

## Delivering High Service Resiliency

Telesat is a leading global satellite operator with over 50 years' experience delivering satcom services over geostationary (GEO) satellites. Telesat is building Telesat Lightspeed, a next-generation network based on a satellite constellation of 198 satellites in low earth orbit (~1,300 km above Earth). This network will deliver high quality, low latency broadband to users globally. User services will be delivered over Ka-band spectrum, the satcom industry standard for high capacity networks.

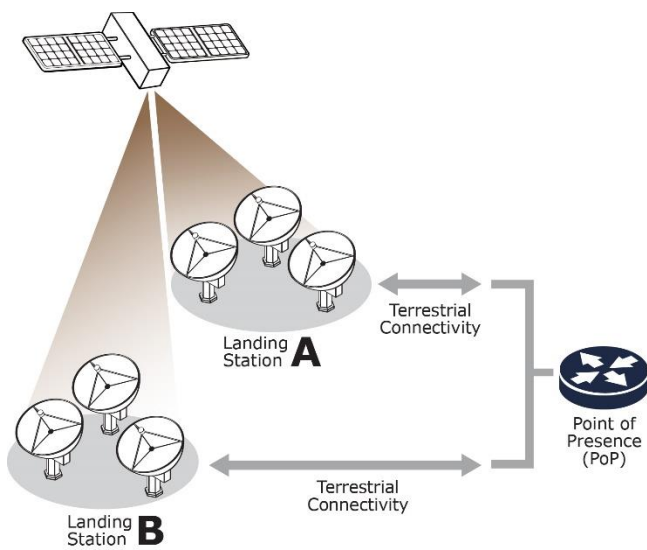
The Telesat Lightspeed architecture offers redundancy at multiple levels to ensure highly resilient service to a user terminal:

- **Space resiliency:** mesh of multiple satellites allowing multiple connectivity paths
- **Ground resiliency:** multiple feeder links and redundant ground infrastructure that provide end-to-end transport path diversity
- **Dynamic user links:** optimal resource allocation adapting to local user environment
- **Satellite and Network Control Centers:** 24/7 monitoring and support by experienced staff

### Multiple LEO Satellites for Higher Space Resiliency

The Telesat Lightspeed constellation will have satellites that are interconnected in a mesh via optical links. Furthermore, multiple satellites are in the view of a user terminal, unlike GEO systems where there is only one visible satellite.

Multiple satellites translates to multiple transport route options to connect a user terminal. The network will decide the optimal satellite assignment and traffic routing to favor long term availability (e.g., paths avoiding rain cells) to ensure that users get their provisioned data rates and performance.



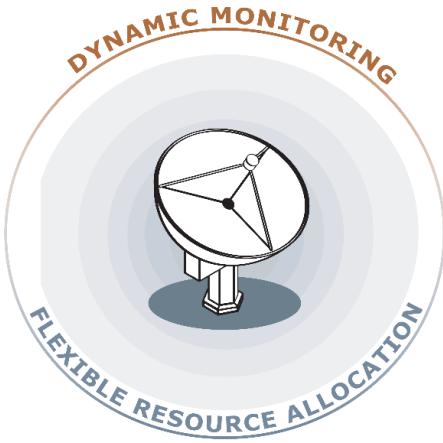
### Ground Resiliency

Each satellite has four feeder link antennas. Multiple feeder link antennas per satellite enable simultaneous connections to multiple Landing Stations for seamless handovers. Each Landing Station consists of multiple tracking antennas that communicate with the satellites.

Multiple Landing Stations connecting to a Point of Presence (PoP) with seamless switchover capability provides redundant paths in the case of weather impairment at one of the Landing Stations.

All of the ground facilities will be orchestrated by Telesat's network management system so the network can dynamically adapt to network and weather events.

## Dynamic User Links Adapt to Local Environment



LEO satellites are about 35x closer to earth than GEO (1,000km vs 35,000km), and this brings a significant advantage in terms of user link performance. All else being equal, LEO RF user links are about 25 dB stronger than GEO RF user links.

Telesat Lightspeed satellites are designed using state-of-the-art technologies, with the ability to optimize resources for degraded local environment conditions such as rain fade. The Telesat Lightspeed system will employ advanced mechanisms to ensure resource allocation to users can adapt to the local user environment. For example, dynamic monitoring of transmissions to detect when rain fade is interfering with signal strength and adjust power levels automatically to compensate. Automated software tools will be used to ensure optimal use of resources while being more resilient to rain

fade.

Additionally, near real-time adjustments to the terminals burst time plan and beam hop plan (FBHP) will be used to allocate more slots to lower performing channels, alleviating the negative effects of rain fade.

## 24/7 Monitoring and Support



Telesat is one of the most innovative global satellite operators and currently owns and manages a fleet of geostationary (GEO) satellites. The global GEO satellite fleet provides coverage and connectivity solutions in C, Ku, and Ka bands. Telesat has more than five decades of experience in ensuring that communication services provided to its customers remain connected through all adverse conditions that impact the network. All routine operations within Telesat's Satellite Control Center are conducted using automated procedures run from master schedulers residing on the fleet control systems. Operations are monitored around the clock at Telesat's Satellite Control Centre and a team of experienced senior engineers are always on hand to trouble shoot any critical anomalies. This legacy of engineering excellence, reliability and industry leading customer service will continue into the new Telesat Lightspeed era.

## End Result: High Service Resilience for Users

Serving enterprises for more than 50 years, Telesat understands the criticality of a satcom data link to a user, whether on land, at sea, or in the air. We have developed a highly dynamic LEO system with redundancy built in at every level whilst using state-of-the-art technologies to ensure users always stay connected.