



Space-Based ISR:

Are we there yet?

Bill Hargreaves – Chief Technology Officer

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Who is CIS Secure

"Military intelligence is the key to war; without it, you cannot win."

—Sun Tzu

The advent of MODERN ISR

- Manned Aircraft
- Unmanned Aircraft
- Space-Based Vehicles

Modern SATCOM

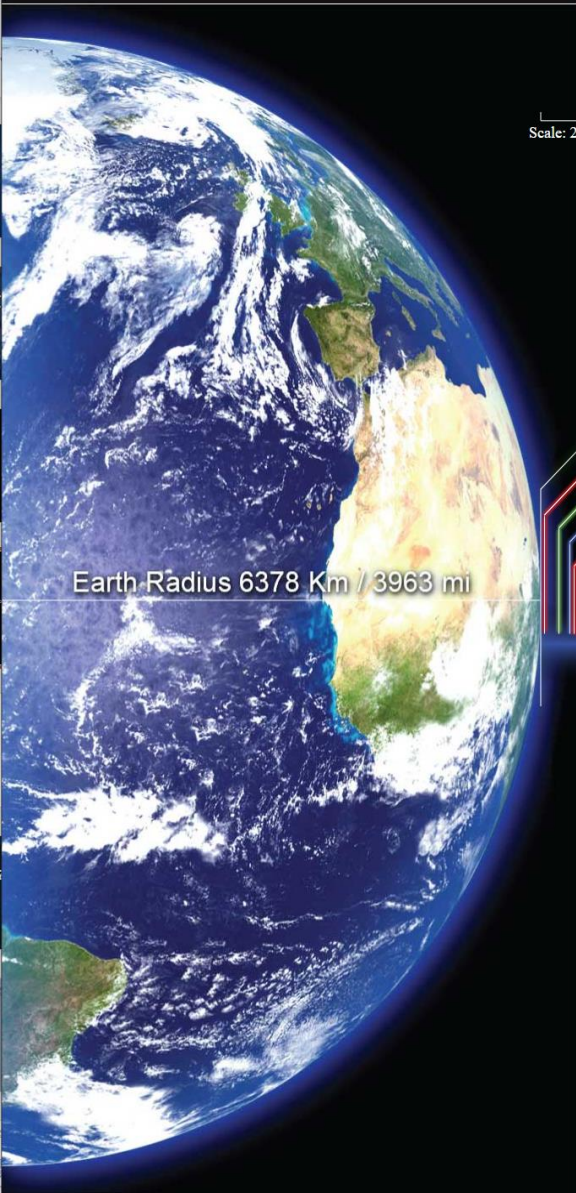
Pros

- Accessibility
- Point to Multi-Point
- COOP (Continuity of Operations)

Cons

- Limited Bandwidth
- High Latency
- Single POF

Orbital altitudes of many significant satellites of Earth



Scale: 2000 km / 1243.7 mi

0 km / mi – Sea level

37.6 km / 23.4 mi – Self-propelled jet aircraft flight ceiling (Record set in 1977)

215 km / 133.6 mi – Sputnik-1, the first artificial satellite of Earth

340 km / 211.3 mi – International Space Station

390 km / 242.3 mi – Former Russian space station Mir

595 km / 369.7 mi – Hubble Space Telescope

[700–1700 km] – Polar-orbiting satellites

[435–1056 mi]

LEO zone
(Low Earth orbit)

MEO zone
(Medium Earth orbit)

2000 km / 1243.7 mi

600–800 km / 372.8–497.1 mi – Sun-synchronous satellites

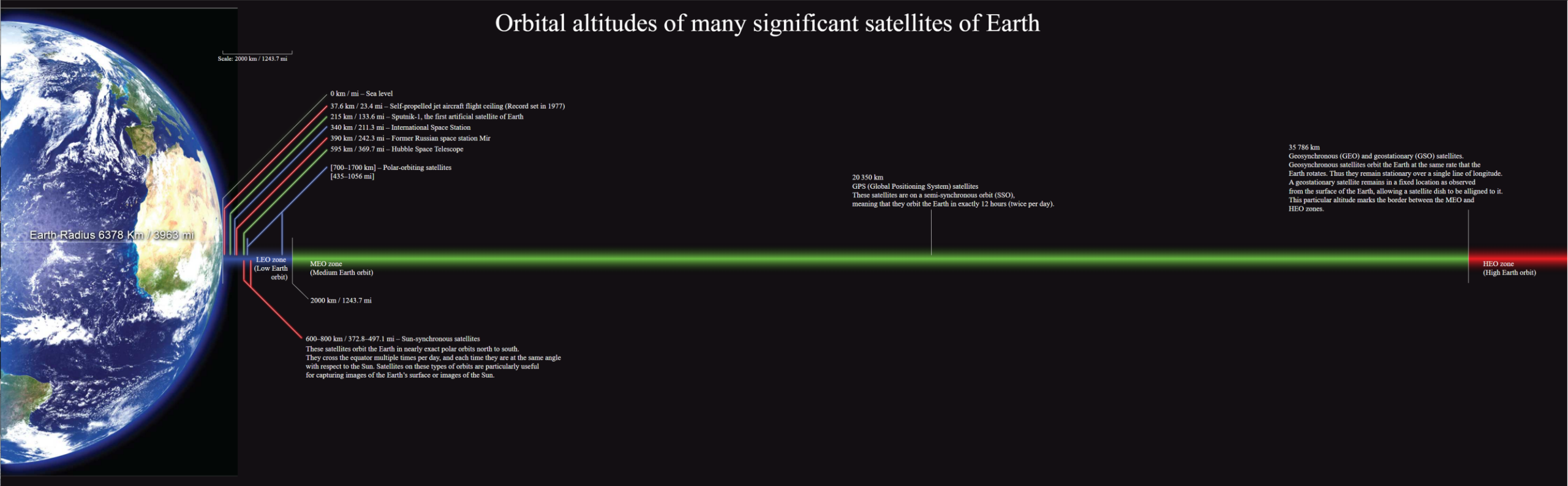
These satellites orbit the Earth in nearly exact polar orbits north to south. They cross the equator multiple times per day, and each time they are at the same angle with respect to the Sun. Satellites on these types of orbits are particularly useful for capturing images of the Earth's surface or images of the Sun.

