

## **ARE SATELLITES A BOOM OR BOON FOR FUTURE SPACE ENTHUSIASTS?**

“Boon or a bane” basically means “good or bad” “beneficial or harmful”. Boon means “a thing that is beneficial or helpful” and bane is something that causes distress or annoyance.

Boon or bane” means “blessing or curse.” Its equivalent to the phrase a “two-edged sword”—a phrase meaning something that can possibly defend you or possibly cut you, or even both at the same time. Its human only that making its a bane but their is good proverb which says " A stitch in time saves nine". That’s a good way to go, we adhere to the proverb and do the easiest and best thing as possible without even thinking. . The danger of the past was that men became slaves. The danger of the future is that men may become robot. Robots will harvest, cook, and serve our food. They will work in our factories, drive our cars, and walk our dogs. Like it or not, the age of work is coming to an end.

Same is the case with satellites. Humanity is so dependent on them that almost every aspect of our lives and every small need is fulfilled in some or the other way by them  
Satellites have made our lives easier and comfortable but we are so dependent on them that a day without satellites would be like a doomsday.

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).

The first artificial satellite was Sputnik 1 which lifted off on October 4,1957 by the Soviet Union. Since then about 8900 satellites have been launched into space by more than 40 countries

How are artificial satellites useful to us? Artificial satellites are used to study the earth and other planets, to help us communicate and even to observe the distant Universe. Satellites can even have people in them like the International Space Station. Artificial Satellites are launched into different orbits depending on their mission.

Satellites often affect our lives without our realising it. They make us safer, provide modern conveniences and broadcast entertainment.

Here are some of the jobs satellites do:

Firstly satellites send television signals directly to home but they are also the backbone of cables and network TV. The satellites send signals from a Central Station that generates programming two smaller stations that send the signals locally wires cables or the airwaves. The satellites communicate by using radio waves to send signals to the Antennas on the earth the antenna then capture those Signals and process the information coming from those Signals.

Satellite navigation is based on a global network of satellites that transmit radio signals in medium Earth orbit satellites emit determine their location by computing the difference between the time that a signal is sent and the time it is received

Satellites can be classified by their function since they are launched into space to do a specific job. The satellite must be designed specifically to fulfill its role.

There are ten different types of satellites

1. Communications Satellite
2. Remote Sensing Satellite
3. Navigation Satellite
4. Geocentric Orbit type satellites - LEO, MEO, GEO
5. Global Positioning System (GPS)
6. Geostationary Satellites (GEOs)
7. Drone Satellite
8. Ground Satellite
9. Polar Satellite
10. Nano Satellites, CubeSats and SmallSats

In the fields of business a number of companies use satellite imagery to predict annual farm yields, mostly focusing on major crops like wheat, corn and soy and produce estimations that are useful for farmers and commodities traders alike.

Weather satellites are a type of satellite that is primarily used to monitor the weather and climate of the earth. Satellites can be polar orbiting, covering the entire Earth asynchronously, or geostationary, hovering

over the same spot on the equator. Satellites provide meteorologists with the ability to see weather on a global scale, allowing them to follow the effects of phenomena like volcanic eruptions and burning gas and oil fields, to the development of large systems like hurricanes and El Niño. E.g. the Antarctic ozone hole is mapped from weather satellite data. Collectively, Global satellites provide nearly continuous observations for a global weather watch.

Meteorological satellites see more than clouds: city lights, fires, effects of pollution, auroras, sand and dust storms, snow cover, ice mapping, boundaries of ocean currents, energy flow etc.

An observation satellite can monitor ocean and wind currents as well as the extent of forest fires, oil spills, airborne pollution. Together, this information helps organise emergency responders and environmental cleanup. Radio directly linked to a search and rescue satellite can lead to rescue as quickly and accurately to a land, sea, or an emergency location. Hence, satellites also provide safety.

Satellites are increasingly important to the developing world. For a country like India, with populations separated by a rough terrain and different languages, communication satellites provide remote populations access to education and to medical expertise that would otherwise not reach them. Each observation satellite also allows developing countries to practice informed Resource Management and released Agencies to follow Refugee population migration.

Every coin has two sides and if one side is enlarged or shrunk, the other matches the change to the nearest micron. Boon and bane are 2 sides of the technology coin.

### **Advantages and Disadvantages of Satellite Communication**

**Satellite communication** is an electronic communication package placed in an orbit. Its prime objective is to initiate or assist through space. It has made a major contribution to the pattern of international communication.

The satellite microwave is basically a microwave relay station in space. It uses a geosynchronous satellite to relay the radio signal transmitted from the ground station. For communication signals, these satellites act as relay stations. From the earth station, the satellite accepts data/signals, amplifies them, and re-transmits them to another earth

station. Data can be transmitted to the other side of the earth using such a setup in only one step.

