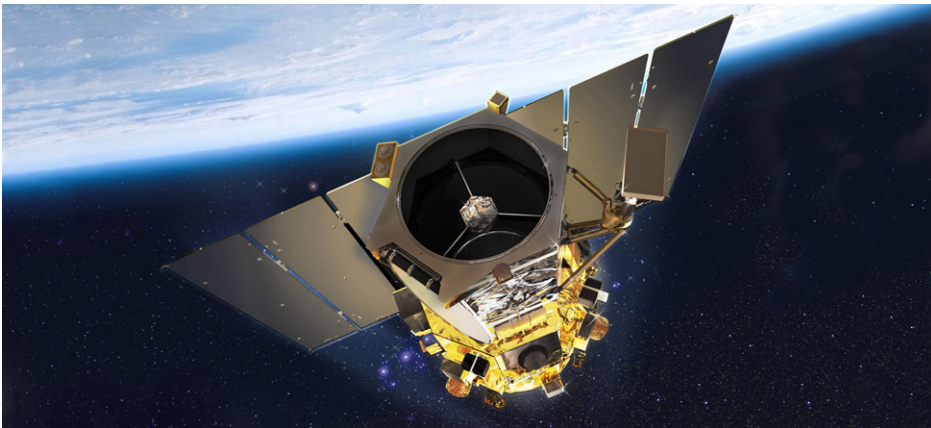




GeoEye-1 Earth Imaging Satellite

Highest Resolution Commercial Imager Launched to Date



Artist's rendering of GeoEye-1 in orbit

Mission Description

GeoEye-1 is a multispectral, Earth-imaging satellite with the highest resolution and most advanced collection capabilities of any commercial imaging satellite launched to date. The satellite orbits the Earth's poles to capture detailed digital images, and can revisit any point on Earth once every three days or sooner. GeoEye-1 offers unprecedented spatial resolution by simultaneously acquiring panchromatic (black and white) and multispectral (color) imagery at 0.41 meter (1.3 feet) and 1.65 meter (5.4 feet) resolutions respectively. This orbiting Earth observatory can collect up to 700,000 square kilometers of panchromatic and up to 350,000 square kilometers of multispectral imagery per day. 1000 gigabits of image data storage is available onboard for "store and forward" operation with a 150/740 Mbps selectable-rate X-band downlink for stored or real-time imagery data. Ground objects can be geo-located from the satellite to better than five meters without ground control points.

Spacecraft

Orbital was the prime contractor for the design, assembly, payload integration, and test of the satellite. Orbital also administered and managed the subcontract with ITT Corporation (Rochester, NY) for the Electro-Optical Camera Assembly. The spacecraft design is based on Orbital's 300HP RSDO-catalogued standard modular bus, with additional design heritage from our Coriolis (USAF/USN), Swift (NASA), and Fermi Gamma-ray Space Telescope (NASA) spacecraft programs. The fully redundant GeoEye-1 spacecraft has a design life of seven years and a sophisticated attitude control system to provide a highly stable, while also highly agile imaging platform.

QUICK FACTS:

- High-performance successor to Orbital's Orbview-3 satellite
- Hi-resolution color and black and white imaging with a 1000 Gb onboard solid state data recorder and a 740 Mbps downlink
- 681 km, 98° (near polar) Low Earth Orbit mission
- Simple, easily integrated design based on flight-proven 300HP modular spacecraft architecture that reduces assembly and test cycle times
- Resolution to 0.41 meter (16 inches) and mapping of natural and man-made features to within five meters (16 feet) of their actual location on the surface of the Earth without ground control points
- Precision attitude control system and highly agile camera allows daily collection of up to 700,000 square kilometers of black and white imagery and up to 350,000 square kilometers of color imagery

Customer:

GeoEye, Inc – Dulles, VA



GeoEye-1 was designed, built, and tested at Orbital's 135,000 square foot satellite manufacturing and test facility in Gilbert, AZ

GeoEye-1 Earth Imaging Satellite

Specifications

Spacecraft

Launch Mass:	1955 kg (4310 lbm)
Solar Arrays:	Deployable, 7-panel, GaAs cells, 3862 W EOL
Orbit:	681 km circular @ 98°, sun synchronous
Stabilization:	3-axis, ZMB, nadir pointing
Pointing knowledge:	0.4 arcsec (3σ)
Data Storage:	1000 Gbits
Data Downlink:	X-band, 740 Mbps or 150 Mbps selectable
Propulsion:	144.5 kg (318.6 lbm) of blowdown monopropellant hydrazine with eight (8) 22N thrusters
Mission Life:	7 year design; 15 year fuel supply

Instrument

Electro-Optical Camera Assembly

The Optical Telescope Assembly, detectors, focal plane assembly and high-speed digital processing electronics are capable of processing 700 million pixels per second. The agile camera allows for side-to-side extensions of the camera's 15.2 kilometer (9.44 mile)-wide swath width or multiple images of the same target during a single pass to create a stereo picture.

Launch

Launch Vehicle:	Delta II 7420-10
Launch Site:	Vandenberg Air Force Base, CA
Date:	September 2008

Key Mission Partners

Orbital Sciences Corporation (Gilbert, AZ)

Prime contractor responsible for spacecraft design and manufacture, administration of camera and optics subcontract, payload integration and system test, development of a Mission Operations Center, launch support, and mission operations support

ITT Corporation, Geospatial Systems (Rochester, NY)

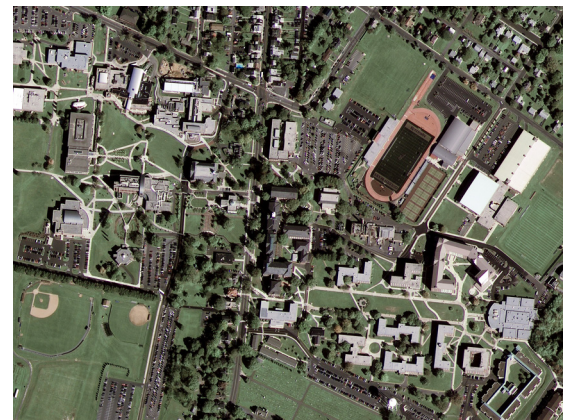
Design, build, and test of the payload camera and optics (the Electro-Optical Camera Assembly)



GeoEye-1 satellite image of Hoover Dam (courtesy GeoEye, Inc)



GeoEye-1 satellite image of Paris, France (courtesy GeoEye, Inc)



GeoEye-1 satellite image of Kutztown University (courtesy GeoEye, Inc)

Agility Means More Imagery per Pass

GeoEye-1 makes 15 orbits per day in its sun-synchronous orbit passing over a given area at about 10:30 a.m. local time every day. GeoEye-1 can "revisit" any point on the globe every three days or sooner, depending upon the required look angle. The entire satellite is able to turn and swivel very quickly in orbit to point the camera at areas of the Earth directly below it, as well as from side-to-side and front-to-back. This agility enables GeoEye-1 to collect much more imagery during a single pass.