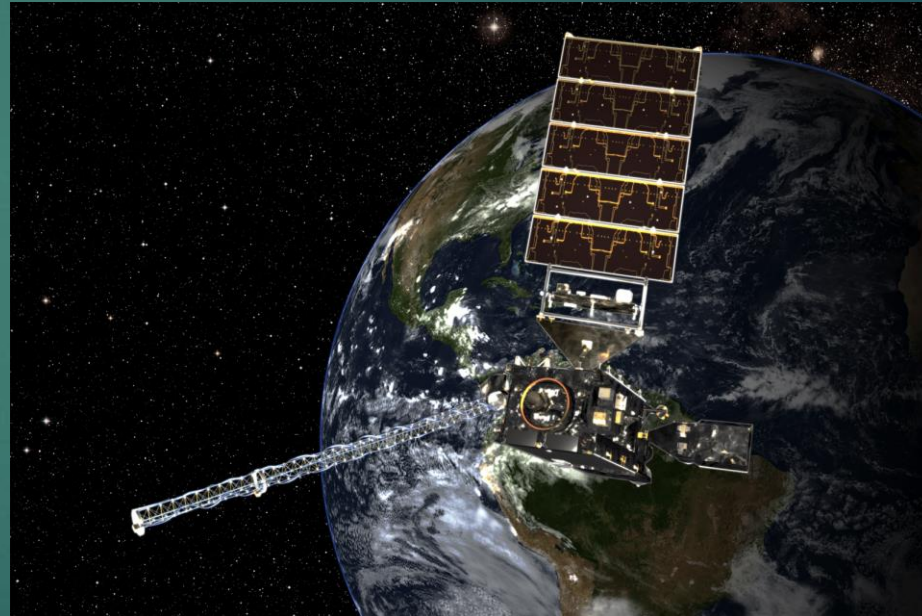


# Types of Satellites

# Weather Satellites

- ▶ Owned by governments
- ▶ Take pictures of Earth from Space
- ▶ Detect clouds, dust, hot vs. cold air, storms, and much more



GOES 16, photo courtesy of NOAA

# Communication satellite

- ▶ Satellites are privately owned
- ▶ TV, radio, telephone, internet signals can be sent

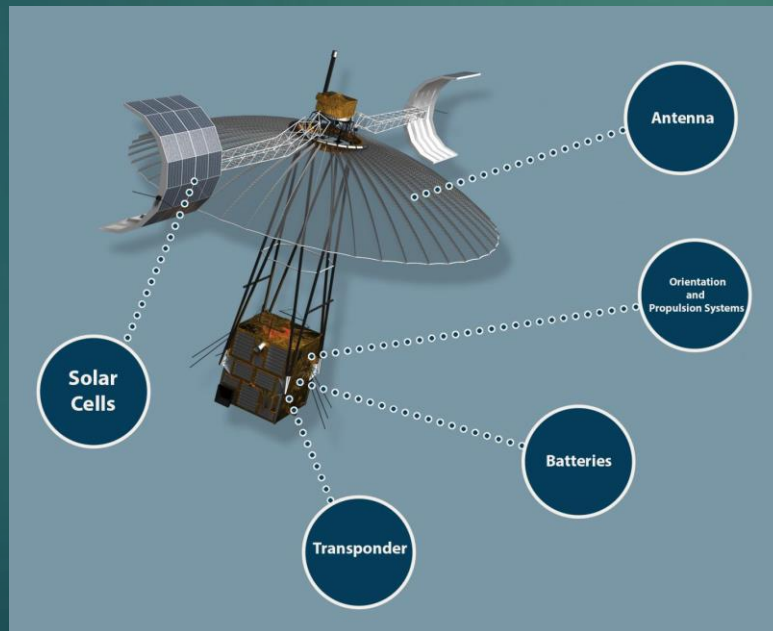


Image courtesy of the SA&S museum



SpaceX train of satellites

# Spy satellites

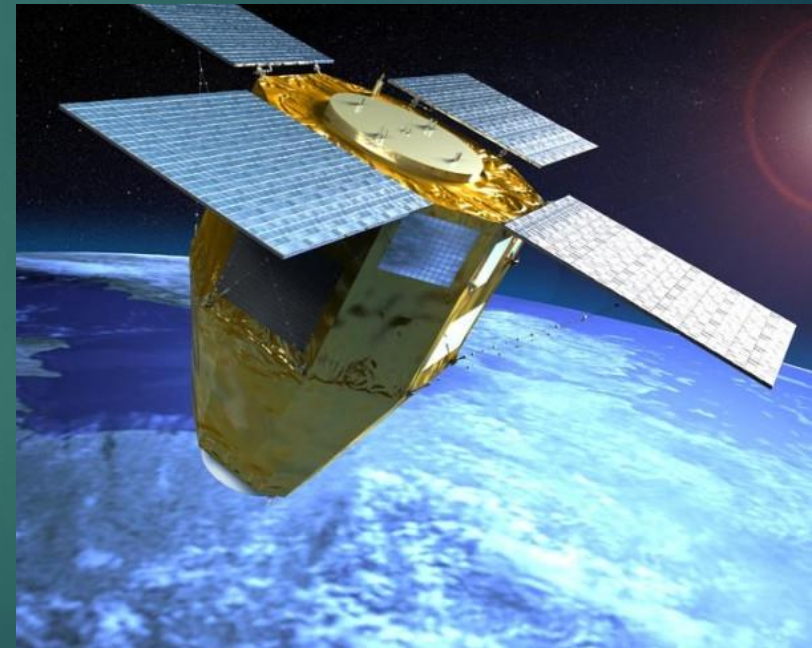
- ▶ Used by countries to collect data on other countries
- ▶ Very large, ~ the size of a school bus
- ▶ Detailed images that can identify a single person



Photo courtesy of the National Air force museum •

# Earth Observation Satellites

- ▶ Used for a variety of purposes: tracking wildfires, identifying illegal fishing, monitoring ice pack, and more



# Satellite navigation

- ▶ Used to determine location and get directions
- ▶ GPS



Image courtesy of Wikipedia

# Satellite Communication

# How Satellites communicate with Earth

- ▶ The group that controls the satellite has a ground station
- ▶ The ground station is able to send and receive information from the satellite
- ▶ This communication occurs via radio waves



One of NASA's Deep Space Network base stations. Photo courtesy of NASA.



# How Satellites communicate with Earth

- ▶ When a satellite sends information to the base station it is called a downlink
- ▶ When a base station sends information to the satellite it is called an uplink
- ▶ Satellites must stay in orbit or they may move out of the range of the base station



One of NASA's Deep Space Network base stations. Photo courtesy of NASA.

# How Satellites communicate with Earth

- ▶ <https://www.youtube.com/watch?v=6WFj-CKldv4&t=147s>