

## WorldView-3

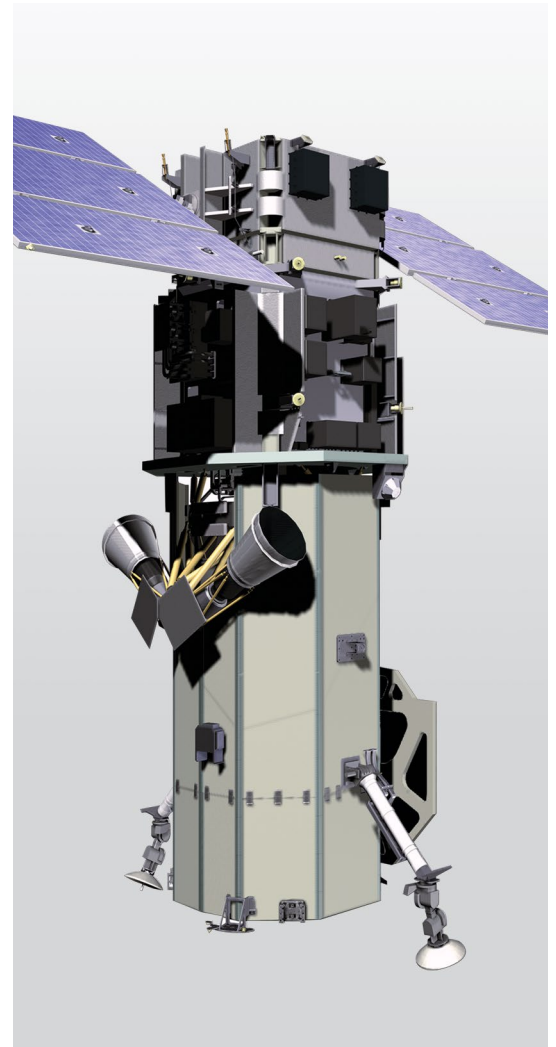
Introducing WorldView-3, the first multi-payload, super-spectral, high-resolution commercial satellite. Operating at an expected altitude of 617 km, WorldView-3 provides 31 cm panchromatic resolution, 1.24 m multispectral resolution, 3.7 m short-wave infrared resolution, and 30 m CAVIS resolution. WorldView-3 has an average revisit time of <1 day and is capable of collecting up to 680,000 km<sup>2</sup> per day, further enhancing the DigitalGlobe collection capacity for more rapid and reliable collection. Launching in 2014, the WorldView-3 system will allow DigitalGlobe to further expand its imagery product offerings.

### Features

- Very high-resolution\*
  - Panchromatic 31 cm
  - Multispectral 1.24 m
  - Short-wave infrared 3.7 m
  - CAVIS 30 m
- \*Will be resampled for commercial distribution
- The most spectral diversity commercially available
  - Panchromatic band
  - 4 standard VNIR colors: blue, green, red, near-IR1
  - 4 added VNIR colors: coastal, yellow, red edge, and near-IR2
  - 8 SWIR bands: Penetrates haze, fog, smog, dust, smoke, mist, and cirrus
  - 12 CAVIS bands: Corrects for clouds, aerosols, vapors, ice, and snow
- Industry-leading geolocation accuracy
- High capacity in various collection modes
- Bi-directional scanning
- Rapid retargeting using Control Moment Gyros (>2x faster than any competitor)
- Direct Access tasking from and image transmission to customer sites
- Daily revisits

### Benefits

- Simultaneous, high resolution, super-spectral imagery
- Large area mono and stereoscopic collection eliminates temporal variations
- Precision geo-location possible without ground control points
- Global capacity of 680,000 km<sup>2</sup> per day
- New and enhanced applications, including:
  - Mapping
  - Land Classifications
  - Disaster Preparedness/Response
  - Feature Extraction/Change Detection
  - Soil/Vegetative Analysis
  - Geology: Oil & Gas, Mining
  - Environmental Monitoring
  - Bathymetry/Coastal Applications
  - Identification of Man-made Materials
  - Superior Haze Penetration



