



NASA is commercializing satellite relay communications for science missions near-Earth. The Communications Services Project (CSP) is leading agency efforts by investing in the U.S. satellite communications industry to develop and demonstrate powerful services for missions launching as early as 2031. In 2022, CSP awarded \$278.5 million to commercial industry through six Funded Space Act Agreements to demonstrate a variety of capabilities, including near-instant delivery of high-rate science data, critical support for launch operations, and reliable exchanges of telemetry, tracking, and command information.

Telesat Government Solutions was awarded \$30.65 million to demonstrate its Telesat Lightspeed low-Earth orbiting (LEO) Ka-band relay network to provide high-rate SATCOM services to missions in LEO.

VISION

Telesat Government Solutions plans to leverage their Telesat Lightspeed network with optical intersatellite link technology to provide seamless end-to-end connectivity for future LEO users.

The Telesat Lightspeed constellation will consist of 198 LEO satellites that are optically connected to form a global mesh network. The Telesat Lightspeed

network will provide space-to-space relay services to multiple LEO User satellites, with increased speeds and availability and low latency, utilizing a high-throughput Ka-band terminal. Once a user connects to this cutting-edge constellation of satellites, data is seamlessly routed to Earth and integrated into ground data networks.



NETWORK ARCHITECTURE



Telesat will harness the power of their advanced Telesat Lightspeed network to demonstrate connectivity, tasking and command, telemetry, and mission data flow services to users in LEO.

KEY FEATURES

- **Optically linked LEO satellites**
- **RF space-to-space relay capabilities**
- **Inter-satellite latency on par with fiber networking**
- **High throughput providing enterprise-class connectivity**
- **Advanced digital beam-forming technology for dynamic capacity allocation**

LEARN MORE

The Communications Services Project is managed by NASA's Glenn Research Center, under the direction of the SCaN (Space Communications and Navigation) Program within NASA's Space Operations Mission Directorate. SCaN operates and manages the communications and navigation systems that are critical to every NASA mission, while facilitating a seamless transition from near-Earth government-owned communications assets to commercial alternatives.

To engage with NASA's Communications Services Project, contact scan@nasa.gov.