Most companies that use **satellite microwave** lease access to the satellites for an exorbitant fee.

Satellite communication has a number of advantages:

**Advantages :**

1. Through satellite transmission, coverage over geographical area is quite large mainly for sparsely populated areas.
2. High bandwidth.
3. Wireless and mobile communication applications can be easily established by satellite communication independent of location.
4. It is used in wide variety of applications such as global mobile communication, private business networks, Long distance telephone transmission, weather forecasting, radio/TV signal broadcasting, gathering intelligence in military, navigation of ships and air crafts, connecting remote areas, television distribution etc.
5. Security in satellite transmission is usually provided by the coding and decoding
6. equipment.
7. Service from one single provider is easy to obtain and uniform service is available.
8. Over long distances, it can be cheaper.
9. The laying and maintenance is easy and cheap in satellite communication therefore it is best alternative.
10. During critical condition, each Earth Station may be removed relatively quickly from a location and reinstalled somewhere else.
11. Ground station sites are easy to install and maintain.

**Disadvantages :**

1. Design, development, investment and insurance of satellite requires higher cost.
2. To reach the satellite from Earth, time can vary between 270 milliseconds and return again to 320 milliseconds. This propagation delay can cause an echo over telephone connections
3. Satellites are not easy to repair and maintain.
4. Some circumstances like weather or sunspots affect the satellite's signal and can cause interference and make proper operation of the satellite very difficult.
5. It requires to be monitored and controlled on regular periods so that it remains in the orbit, once it has been launched.

Man made satellites are important and impressive pieces of Technology but they do have some glitches satellites are very costly hard to maintain and not always reliable these disadvantages have to be weighed against the many benefits from satellite

Satellites are expensive in addition to the cost of building one of these devices there is also the cost of launching the satellite into space satellites are costly even when they are successfully launched but all too often launches end in failure. Satellites cost may rise as satellite technologies grow more complex to handle for different purposes

Another problem with satellites is there somewhat unreliable signal there are different factors that affect the strength and reception of a satellite signal errors might be made by the satellite or anyone working on it this can cause a variable level of interference to the signal

Satellites used to be impossible to maintain or repair in any way only with the successful repair of the Hubble Telescope did that change however it is still extremely difficult to repair a satellite NASA is designing robots whose sole purpose would be to repair satellites the operation is being handled by a department as NASA called the satellite servicing Development Office

### THE INDIAN SPACE PROGRAM

ISRO was formed by Dr. Vikram Sarabhai on 15th August 1969.

India has launched 118 satellites since 1975. Indian Space Research Organization (ISRO) is responsible for India's Space Program. In February 2017, ISRO has created a new record by launching 104 satellites in one go. Out of these 104 satellites, only 3 of these were Indian Satellites. These were launched by Polar Satellite Launch Vehicle (PSLV) - C37 on 15th February 2017. Earlier, this record was set by Russia in 2014 by launching 37 satellites in a single mission. US Space Agency NASA has launched 29 satellites in one go.

ISRO launched many types of satellites. These include Indian Remote Sensing Satellites, GPS or Navigation Satellites, Spy Satellites, and Military Satellites etc

- A.P.J. Abdul Kalam was the director of India's first Indigenous Satellite Launch Vehicle (SLV-3).
- The first Indian Satellite, Aryabhata was named after an Indian astronomer and mathematician. Prime Minister, Indira Gandhi named the first Indian Satellite as Aryabhata.
- ISRO's Mars mission is the cheapest mission so far with just Rs. 450 Crores (Rs. 12/km).
- ISRO's mission to Mars was the only mission to reach the Mars in the first attempt.
- An elated Prime Minister patted the back of ISRO Chairman K Radhakrishnan and complimented the Indian space scientists for making space history. With the success of "Mangalyaan", India has become the first country in the world to go to Mars in the very first try.
- ISRO has set a national record of launching a rocket carrying 20 satellites out of which 13 were from US.
- India's Second Mission to moon "Chandrayaan-2" was launched on 22nd July 2019.
- ISRO is one of the six space agencies in the world with the capability to build and launch satellites from its own
- India lost contact with its Vikram lunar lander Friday (Sept. 6) during a daring attempt to make history as the first country to land near the south pole of moon. The landing anomaly may have dashed Indian dreams of becoming just the fourth country to successfully soft-land a spacecraft on the moon.

I am confident that with hard work and determination, our scientists will continue to scale greater heights and win more laurels for the country in the field of space exploration.

Everything depends on our use .same goes with the satellites .use it as a boon or a curse. Technology is a useful servant but a dangerous master.

Technology is not good or evil in and of itself, its all about how people choose to use it.