

# How satellites can create cell towers in the sky



Alex Miller 2 minutes  
Technology Space Innovation



The fifth generation of cellular network technology, 5G, offers speeds up to 100 times faster than 4G LTE. This technological advance with 5G enables a wealth of new applications and services.

One of the most intriguing aspects of 5G is its potential to be used with satellites to create "cell towers in the sky." This would allow for global coverage and high-speed connectivity, even in remote areas.

Traditional cell towers are limited by range — typically only a few miles. So, they cannot provide coverage in areas that are too far away from the tower. Satellites, on the other hand, can provide coverage almost anywhere.

By combining the attributes of satellites and cell towers, a 5G satellite network like the one being developed by E-Space can provide ubiquitous coverage capable of delivering data in real-time. While some companies are focusing on enabling satellite connectivity for cellphones (Apple's Emergency SOS service, for example), our emphasis is on eventually connecting billions of Internet of Things (IoT) sensors with a 5G satellite network. This opens up an enormous variety of applications and services not possible using only terrestrial connectivity.

For industry, 5G satellite networks enables new or expanded applications such as asset tracking, autonomous vehicle control, climate and environmental monitoring and many more — all enhanced by adding real-time data analytics enhanced by artificial intelligence (AI) and machine learning (ML). This is the Smart-IoT model that E-Space is building into its low Earth orbit (LEO) satellite constellation.

## Advantages of satellite over terrestrial for 5G networks

- **Low latency:** LEO satellites are much closer to the Earth, meaning a much shorter delay in the signal from satellite to terminal. Applications that require real-time control can't tolerate the higher latency from satellites in higher orbits.
- **Resiliency:** Compared to cell towers on land that are vulnerable to disruption from natural disasters, war, vandalism and more, satellites are hundreds of kilometers above the Earth.
- **Reliability:** Satellite networks are much less susceptible to interference from buildings, trees or other obstacles. This makes 5G via satellite ideal for IoT applications that require high reliability, such as medical devices and critical infrastructure monitoring.
- **Cost-effective:** The cost of providing 5G connectivity through LEO satellites is decreasing, making it a more attractive option for IoT applications. Once launched, the cost of operation is typically much lower than what's required for the upkeep of cell towers.



Alex Miller

Alex Miller leads editorial at E-Space. Based in Denver, he's a longtime journalist who's been involved with the satellite industry for over a decade.

[Connect on LinkedIn](#)

[All author's articles](#)

## You may also like



E-Stories Aug 16, 2023 3 minutes

Top 10 findings from Pew Research on Americans' views of space



E-Stories Aug 15, 2023 2 minutes

Two-Minute Tech: How radiation impacts satellites



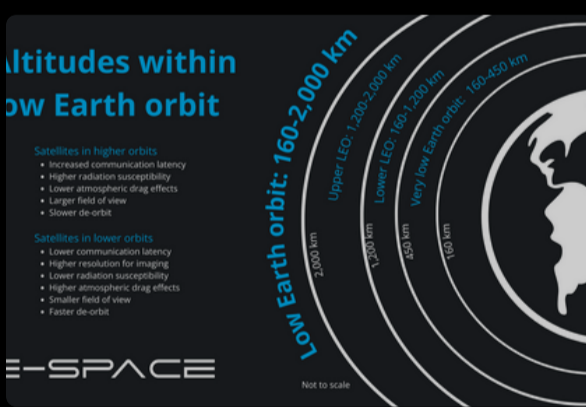
E-Stories Aug 9, 2023 3 minutes

E-Space joins European standards organization ETSI



E-Stories Aug 8, 2023 2 minutes

The advantages of inter-satellite links



E-Stories Aug 1, 2023 2 minutes

2-Minute Tech: Exploring different altitudes within low Earth orbit



E-Stories Jul 19, 2023 4 minutes

Key markets: Digital agriculture



[Back to topic](#)

## E-Stories



Become an E-Space Insider to receive the latest news and updates right to your inbox.

[Subscribe](#)

### Navigation

- [Home](#)
- [About](#)
- [Industries](#)
- [Careers](#)
- [News Hub](#)
- [Contact](#)

