Medium Earth Orbit Satellite.

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Satellite

A satellite is an object in space that orbits or circles around a bigger object. There are two kinds of satellites: natural (such as the moon orbiting the Earth) or artificial (such as the International Space Station orbiting the Earth).

We all know satellites are for wireless communication among earth's stations. They receive signals from one earth station and transmit them to other stations at larger distance from the remitting station.

Satellites are deployed into the space with all the necessary equipments and they then begins to orbit around the earth.

Types

So we have 3 types of satellites. Depending upon their distance from the earth we categorize them into 3 categories.

1. LEO means low earth orbit satellites.
2. MEO medium earth orbit satellites.
3. GEO seatationary earth orbit satellites.

Leo operates at from 160 to 2000 kms from earth. Like our ISS which is at 400 km from earth.

Geo operates above 35870 km.

The MEOs lies in between LEO and GEO range. They are also known as intermediate circular orbit (ICO) due to their position in between Leo and geo.

Orbital period

So every satellite orbits around the earth and their orbital period depends upon the distance from the earth. In case of MEO it can be anywhere from 2 hour to almost 24 hours. Or 23 hour 56 minutes and 4 secs.

With 24hours of orbital time period they are almost stationary with respect to an observer on the earth.

And at 20200 km the orbital time period becomes 12 hours which is used by the Global positioning system.

GPS overview

So GPS is a system of satellites which can determine your exact location on earth.

The Global Positioning System consists of 24 satellites, that circle the globe once every 12 hours, to provide worldwide position, time and velocity information. GPS makes it possible to precisely identify locations on the earth by measuring distance from the satellites. GPS allows you to record or create locations from places on the earth and help you navigate to and from those places.

Other Positioning systems

There are some other satellite positioning systems based on MEO

we have

- Russian GLONASS (altitude 19100 km)
- European Galileo (altitude 23222 km)
- Chinese BeiDou (altitude 21528 km)

And their respective distances

Also INIDIA now has its own positioning system operating at distance 36000 km.

Disadvantages

The disadvantages of MEO are as follows

1. Signal received from MEO are weaker than LEO.
2. They need tracking guided antennas.
3. MEO satellites are more expensive than Leo satellites.
4. Multiple satellites are required to cover a region continuously.
5. Increases orbital debris because of need of large number of satellites per system.

Advantages

Now for the advantages

1. MEO satellites require less onboard fuel by launch vehicle.

2. Lesser number of satellites are required than LEO

3. they can capture weaker signals than in GEO.