Goal
NASA’s Commercial Crew Program (CCP) was formed to facilitate the development of a U.S. commercial crew space transportation capability with the goal of achieving safe, reliable and cost-effective access to and from the International Space Station and low-Earth orbit.

Background
CCP has invested in multiple American companies that are designing and developing transportation capabilities to and from low-Earth orbit and the International Space Station. By supporting the development of human spaceflight capabilities, NASA is laying the foundation for future commercial transportation capabilities.

Ultimately, the goal is to establish safe, reliable and cost-effective access to space. Once a transportation capability is certified to meet NASA requirements, the agency will fly missions to meet its space station crew rotation and emergency return obligations.

Throughout the process, both NASA and industry have invested time, money and resources in the development of their systems. NASA also is spurring economic growth through this program as potential new space markets are created.

To accelerate the program’s efforts and reduce the gap in American human spaceflight capabilities, NASA awarded more than $1.4 billion in Space Act Agreements (SAAs) and contracts under two Commercial Crew Development (CCDev) phases, the Commercial Crew Integrated Capability (CCiCap) initiative, and Certification Products Contracts (CPC).

CCP is primarily based at NASA’s Kennedy Space Center in Florida, the space agency’s premier launch site. About 200 people are working in CCP for NASA, with almost half involved in the work at other NASA centers, including Johnson Space Center in Houston and Marshall Space Flight Center in Huntsville, Alabama.
Complementary Approaches to Complementary Goals

Space Act Agreements: When NASA decided to support the development of new U.S. human spaceflight capabilities to low-Earth orbit, it relied on its commercial partners to propose specifics, ranging from the design and capabilities to private investment ratio, milestone achievements, success criteria and timelines. Once an agreement was accepted, CCP and its expert teams worked closely with each company to provide technical support and determine when milestones were met.

Contracts: Concurrently with the Space Act Agreements, NASA established safety and mission requirements for missions to the International Space Station that would be flown under a NASA contract. During their development efforts, companies could choose to design their systems to meet NASA’s pre-determined requirements. To support the certification of these systems, NASA awarded the Certification Products Contract (CPC) and will follow up with the new Commercial Crew Transportation Capabilities (CCtCap) contract.

Commercial Development with Space Act Agreements

To support the goal of achieving safe, reliable and cost-effective access to and from low-Earth orbit for commercial customers, NASA used Space Act Agreements to partner with domestic companies capable of contributing to the development of a U.S. human spaceflight capability.

Commercial Crew Development Round 1 (CCDev1) Space Act Agreement

As NASA retired the space shuttle, the ability of private industry to take on the task of providing routine access to space was of vital importance. In 2010, NASA invested a total of nearly $50 million of the American Recovery and Reinvestment Act (ARRA) funds for CCDev1 to stimulate efforts within the private sector to aid in the development and demonstration of safe, reliable and cost-effective crew transportation capabilities. It included the development and maturation systems and subsystems, such as a spacecraft, launch vehicle, launch abort systems, environmental control and life support system, launch vehicle emergency detection systems and more.

- Blue Origin - $3.7 million
- Boeing - $18 million
- Paragon Space Development Corporation - $1.4 million
- Sierra Nevada Corporation (SNC) - $20 million
- United Launch Alliance (ULA) - $6.7 million

Commercial Crew Development Round 2 (CCDev2) Space Act Agreement

CCDev2 kicked off in April 2011 when NASA awarded a total of nearly $270 million to four companies to aid in further development and demonstration of safe, reliable and cost-effective transportation capabilities. The agency also signed unfunded Space Act Agreements
to establish a framework of collaboration with additional aerospace companies. As part of those agreements, NASA reviewed and provided expert feedback on overall concepts and designs, systems requirements, launch vehicle compatibility, testing and integration plans, and operational and facilities plans.

- Alliant Techsystems Inc. (ATK) - unfunded
- Blue Origin - $22 million
- Boeing - $92.3 million
- Excalibur Almaz Inc. (EAI) - unfunded
- Sierra Nevada Corporation (SNC) - $80 million
- SpaceX - $75 million
- United Launch Alliance (ULA) – unfunded

NASA later funded an additional $20.6 million to Boeing and $25.6 million to Sierra Nevada Corporation by exercising optional, pre-negotiated milestones, which were part of their original Space Act Agreements, to accelerate development.

In 2012, the agency extended its CCDev2 agreement with Blue Origin in an unfunded capacity. Through the agreement, the agency continued to support the development of the company’s Space Vehicle and related systems.

**Commercial Crew Integrated Capability (CCiCap)**
- Space Act Agreement
- CCiCap continued the development of three fully integrated systems. The Space Act Agreements called for industry partners to develop crew transportation capabilities and to perform tests to verify, validate and mature integrated designs.

  - Boeing - $460 million
  - Sierra Nevada Corporation (SNC) - $212.5 million
  - SpaceX - $440 million

NASA later funded an additional $20 million to Boeing, $20 million to SpaceX and $15 million to Sierra Nevada Corporation by exercising optional, pre-negotiated milestones, which were part of their original Space Act Agreements, to accelerate development.
Supporting NASA's Mission Needs through Contracts

To support the goal of achieving safe, reliable and cost-effective access to and from the International Space Station for the agency, NASA awarded and will award contracts intended to permit the certification of commercial crew transportation systems to carry NASA astronauts.

**Certification Products Contracts (CPC)**

**Contract**
Throughout CPC, the first phase of a two-phase contract, companies worked with NASA to discuss and develop data products to implement the agency's flight safety and performance requirements. This included implementation across all aspects of the space system, including the spacecraft, launch vehicle, and ground and mission operations.

Under the contracts, certification plans were developed toward achieving safe, crewed missions to the space station. It included data that will result in developing engineering standards, tests and analyses of crew transportation system designs. NASA awarded a total of nearly $30 million under the CPC contracts.

- **Boeing** - $9.993 million
- **Sierra Nevada Corporation (SNC)** - $10 million
- **SpaceX** - $9.589 million

**Commercial Crew Transportation Capability (CCtCap)**

**Contract**
CCtCap is the second phase of a two-phase certification plan for commercially built and operated integrated crew transportation systems. One or more FAR-based, firm fixed-price contracts will be awarded following an open competition. All companies interested in submitting proposals were required to be at a level consistent with the first phase of certification efforts required by CPC. Through its certification efforts, NASA will ensure the selected commercial transportation system, or systems, meet the agency's safety and performance requirements for transporting NASA crew to the International Space Station.