



The Human Exploration and Operations Mission Directorate (HEOMD) manages the International Space Station (ISS) and develops the next generation of rockets, spacecraft, and other capabilities that will extend human presence throughout the solar system.

To Meet This Challenge, NASA Must Catalyze a Worldwide Exploration Movement

- Forge new partnerships
- Invent new approaches
- Explore new places
- Engage the public in new ways

Where We Are Going: Explore To Prosper

Discover

- Address grand challenges about ourselves, our world, and our cosmic surroundings.

Innovate

- Provide opportunities to develop new technologies, new jobs, and new markets.

Inspire

- Inspire students to explore, learn, contribute to our Nation's economic competitiveness, and build a better future.

NASA is Investing in Various Programs To Advance These Goals:

International Space Station

Now assembled and fully operational, the ISS serves as the largest scientific and technological cooperative program in history. The Station draws from the resources and scientific expertise of the United States, Canada, multiple European states, Japan, and Russia. The ISS will support exploration goals—with an emphasis on understanding how the space environment impacts astronaut health and capabilities—and will serve as a technology testing ground for future long-duration space missions (including work on crew health and safety systems). NASA will also conduct research into fundamental space biology and physical sciences aboard the ISS. HEOMD has entered into an agreement with a not-for-profit organization to manage non-NASA research conducted aboard the ISS in its role as a national laboratory. The ISS will continue to serve as a critical science platform in Earth's orbit until at least 2020.

Commercial Space Flight Development

Commercial space transportation is a vital component to the future of human space exploration. As NASA charts a new course to send humans deeper into space than ever before, it is working with private industry to spur economic growth in the commercial space sector. HEOMD is partnering with both long-established and newly emerging aerospace companies which are developing new rockets and other capabilities to carry both cargo and astronauts to the ISS and other destinations in low-Earth orbit (LEO). These partnerships will create the capabilities that will continue to send humans into space on American-made vehicles. This will assure access to the ISS, strengthen America's space industry, and provide a catalyst for future business ventures to capitalize on affordable access for space. As part of these partnerships, NASA is building alliances with private companies to build and reuse NASA facilities for commercial space programs.



Deep Space Exploration

Under the auspices of HEOMD's Exploration Systems Development program, NASA is developing the next generation of vehicles that will take astronauts beyond LEO and on deep space missions to boldly go places where no one has gone before, including asteroids, Lagrange points, and, ultimately, Mars. The Multi-Purpose Crew Vehicle (MPCV), which features dozens of technology advancements and innovations that have been incorporated into the spacecraft's subsystem and component design, will be the primary spacecraft to transport astronauts. It will be capable of conducting regular in-space operations such as rendezvous, docking, and spacewalking. The Space Launch System (SLS) will be a heavy-lift rocket that will carry the MPCV and large payloads necessary for human missions to deep space. The SLS, which will be ultimately capable of carrying 130 metric tons to LEO, will use both the proven Space Shuttle main engines (RS-25D/E) and newly developed J-2X rocket engines in the core, as well as advanced boosters, to take payload to orbit. In addition to development of the vehicles necessary to take humans to deep space, NASA will build the infrastructure necessary to support the SLS and commercial launches at Kennedy Space Center and other NASA flight facilities, while HEOMD's Advanced Exploration Systems program develops innovative systems and robotic precursors that will sustain human missions beyond LEO.

Launch Services

HEOMD oversees Agency launch requirements, including providing launches on commercial expendable launch vehicles (ELVs). Unpiloted ELVs have carried into space some of NASA's most important space science missions, including Voyagers 1 and 2 and the Mars Exploration Rovers, Spirit and Opportunity. They also carried Earth science missions, such as Terra, Aqua, and Aura. The Launch Services Program features two annual "on-ramp" opportunities, during which launch providers may be added to the NASA Launch Services II contract. This helps to encourage the launch services market and provides NASA with increased options for selecting launch vehicles for its science missions.

Space Communications and Navigation

To track and acquire data for the Agency's space flight missions, NASA operates space communications networks such as the Near Earth Network, the Deep Space Network, and the Tracking and Data Relay Satellite System (TDRSS). The space communications networks communicate with launch vehicles, Earth-orbiting spacecraft (including the ISS), and spacecraft throughout the solar system.

Human Space Flight Capabilities

HEOMD is responsible for human space flight capabilities, including Space Flight Crew Operations (SFCO), the Mission Operations Directorate at Johnson Space Center, extravehicular activity (EVA) training, and work at the Michoud Assembly Facility in Louisiana. SFCO focuses on critical health and safety risks and risk-management solutions that improve crew performance and protect our astronauts from space travel hazards. Human space flight capabilities also involve managing NASA's Rocket Propulsion Test efforts.

For more information on the Human Exploration and Operations Mission Directorate, go to <http://www.nasa.gov/directorates/heo>.