

A man in a light blue shirt is speaking at a podium. The background is dark with some blurred figures. A large, semi-transparent 'Vizle' watermark is overlaid on the image.

*"G.P.S." - A LECTURE BY
GAURAV GAURI*



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OVERVEIW

- Official name : “Navigational Satellite Timing And Ranging Global Positioning System” (NAVSTAR GPS)
- Consists of **30+ GPS satellites** in medium Earth orbit (2000km - 35,000 km).
- Made up of two dozen satellites working in harmony are known as a satellite constellation
- Mainly used for navigation, map-making and surveying.

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MONITOR STATIONS

- Checks the exact altitude, position, speed, and overall health of the orbiting satellites.
- The control segment ensures that the GPS satellite orbits and clocks remain within acceptable limits.
- A station can track up to 11 satellites at a time.
- This "check-up" is performed twice a day, by each station.

Falcon Air Force Base in Colorado,

Cape Canaveral,

Florida,

Hawaii,

Ascension Island in the Atlantic Ocean,

Diego Garcia Atoll in the Indian Ocean,

Kwajalein Island in the South Pacific Ocean.

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CURRENT LOCATIONS OF GPS SATELLITES

- GPS satellites are orbiting the earth at an altitude of 11,000 miles.
- The orbits, and the locations of the satellites, are known in advance.
- GPS receivers store this orbit information for all of the GPS satellites in an ALMANAC*.

* The Almanac is a file which contains positional information for all of the GPS satellites

ACCURACY

- The position calculated by a GPS receiver relies on three accurate measurements:
 - Current time
 - Position of the satellite
 - Time delay for the signal
- The GPS signal in space will provide a "worst case" accuracy of 7.8 meters at a 95% confidence level.
- GPS time is accurate to about 14 nanoseconds.
- Higher accuracy is available today by using GPS in combination with augmentation systems. These enable real-time positioning to within a few centimeters.





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