

The Exploration and Space Communications (ESC) projects division (Code 450) at NASA's Goddard Space Flight Center manages one of NASA's critical space communications and navigation networks: The Near Space Network. Additionally, the division hosts nine projects and offices dedicated to advancing technologies and capabilities for the network. ESC works on behalf of NASA's Space Communications and Navigation (SCaN) program office to effectively implement their vision.

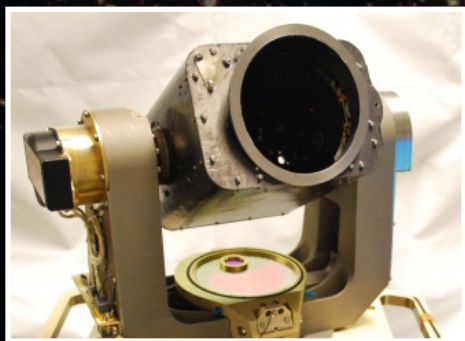
## THE NEAR SPACE NETWORK

The Near Space Network provides missions out to 2 million kilometers (1.2 million miles) with premier communications and navigation services, enabling spacecraft to exchange critical data with mission operators on Earth. Using space relays in geosynchronous orbit and a global system of government and commercial antennas on Earth, the network brings down terabytes of science data each day. The network supports missions of all kinds, including human spaceflight, science and exploration, technology demonstrations, rocket launches, and more.



## COMMERCIALIZATION

ESC actively supports NASA's commercialization goals and is working to integrate more commercial providers and assets into the Near Space Network. The division's Commercialization, Innovation, and Synergies (CIS) office is dedicated to increasing the industry base for the network while also identifying collaboration opportunities with commercial companies, other government agencies, and international partners.



The ILLUMA-T optical terminal.





## TECHNOLOGY DEVELOPMENT

ESC has multiple projects dedicated to advancing space communications and navigation capabilities. Below are a few of the ongoing development efforts being researched, demonstrated, or implemented:

- **Laser Communications**
- **Quantum Networking**
- **Cloud-based Systems**
- **Delay / Disruption Tolerant Networking**
- **Search and Rescue**
- **Autonomous Navigation**



## TO THE MOON



As NASA establishes humanity's presence on the Moon through the Artemis missions, astronauts, rovers, and orbiters will need superior communications, navigation, and search and rescue services. For Artemis I, the Near Space Network and Deep Space Network worked in tandem to provide essential support during launch, orbit, and re-entry.

The Near Space Network is bringing on multiple enhancements to support growing lunar activity. This includes developing new antennas, supporting lunar relays, and contributing to standards-based architectures that will bring internet-like capabilities to the lunar surface.

Other Moon-centric activities for ESC include developing emergency location beacons for Artemis astronauts and testing if Earth-based GPS signals can be used for precise navigation on the Moon.



## JOIN OUR TEAM

Goddard's Code 450 is always looking for bright and bold minds to join our team! Check out our community's opportunities by going to USAJobs and searching "Near Space Network" or "Space Communications and Navigation."

Learn more about the Exploration and Space Communications at: [www.esc.gsfc.nasa.gov](http://www.esc.gsfc.nasa.gov)