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SPACE DEBRIS

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(Figure 1)

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SPACE DEBRIS

Space debris or space junk is a collection of inoperative human made objects in the space. These mainly include pieces of machinery, dead satellites, paint flecks that have fallen of a rocket, etc. As per the data there are currently,

- *3000* dead satellites in the Earth's orbit.
- *34,000* pieces of space junk larger than 10 cm
- *128 million* pieces of space junk larger than 1 mm

- The lower earth orbit(LEO) is the most concentrated area for space debris or orbital debris. It is now viewed as the world's largest garbage dump

Most of the space junk is moving at very high speeds which could even reach up to **8000 m/s**. Even though they are of no use, we cannot turn a blind eye to the fact that they could be menacing to us.

Large space debris objects that reenter into the atmosphere in an uncontrolled way can reach the ground and could endanger the population on ground.

Not only this but it also poses a huge risk to other satellites in outer space as well as to the International space station(ISS).

- The collisions of dead satellites with active satellites is not new to us. In the year 2009, the operational **Iridium 33 communications satellite** had collided with the inoperative Russian military satellite-- **'Cosmos 2251'**

- Not only the LEO but even the **geostationary orbit** is highly congested with space junk. The average distance b/w two objects here is

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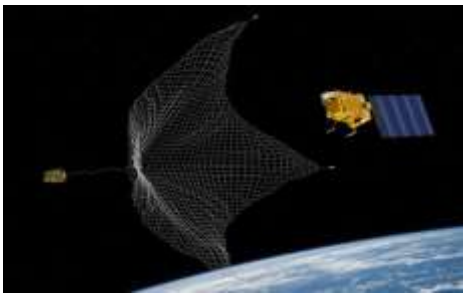
190 km only. The threat posed to satellites in the GEO is also much higher.

- Another very crucial thing to note here is that collisions with objects 20 cm in size were found to occur every 50 years on average. Events like this could result in the formation of clouds of high velocity fragments that could spread throughout the GEO region.

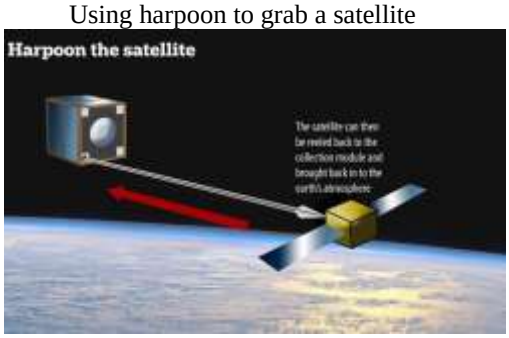
With the growing amount of space junk, it becomes highly important for us to think of some effective ways in order to do away with space debris. But cleaning up the space junk is not the duty of a single country. It is the responsibility of every single spacefaring nation. Some of the ways through which space junk could be cleaned are as follows:

- Catching it with a huge net



(Figure 2)

- Using harpoon to grab a satellite

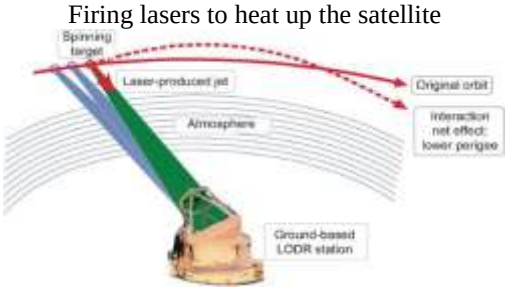


(Figure 3)

- Using magnets to attract the satellites and grab them

(Figure 4)

- Firing lasers to heat up the satellite



(Figure 5)

(https://www.researchgate.net/profile/SkTuritsyn/publication/270946290/figure/fig2/AS:271241248505873@1441680361634/Schematic-depiction-of-laser-space-debris-cleaning_Q320.jpg)

- Increasing the atmospheric drag so that it falls out of it's orbit.
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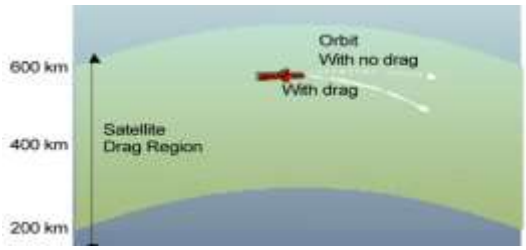
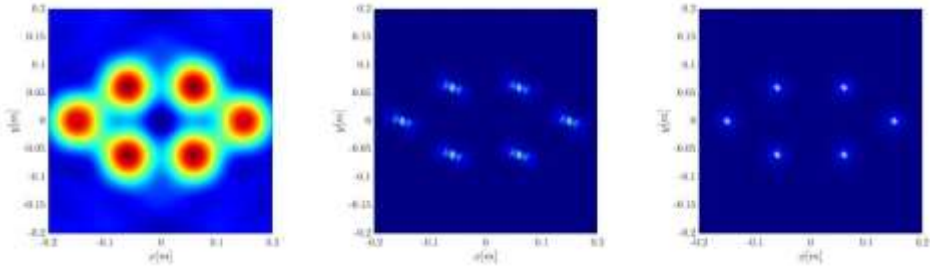


(Figure 6)

- Imaging space debris in high resolution in order to track the perilous space junk.



(Figure 7)

But all of these ways may not be completely safe to use. Like using active lasers for melting down the satellites could be very dangerous as it could also shatter other active satellites.

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1) Total figures/images used = 7
2) Image sources:

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Figure 6-
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3) Note: All the information mentioned in the article are accurate. No paragraph or sentence has been pasted directly from any source. All the information has been provided here after intensive research from enormous sources which include magazines, papers, articles, books, journals, etc.

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