

Hyperspectral Imaging Satellite

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Hyperspectral Imaging Satellite



About Hyperspectral Imaging Satellite:

- These satellites are uniquely designed to beam down **data in hundreds of wavelengths** to detect problems that are invisible to today's satellites.
- The constellation is designed to provide global coverage at a revisit of every 24 hours.
 - Hyperspectral imaging (HSI) is a technique that **analyses a wide spectrum of light** instead of just assigning primary colours (red, green, blue) to each pixel, effectively spectrally fingerprinting the Earth to provide more information on what is imaged.
 - The collected spectra are used to form an image in a way that each image pixel includes a complete spectrum.

What is Firefly' constellation?

- It is India's first **commercial satellite constellation**.
- It offers six times sharper resolution than the standard 30-meter resolution of existing hyperspectral satellites, achieving an unprecedented five-meter resolution.
- This capability allows it to **capture intricate details** previously invisible to conventional systems.

- The satellites' advanced sensors, capable of **capturing data across more than 150 spectral bands**, enable the detection of subtle changes in chemical compositions, vegetation health, water quality, and atmospheric conditions.
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Q1: What is the difference between hyperspectral and multispectral satellites?

Multispectral satellites orbit in a sun-synchronous, Low-Earth Orbit. On the other hand, a hyperspectral satellite can detect thousands of different bands within the light spectrum. This can be extremely helpful in detecting certain minerals or objects if you are familiar with their spectral properties.

Source: IE

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