National Aeronautics and Space Administration

KSAT

COMMUNICATIONS SERVICES PROJECT PARTNERSHIP

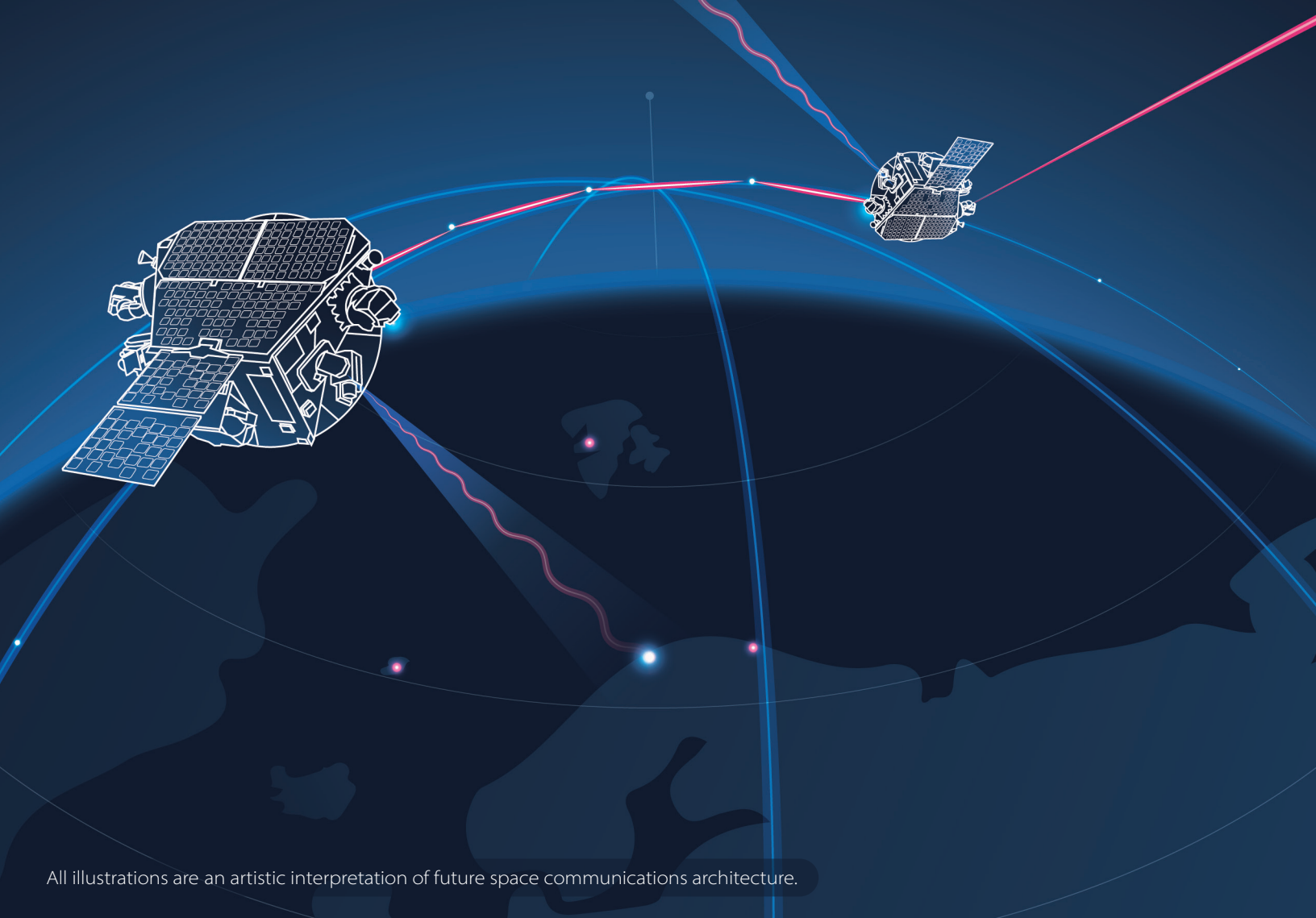
NASA is commercializing satellite relay services for future robotic science missions in low Earth orbit. The Communications Services Project is leading agency efforts by investing in the U.S. satellite communications industry to develop and demonstrate powerful space relay services. By 2028, missions will have access to a portfolio of validated commercial service offerings.

KSAT USA has partnered with the Communications Services Project through a Nonreimbursable Space Act Agreement to grow the U.S. satellite communications market and expand service offerings for future missions.

