

SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)  
Launch Vehicles in Service or in Development (1)

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SPACE EXPLORATION TECHNOLOGIES: WORKING TO REVOLUTIONIZE ACCESS TO SPACE

**Abstract**

SpaceX is among a select group of companies that is redefining space exploration. The company is only 9 years old but has already established itself as one of the most innovative and disruptive forces in the launch services industry. In September 2008, SpaceX made history when its Falcon 1 became the first privately developed liquid-fueled launch vehicle to reach Earth orbit. Less than a year later, the Falcon 1 placed into orbit its first commercial payload: Malaysia's RazakSat satellite. SpaceX built upon the successes of the Falcon 1 with the inaugural flight in June 2010 of its larger launch vehicle, the Falcon 9. Six months later, SpaceX launched the Falcon 9 again, on its first demonstration mission for NASA's Commercial Orbital Transportation Services (COTS) program. For this mission, Falcon 9 confirmed its capabilities and inserted into orbit the company's Dragon spacecraft, which was also designed and developed in-house by SpaceX. The company again made history as Dragon returned to Earth and SpaceX became the first private company to ever recover a spacecraft from orbit. In recent weeks, the company announced its plans for 2012 to launch the Falcon Heavy, which will be the world's most powerful launch vehicle and will be able to carry satellites or interplanetary spacecraft that weigh as much as 53 metric tons (117,000 lb) to low Earth orbit. But the company aims to do more than demonstrate rapid development, adherence to rigorous milestones and expedited launch services. SpaceX is also working on crew transportation capabilities. With NASA's recent award of \$75 million to develop a launch escape system, the company will take Dragon one step closer to carrying out its first manned mission by 2014. In addition to the above-mentioned highlights, the company has designed and developed four versions of its Merlin engine and two versions of its Kestrel engine. SpaceX has also developed manufacturing capabilities, testing facilities, and two launch pads. In short, SpaceX has consistently demonstrated the kind of vision and innovation that will revolutionize the industry, as the company's ultimate goal is to increase reliability and reduce the cost of space transportation by a factor of 10.