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LEO Connectivity 101

How low Earth orbit networks work — and why they matter

spaceconnectassociation.org

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Who We Are

The leading global trade association representing non-geostationary satellite systems (NGSOs)

amazon LEO

Globalstar

iridium

TELESAT

What makes LEO connectivity different?

Closer orbit changes both network performance and network architecture.



GEO/GSO:

- Much farther away
- Appears fixed in the sky

LEO/NGSO:

- Closer to Earth
- Lower latency
- Many moving satellites

Because LEO satellites are much closer to Earth, signals travel shorter distances. But this also requires more satellites moving across the sky to guarantee continuous coverage.

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How spot beams deliver connectivity

LEO spot beams focus satellite capacity where it’s needed.



FOCUS: Rather than covering an entire region with one broad signal, spot beams target smaller geographic areas.

REUSE: Frequencies can be reused across separated beams, helping networks use limited spectrum more efficiently.

ADAPT: LEO networks can manage beams as satellites move and demand changes, directing network resources across different locations.

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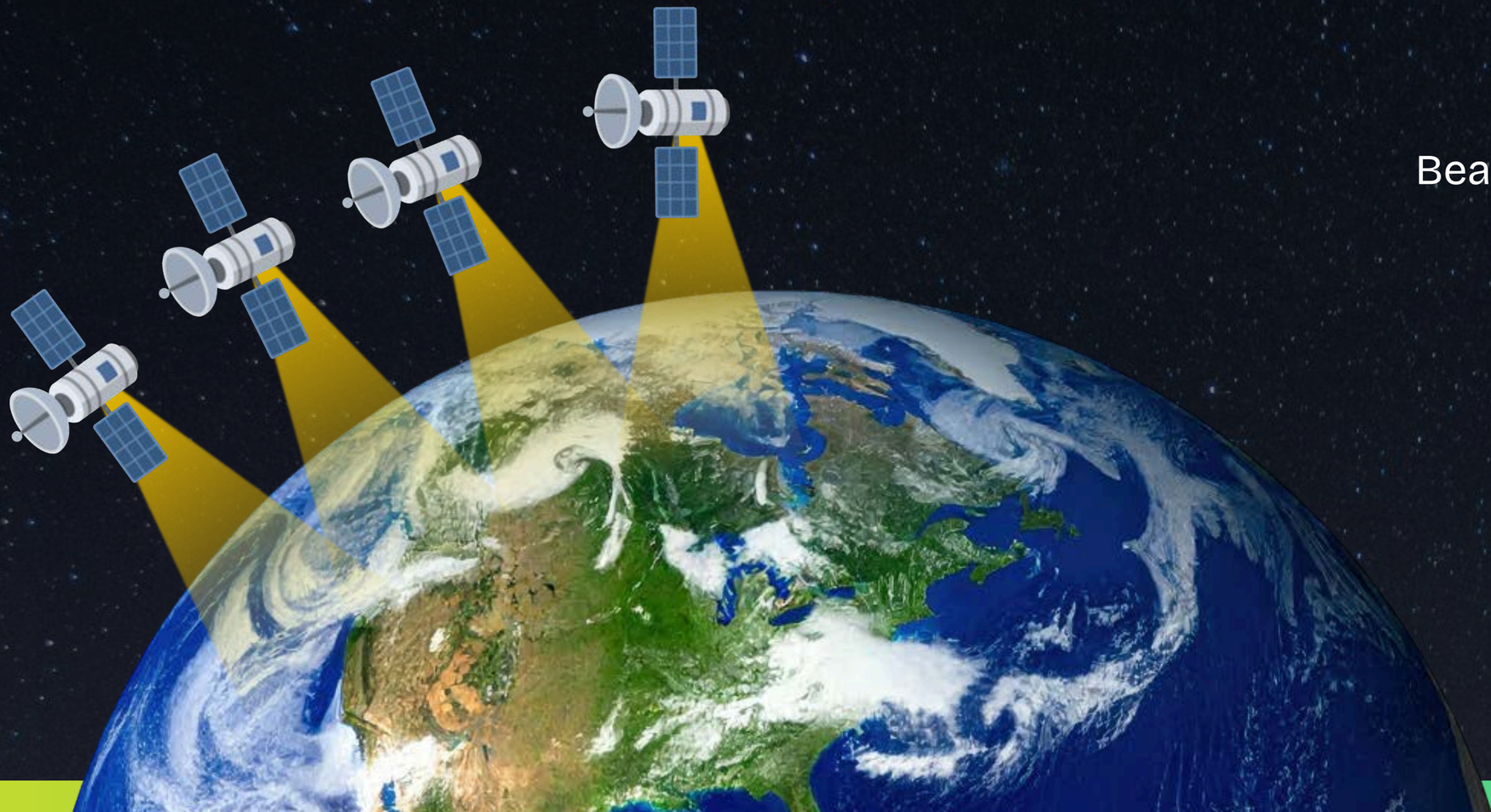
A LEO constellation is a dynamic communications network

Satellites continually direct capacity across geography as they move overhead.



Multiple moving satellites

Beams serving geographic areas

User terminals / devices

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What does LEO connectivity enable?

The value proposition extends well beyond residential broadband.



REACH:

- Rural and remote broadband
- Hard-to-serve or unservable locations
- Oceanic and polar regions
- Enterprise connectivity



MOBILITY:

- Aviation & maritime
- Connected vehicles
- Direct-to-Device
- PNT/GPS alternative



RELIABILITY:

- Government & defense
- Disaster response
- Network redundancy

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LEO depends on an entire ecosystem

Connectivity is the end product of many interconnected capabilities.



A policy decision at any point in the chain can affect capacity, deployment, competition and the services users ultimately receive.

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Why LEO Matters

The technology is increasingly part of the communications and space policy landscape.



CONNECTIVITY
Another way to reach consumers, businesses and communities



COMPETITION
Additional choices across the connectivity ecosystem



RESILIENCE
Alternative communications pathways when networks are disrupted



U.S. LEADERSHIP
A growing commercial space and communications sector

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Who Regulates Satellites

Satellite systems operate under a mix of U.S. licensing, spectrum, space safety and international rules.

Federal Communications Commission (FCC)

National Telecommunications and Information Administration (NTIA)
&
Office of Space Commerce (OSC)

International Telecommunication Union, Radiocommunication Sector (ITU-R)

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