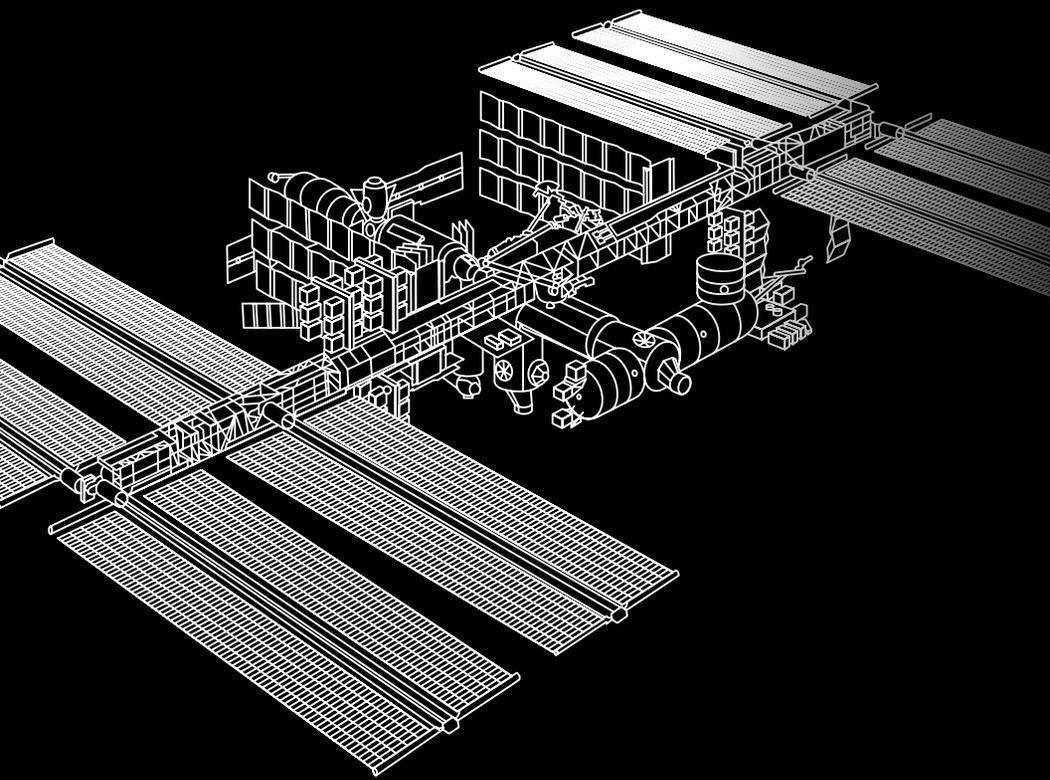




# Commercial Low Earth Orbit (LEO) Development

NASA OFFICE OF PROCUREMENT | VIGNETTE



## Who/Where

The Commercial LEO Development Program Office, aligned under NASA's Space Operations Mission Directorate and located at Johnson Space Center (JSC) in Texas, manages and funds commercial LEO efforts. Contractual instruments supporting commercial LEO efforts are issued by Office of Procurement personnel at JSC.

## What

The NASA Authorization Act of 2017 instructed NASA to perform an "orderly transition for United States human space flight activities in LEO from the current International Space Station (ISS) regime, which relies heavily on NASA sponsorship, to a regime where NASA is one of many customers of a long-term, sustainable, commercial LEO economy." To achieve this, NASA's goal is to stimulate and foster the production, distribution, and trade of goods and services in LEO.

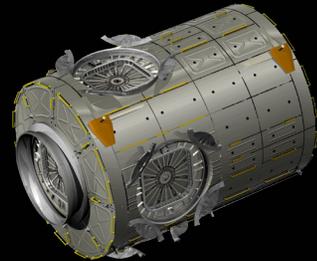
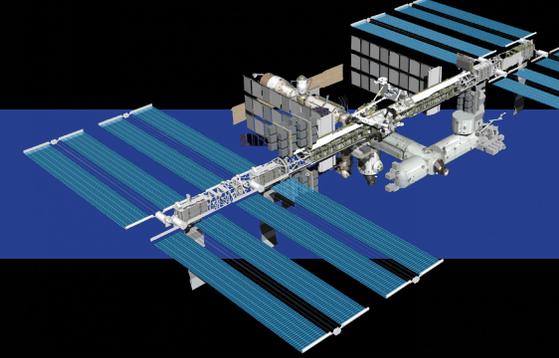
## When

On June 7, 2019, NASA announced the opening of the ISS to expanded commercial and marketing activities. In addition to releasing the Agency's plan for LEO commercial development, NASA issued commercial pricing for corporate use of Government resources aboard the ISS. Efforts to commercialize LEO will continue until proven, habitable commercial destinations in LEO capable of succeeding the ISS are available.

## How

The Commercial LEO Development Framework is an iterative/phased approach with short-/near-term, mid-term, and long-term objectives and activities as illustrated (see reverse side):

## Why



A few notable examples of efforts aimed at encouraging increased commercial use of the ISS and/or facilitating industry development and demonstration of one or more commercial destinations to eventually succeed the ISS follow:

### Commercial Destination Development in LEO using the ISS Port

Under this contract, awarded in February 2020, the selectee is tasked with the development and demonstration of at least one habitable commercial module that will attach to the ISS's Node 2 forward port. Upon successful completion of the demonstration, the element will transition to a self-sustaining commercial destination in LEO.



### Private Astronaut Missions to the ISS

An announcement of proposals for privately funded missions to the ISS for the performance of commercial activities by private astronauts resulted in the award of NASA's first private astronaut mission (PAM) to the ISS in April 2021. The mission, dubbed Ax-1, launched in April 2022 with a private crew of four. NASA intends to enable up to two PAMs each year.

### Commercial Destination Development in LEO Free Flyer (CDFF)

In December 2021, NASA awarded funded Space Act Agreements (SAAs) aimed at stimulating U.S. private-industry development of an independent, free-flying facility operating in LEO.



#### Starlab

from Nanoracks,  
Voyager Space,  
and Lockheed  
Martin

Given the unique nature of the missions, LEO procurement efforts require flexibility and innovation. As competition is essential to driving down costs and providing redundancy in LEO, all efforts have been competitive. Some of the more innovative aspects of LEO procurement efforts include the following:

- Both NASA and industry partners contributing to technology demonstration and development
- Contract terms that enable industry to retain the maximum intellectual property rights permitted by law, unless NASA has a specific need to obtain rights for its own purposes.
- Fluidity in the type of contractual instrument utilized given that not one type of instrument is suited to the various LEO efforts.

- Commercial LEO development efforts allow industry to gain insight into the costs associated with owning/operating a future platform and reduce market risk.
- It is envisioned that nurturing the commercial space market will enable future procurements for purchase of transportation and accommodations for NASA crew in LEO direct from commercial providers.
- A LEO economy with multiple providers would not only increase the frequency of space flight, but also reduce the costs for access to LEO and increase available crew time on orbit.
- Establishing a robust LEO economy in which many groups on Earth can participate also promotes technological discovery, and increases the potential for advancements through in-space work and research that benefit humanity.

Additional information on Commercial LEO Development can be found at <https://www.nasa.gov/leo-economy/low-earth-orbit-economy>.