would later found the company Vector Launch), rocket engineer Tom Mueller , and Chris Thompson. SpaceX was first headquartered in a warehouse in El Segundo, California . Early SpaceX employees, such as Tom Mueller (CTO), Gwynne Shotwell (COO), and Chris Thompson (VP of Operations), came from neighboring TRW and Boeing corporations. By November 2005, the company had 160 employees. Musk personally interviewed and approved all of SpaceX's early employees. Musk has stated that one of his goals with SpaceX is to decrease the cost and improve the reliability of access to space , ultimately by a factor of ten.

In January 2015, SpaceX raised \$1 billion in funding from Google and Fidelity , in exchange for 8.33% of the company, establishing the company valuation at approximately \$12 billion. The same month SpaceX announced the development of a new satellite constellation, called Starlink , to provide global broadband internet service with 4,000 satellites.

On 19 August 2020, after a \$1.9 billion funding round, one of the largest single fundraising pushes by any privately held company, SpaceX's valuation increased to \$46 billion.

In August 2022, Reuters reported that the European Space Agency (ESA) began initial discussions with SpaceX that could lead to the company's launchers being used temporarily, given that Russia blocked access to Soyuz rockets amid the Russian invasion of Ukraine . Since that same invasion and in the greater war between Russia and Ukraine, Starlink was extensively used .

Starlink is an internet satellite constellation under development by SpaceX that consists of thousands of cross-linked communications satellites in ~550 km orbits. Owned and operated by SpaceX, its goal is to address the significant unmet demand worldwide for low-cost broadband capabilities.

In March 2020 SpaceX revealed the Dragon XL, designed as a resupply spacecraft for NASA's planned Lunar Gateway space station under a Gateway Logistics Services (GLS) contract. Dragon XL is planned to launch on the Falcon Heavy , and is able to transport over 5,000 kg (11,000 lb) to the Gateway. Dragon XL will be docked at the Gateway for six to twelve months at a time.

SpaceX manufactures and flies Starship test vehicles from the SpaceX Starbase in Boca Chica near Brownsville, Texas , having announced first plans for the launch facility in August 2014. The Federal Aviation Administration (FAA) issued the permit in July 2014. SpaceX broke ground on the new launch facility in 2014 with construction ramping up in the latter half of 2015, with the first suborbital launches from the facility in 2019 and orbital launches starting in 2023. Some residents of Boca Chica Village , Brownsville , and environmental activists criticized the site along with Starship development program in various aspects.

Since the founding of SpaceX in 2002, the company has developed several rocket engines – Merlin , Kestrel , and Raptor – for use in launch vehicles , Draco for the reaction control system of the Dragon series of spacecraft, and SuperDraco for abort capability in Crew Dragon .

In January 2019, SpaceX announced it would lay off 10% of its workforce to help finance the Starship and Starlink projects. The purpose of the Starship vehicle is to enable large-scale transit of humans and cargo to the Moon, Mars, and beyond. Construction of initial prototypes and tests for Starship started in early 2019 in Florida and Texas. All Starship construction and testing moved to

the new SpaceX South Texas launch site later that year. In May 2019, SpaceX also launched the first large batch of 60 Starlink satellites, beginning to deploy what would become the world's largest commercial satellite constellation the following year. The company raised \$1.33 billion of capital across three funding rounds in 2019. By May 2019, the valuation of SpaceX had risen to \$33.3 billion and reached \$36 billion by March 2020.

Commercial Resupply Services (CRS) are a series of contracts awarded by NASA from 2008 to 2016 for delivery of cargo and supplies to the International Space Station on commercially operated spacecraft. The first CRS contracts were signed in 2008 and awarded \$1.6 billion to SpaceX for 12 cargo transport missions, covering deliveries to 2016. SpaceX CRS-1, the first of the 12 planned resupply missions, launched in October 2012, achieved orbit, berthed and remained on station for 20 days, before re-entering the atmosphere and splashing down in the Pacific Ocean.