20 350 km

GPS (Global Positioning System) satellites

These satellites are on a semi-synchronous orbit (SSO), meaning that they orbit the Earth in exactly 12 hours (twice per day).

Orbital altitudes of many significant satellites of Earth

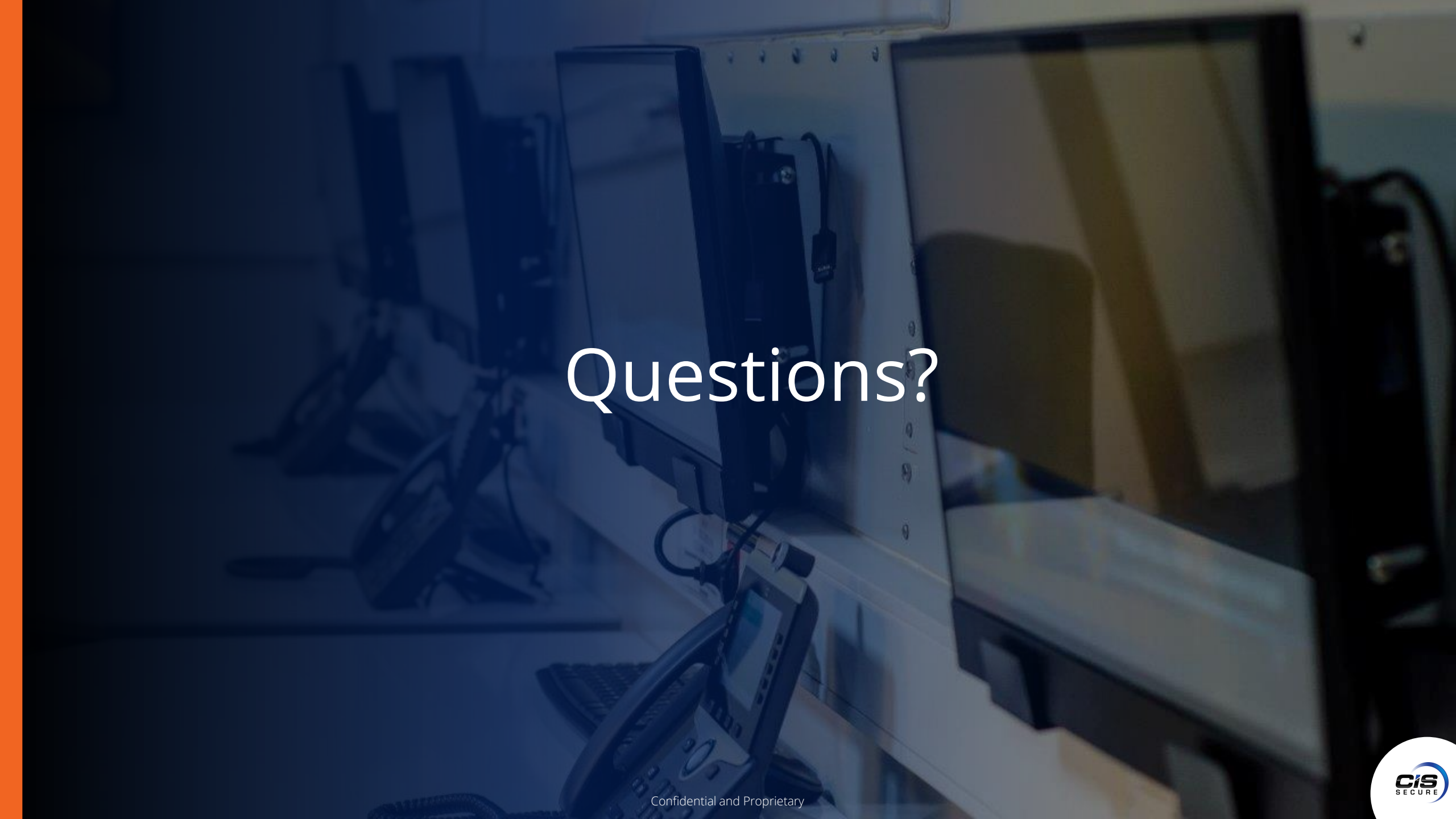


Layering Technologies

- Redundant Satellites
- Highly Encrypted Signals/Information
- Trusted Hardware
- Physical Security

The future of ISR?

- Portable Devices
- Satellite Constellations
- Collaborative data gathering
- Artificial Intelligence

The background of the slide is a photograph of a server room. It shows rows of server racks with various cables and equipment. The image is dimmed and has a blue color overlay. A solid orange vertical bar is on the left side of the slide.

Questions?

Thank You

sales@cissecure.com

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