VISION

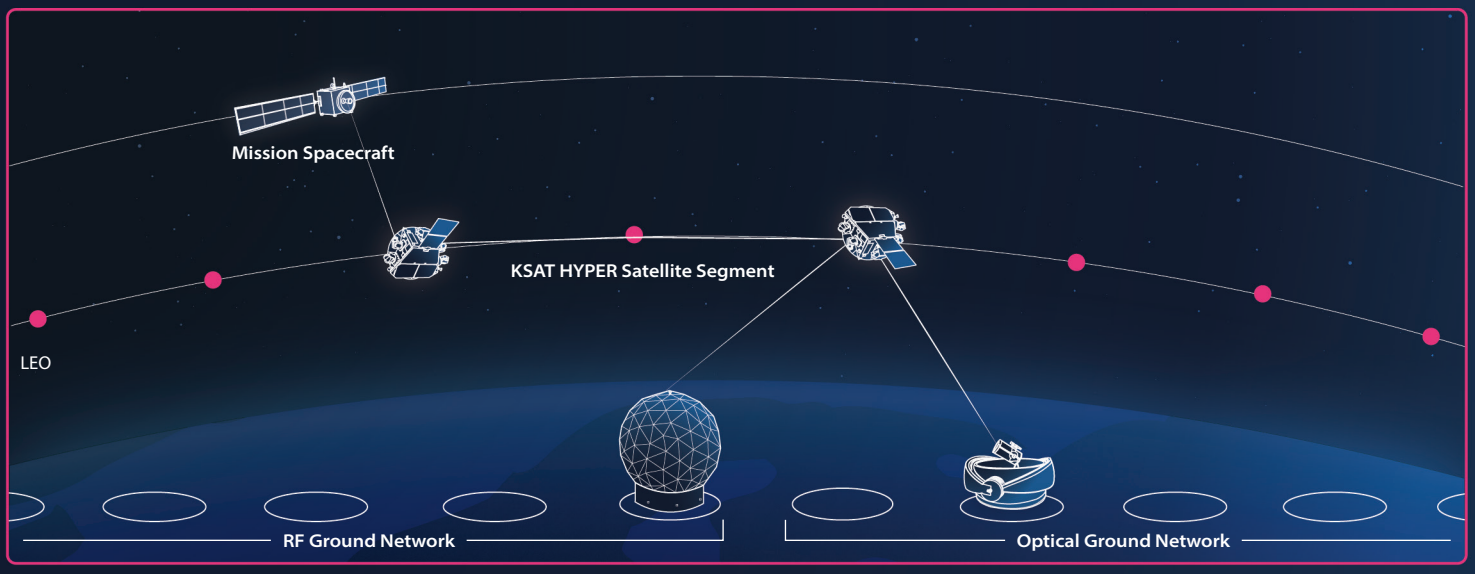
KSAT's vision for HYPER is to strengthen the security, resilience and sovereignty of space-based communications by extending critical connectivity into orbit through relay satellites in Low Earth Orbit (LEO). As more missions depend on timely access to information, HYPER is designed to reduce the delay between data collection and delivery to users.

HYPER combines radio frequency and optical links across a network of relay satellites, connected to KSAT's global ground network of more than 300 antennas at 40 sites. When a ground station is in view, data flows through the terrestrial network as usual. HYPER provides connectivity when the ground cannot, over oceans and regions without station coverage.



All illustrations are an artistic interpretation of future space communications architecture.

NETWORK ARCHITECTURE



HYPER is planned as a hybrid RF and optical relay network, deployed in orbital loops, using multi-band RF and standards-compatible optical space links to provide connectivity between user spacecraft and relay nodes in LEO. While RF will be the primary communications link to Earth, HYPER plans to leverage optical direct-to-Earth links as a secondary capability.

KEY FEATURES

- **Hybrid tri-band radio frequency and optical data relay for satellites in LEO**
- **Dynamic tasking and reprioritization to support time- sensitive operations**
- **End-to-end resilient connectivity and sovereign paths for data delivery**
- **Intelligent software-based network orchestration through KSAT's REPLICA platform, integrating ground and HYPER services into a unified network**
- **Onboard processing that supports data triage and prioritization before downlink**

LEARN MORE

The Communications Services Project is managed by NASA's Glenn Research Center in Cleveland, under the direction of the SCaN (Space Communications and Navigation) Program within NASA's Research and Technology Mission Directorate. SCaN operates and manages the communications and navigation systems that are critical to every NASA missions, 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.**