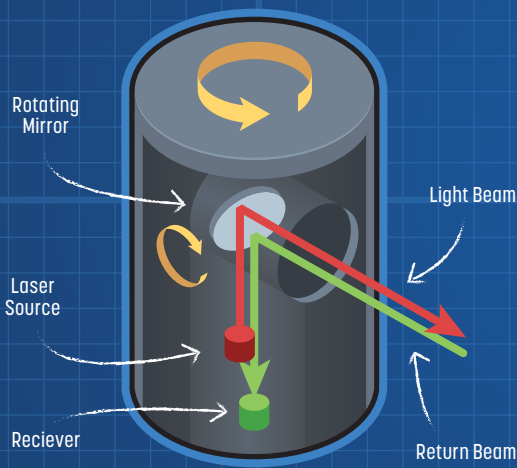


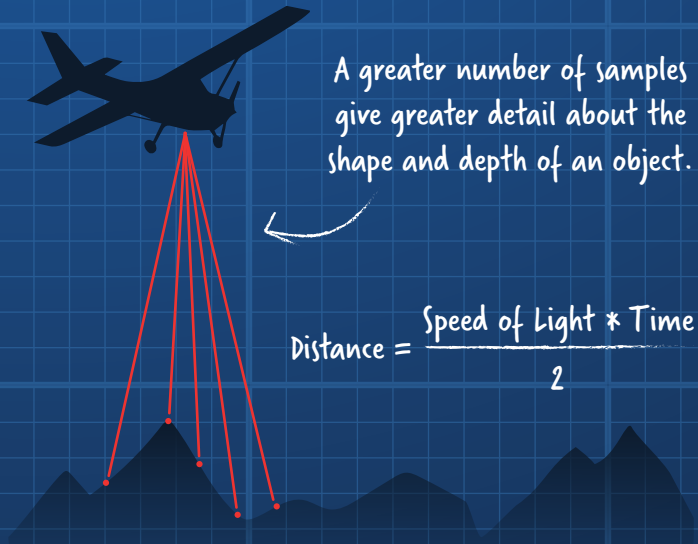
All About LIDAR

LIDAR stands for Light Detection and Ranging. It is a detection system similar to RADAR (Radio Detection and Ranging) that operates using **light** instead of radio waves. By sending a pulse from a laser, the time it takes the light to travel to an object and return can be used to determine distance.



- Components**
- LIDAR as a system is made up of several different components.
 - Laser:** Emits light pulses (usually near-infrared or green)
 - Photodetector:** Receives reflected pulses back
 - Timing Electronics:** Measure time between pulse and return
 - Optics:** Scanning and rotating mechanisms
 - Positioning Systems:** Measure position data, such as GPS and IMU
 - Computer:** Makes calculations and records data

The shorter wavelength of light waves versus radio waves makes it possible to detect much smaller objects and more detail than with RADAR, but also makes it more difficult to use in places with environmental interference, such as harsh weather.



Key Differences between LIDAR and RADAR

	LIDAR	RADAR
Medium	Light	Radio
Wavelength	Shorter	Longer
Object Detection	Small and Large	Large Only
Environment	Must be Clear	Can be Harsh