On 16 July 2021 SpaceX entered an agreement to acquire Swarm Technologies, a private company building a low Earth orbit satellite constellation for communications with Internet of things (IoT) devices, for \$524 million.

When Musk returned to Moscow, Russia, with Michael Griffin, they found the Russians increasingly unreceptive. On the flight home Musk announced he could start a company to build the affordable rockets they needed instead. By applying vertical integration, using cheap commercial off-the-shelf components when possible, and adopting the modular approach of modern software engineering, Musk believed SpaceX could significantly cut launch price. Griffin would later be appointed NASA administrator, and play a part in the formation of the COTS program.

SpaceX also plans to introduce floating launch platforms. These are modified oil rigs to use in the 2020s to provide a sea launch option for their second-generation launch vehicle: the heavy-lift Starship system, consisting of the Super Heavy booster and Starship second stage.

A significant milestone was achieved in May 2020, when SpaceX successfully launched two NASA astronauts (Doug Hurley and Bob Behnken) into orbit on a Crew Dragon spacecraft during Crew Dragon Demo-2, making SpaceX the first private company to send astronauts to the International Space Station and marking the first crewed orbital launch from American soil in 9 years. The mission launched from Kennedy Space Center Launch Complex 39A (LC-39A) of the Kennedy Space Center in Florida.

SpaceX has developed the Dragon spacecraft to transport cargo and crew to the International Space Station. The first version of Dragon, used only for cargo, was first launched in 2010. The currently operational second generation Dragon spacecraft, known as Dragon 2, conducted its first flight, without crew, to the ISS in early 2019, followed by a crewed flight of Dragon 2 in 2020. The cargo variant of Dragon 2 flew for the first time in December 2020, for a resupply to the Space Station as part of the CRS contract with NASA.

In December 2022, the U.S. Federal Communications Commission (FCC) approved to launch up to 7,500 of SpaceX's next-generation satellites in its Starlink internet network.

SpaceX operates its Rocket Development and Test Facility in McGregor, Texas. All SpaceX rocket engines are tested on rocket test stands, and low-altitude VTVL flight testing of the Falcon 9 Grasshopper in 2012–2013 were carried out at McGregor. Testing of the much larger Starship prototypes is conducted at the SpaceX Starbase near Brownsville, Texas.

The U.S. National Reconnaissance Office (NRO) also purchased launches from SpaceX, with the first taking place on 1 May 2017. In February 2019, SpaceX secured a \$297 million contract from the U.S. Air Force to launch another three national security missions, all slated to launch no earlier than FY 2021. In August 2020, the U.S. Space Force awarded its National Security Space Launch (NSSL) contracts for the following 5–7 years. SpaceX won a contract for \$316 million for one launch. In addition, SpaceX will handle 40% of the U.S. military's satellite launch requirements over the period.

In September 2014, NASA chose SpaceX and Boeing as the two companies that would be funded to develop systems to transport U.S. crews to and from the ISS. SpaceX won \$2.6 billion to complete and certify Dragon 2 by 2017. The contracts called for at least one crewed flight test with at least one NASA astronaut aboard. Once Crew Dragon received NASA human-spaceflight certification, the contract required SpaceX to conduct at least two, and as many as six, crewed missions to the space station.

In December 2010 the launch of the SpaceX COTS Demo Flight 1 mission, SpaceX became the first private company to successfully launch, orbit and recover a spacecraft. Dragon successfully berthed with the ISS during SpaceX COTS Demo Flight 2 in May 2012, a first for a private spacecraft .

According to former NASA deputy administrator Lori Garver , the company overall has a male-dominated employee culture, similar to that of the spaceflight industry in general. In December 2021, claims of workplace sexual harassment from five former SpaceX employees, ranging from interns to full engineers, were published. The former employees claimed to have experienced unwanted advances and uncomfortable interactions. Additionally, the accounts included claims of a culture of sexual harassment existing at the company and one where complaints made to executives, managers, and human resources officers went largely unaddressed.

