



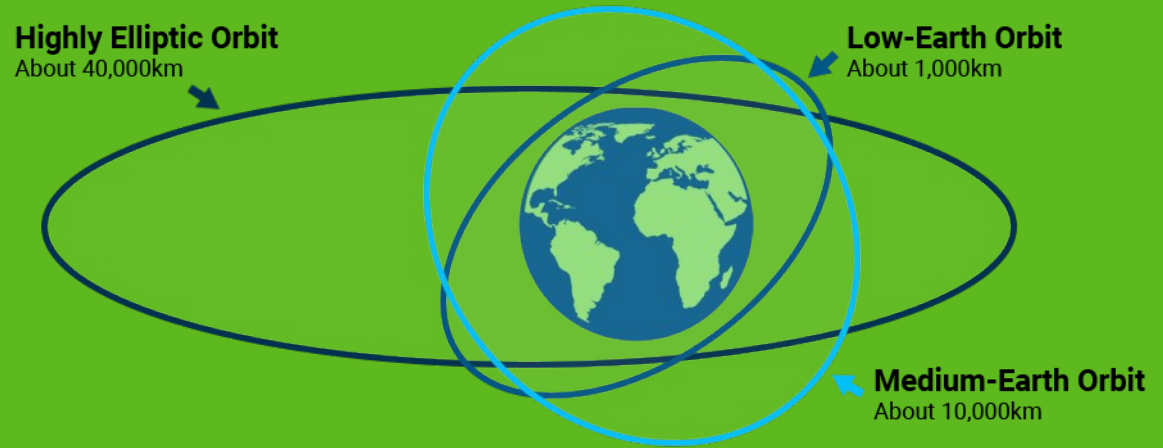
Low Earth Orbit Satellite

Mobile and Satellite Communication Network

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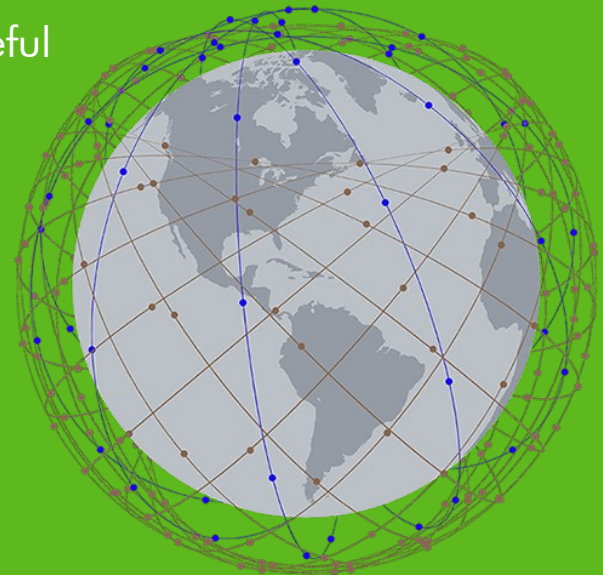
Types of Satellites

- Geostationary/Geosynchronous Earth orbit satellite
(Propagation delay: 250-280 ms)
- Medium Earth Orbit Satellites
(Propagation delay: 110-130 ms)
- Highly Elliptical Satellites
(Propagation delay: Variable)
- Low Earth Orbit Satellite
(Propagation delay: 20-25)



Low Earth Orbit

- A LEO is generally defined as an orbit below an altitude of approx 2000 km
- A majority of artificial satellites are placed in LEO.
- LEO satellites don't stay in fixed position relative to the surface.
- A network of LEO satellites is necessary for LEO satellites to be useful



Advantages

- Better signal strength and less propagation delay
- Flexible bandwidth
- Better for point to point communication

Disadvantages

- A network of LEO satellites is needed, which can be costly.
- LEO satellites have to compensate for Doppler shifts caused by their relative movement.

Architecture of LEO

- Communication data passes through a satellite using a signal path known as a transponder.
- Satellites have 24-72 transponders. A single transponder is capable of handling up to 155 million bits of info per sec
- Today's communication satellites are an ideal medium for transmitting and receiving almost any kind of content – from simple to most complex contents.

Classes of LEO

- Little LEO
 - Operates under 1Ghz
 - Mostly used for low data rate messaging
 - Orbcomm
- BroadBand LEOs
 - Provides communication similar to fiber optic networks
 - SkyBridge
- Big LEOs
 - Operates between 1 and 3 Ghz
 - Voice and limited data services
 - Globalstar

Applications of Satellite Networks

- Telecommunication
- Earth Observation
- Military Operations
- Natural Calamities
- Broadcasting Internet