In 2001, in an attempt to regain public interest in space exploration, Musk conceptualized "Mars Oasis", a project in which miniature experimental greenhouses should be landed on Mars and food crops should be grown there. So, because he wanted so much for his dream to become true, he tried twice without succeeding. He first traveled and met with different companies, but he was seen as a novice and he was rejected and the second time he was the one who rejected the offer because, in his opinion, it was too expensive. On his way back home, he realized that he could actually make it work. How? By starting a company that could build the affordable rockets he needed. And so he did.

One year later, Musk founded Space Exploration Technologies, or SpaceX and managed to develop and manufacture space launch vehicles. In seven years, SpaceX designed the family of Falcon launch vehicles and the Dragon spacecraft. Later, Falcon 1 rocket was the first privately funded liquid-fueled vehicle which put a satellite into the orbit.

Musk wanted to make space travel more affordable and believed that the key was to make rockets reusable, but not everyone believed that it was possible. But contrary other’s opinions, in 2015, SpaceX managed to successfully land a Falcon rocket back to its launch pad. This was the first time in history when this had been achieved by a rocket and it was a very important step in making rockets reusable. So, a big step in lowering the costs of access to space. By the end of 2017, SpaceX had landed and recovered spacecrafts on 16 missions in a row.

The company received a contract from NASA for a better development and tests of spacecrafts, in order to transport cargo to the ISS and it was the first commercial company which launched and landed vehicle to the ISS.

SpaceX is the largest private producer of rocket engines in the world and holds the record for the highest thrust-to-weight ratio for a rocket engine; these are named Merlin 1D engines and one can vertically lift the weight of 40 average family cars. In late 2017, SpaceX unveiled the design for its next-generation launch vehicle and spacecraft system: a single set of very large vehicles: Earth-orbit, Lunar-orbit, interplanetary missions, and even intercontinental passenger transport on Earth

Musk was influenced by Isaac Asimov's Foundation series and believed that space exploration was an important step in preserving and expanding human life. He said that life on multiple planets may help in the survival of human species: for example, an asteroid or a super volcano could destroy us, and we face extinction, one that dinosaurs never saw: an engineered virus, catastrophic global warming etc. Humans evolved over millions of years, but in the last sixty years, atomic weapons created the potential to destroy everything. This is why he thinks that expanding life somewhere else could help us.

In an interview, he said that he hopes to send humans to Mars in 10–20 years and establish a Mars colony by 2040. He even thought of how we could survive there and concluded that all transportation would have to be electric. He stated that the first unmanned flight to Mars is aimed for departure in 2022 and the first flight departing in 2024.