In November 2023, SpaceX announced it would acquire its parachute supplier Pioneer Aerospace out of bankruptcy for \$2.2 million.

On 14 April 2014, SpaceX signed a 20-year lease for Kennedy Space Center Launch Complex 39A . The pad was subsequently modified to support Falcon 9 and Falcon Heavy launches. As of 2024 it is the only pad that supports Falcon Heavy launches. SpaceX launched its first crewed mission to the ISS from Launch Pad 39A on 30 May 2020. Pad 39A has been prepared since 2019 to eventually accommodate Starship launches. With delays in launch FAA permits for Boca Chica, the 39A Starship preparation was accelerated in 2022.

On November 18, 2023, SpaceX launched its second integrated Starship test , with both vehicles flying for a few minutes before separately exploding.

SpaceX also offers paid crewed spaceflights for private individuals. The first of these missions, Inspiration4 , launched in 2021 on behalf of Shift4 Payments CEO Jared Isaacman . The mission launched the Crew Dragon Resilience from the Florida Kennedy Space Center 's Launch Complex 39A atop a Falcon 9 launch vehicle, placed the Dragon capsule into low Earth orbit , and ended successfully about three days later, when the Resilience splashed down in the Atlantic Ocean. All four crew members received commercial astronaut training from SpaceX. The training included lessons in orbital mechanics, operating in a microgravity environment, stress testing, emergency-preparedness training and mission simulations.

SpaceX originally intended to follow its light Falcon 1 launch vehicle with an intermediate capacity vehicle, the Falcon 5. The company instead decided in 2005 to proceed with the development of the Falcon 9 , a reusable heavier lift vehicle . Development of the Falcon 9 was accelerated by NASA , which committed to purchasing several commercial flights if specific capabilities were demonstrated. This started with seed money from the Commercial Orbital Transportation Services (COTS) program in 2006. The overall contract award was \$278 million to provide development funding for the Dragon spacecraft , Falcon 9, and demonstration launches of Falcon 9 with Dragon. As part of this contract, the Falcon 9 launched for the first time in June 2010 with the Dragon Spacecraft Qualification Unit , using a mockup of the Dragon spacecraft.

In February 2021, SpaceX raised an additional \$1.61 billion in an equity round from 99 investors at a per share value of approximately \$420, raising the company valuation to approximately \$74 billion. By 2021, SpaceX had raised more than \$6 billion in equity financing. Most of the capital raised since 2019 has been used to support the operational fielding of the Starlink satellite constellation and the development and manufacture of the Starship launch vehicle. By October 2021, the valuation of SpaceX had risen to \$100.3 billion. On 16 April 2021, Starship HLS won the contract, and will play a critical role in the Artemis program . By 2021, SpaceX had entered into agreements with Google Cloud Platform and Microsoft Azure to provide on-ground computer and networking services for Starlink . A new round of financing in 2022 values SpaceX at \$127 billion.

SpaceX ended the United Launch Alliance (ULA) monopoly of U.S. military payloads when it began to compete for national security launches. In 2015, anticipating a slump in domestic, military, and spy launches, ULA stated that it would go out of business unless it won commercial satellite launch orders. To that end, ULA announced a major restructuring of processes and workforce to decrease launch costs by half.

CRS missions have flown approximately twice a year to the ISS since then. In 2015, NASA extended the Phase 1 contracts by ordering an additional three resupply flights from SpaceX, and then extended the contract further for a total of twenty cargo missions to the ISS. The final Dragon 1 mission, SpaceX CRS-20, departed the ISS in April 2020, and Dragon was subsequently retired from service. A second phase of contracts was awarded in January 2016 with SpaceX as one of the awardees. SpaceX will fly up to nine additional CRS flights with the upgraded Dragon 2 spacecraft. In March 2020, NASA contracted SpaceX to develop the Dragon XL spacecraft to send supplies to the Lunar Gateway space station. Dragon XL will be launched on a Falcon Heavy.