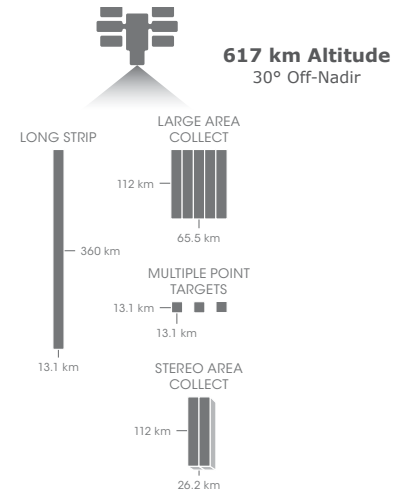
WorldView-3 artist rendering

# WorldView-3

## Design and Specifications

## Collection Scenarios

<b>Orbit</b>	Altitude: 617 km Type: SunSync, 1:30 pm descending Node Period: 97 min.
<b>Life</b>	Spec Mission Life: 7.25 years Estimated Service Life: 10 to 12 years
<b>Spacecraft Size, Mass and Power</b>	Size: 5.7 m (18.7 ft) tall x 2.5 m (8 ft) across 7.1 m (23 ft) across deployed solar arrays Mass: 2800 kg (6200 lbs) Power: 3.1 kW solar array, 100 Ahr battery
<b>Sensor Bands</b>	Panchromatic: 450 - 800 nm  8 Multispectral: Coastal: 400 - 450 nm      Red: 630 - 690 nm Blue: 450 - 510 nm      Red Edge: 705 - 745 nm Green: 510 - 580 nm      Near-IR1: 770 - 895 nm Yellow: 585 - 625 nm      Near-IR2: 860 - 1040 nm  8 SWIR Bands: SWIR-1: 1195 - 1225 nm      SWIR-5: 2145 - 2185 nm SWIR-2: 1550 - 1590 nm      SWIR-6: 2185 - 2225 nm SWIR-3: 1640 - 1680 nm      SWIR-7: 2235 - 2285 nm SWIR-4: 1710 - 1750 nm      SWIR-8: 2295 - 2365 nm  12 CAVIS Bands: Desert Clouds: 405 - 420 nm      Water-3: 930 - 965 nm Aerosol-1: 459 - 509 nm      NDVI-SWIR: 1220 - 1252 nm Green: 525 - 585 nm      Cirrus: 1350 - 1410 nm Aerosol-2: 620 - 670 nm      Snow: 1620 - 1680 nm Water-1: 845 - 885 nm      Aerosol-3: 2105 - 2245 nm Water-2: 897 - 927 nm      Aerosol-3: 2105 - 2245 nm
<b>Sensor Resolution (or GSD, Ground Sample Distance; off-nadir is geometric mean)</b>	Panchromatic Nadir: 0.31 m 20° Off-Nadir: 0.34 m Multispectral Nadir: 1.24 m 20° Off-Nadir: 1.38 m SWIR Nadir: 3.70 m 20° Off-Nadir: 4.10 m CAVIS Nadir: 30.00 m
<b>Dynamic Range</b>	11-bits per pixel Pan and MS; 14-bits per pixel SWIR
<b>Swath Width</b>	At nadir: 13.1 km
<b>Attitude Determination and Control</b>	Type: 3-axis Stabilized Actuators: Control Moment Gyros (CMGs) Sensors: Star trackers, precision IRU, GPS
<b>Pointing Accuracy and Knowledge</b>	Accuracy: <500 m at image start/stop Knowledge: Supports geolocation accuracy below
<b>Retargeting Agility</b>	Time to Slew 200 km: 12 sec
<b>Onboard Storage</b>	2199 Gb solid state with EDAC
<b>Communications</b>	Image & Ancillary Data: 800 and 1200 Mbps X-band Housekeeping: 4, 16, 32, or 64 kbps real time, 524 kbps stored, X-band Command: 2 or 64 kbps S-band
<b>Max Contiguous Area Collected in a Single Pass (30° off-nadir angle)</b>	Mono: 66.5 km x 112 km (5 strips) Stereo: 26.6 km x 112 km (2 pairs)
<b>Revisit Frequency (at 40°N Latitude)</b>	1 m GSD: <1.0 day 4.5 days at 20° off-nadir or less
<b>Geolocation Accuracy (CE90)</b>	Predicted <3.5 m CE90 without ground control
<b>Capacity</b>	680,000 km <sup>2</sup> per day



## Sensor Bands

- Panchromatic
- Multispectral
- 4 Additional Multispectral Bands
- 8 SWIR Bands
- 12 CAVIS Bands