

DigitalGlobe Incorporated Corporate and Satellite Program Update

12th Annual Joint Agency Commercial Imagery Evaluation (JACIE) Workshop

April 16th 2013





DigitalGlobe

See the world around you
– anytime, anywhere –
and act on it

DG Now Provides:

Imagery

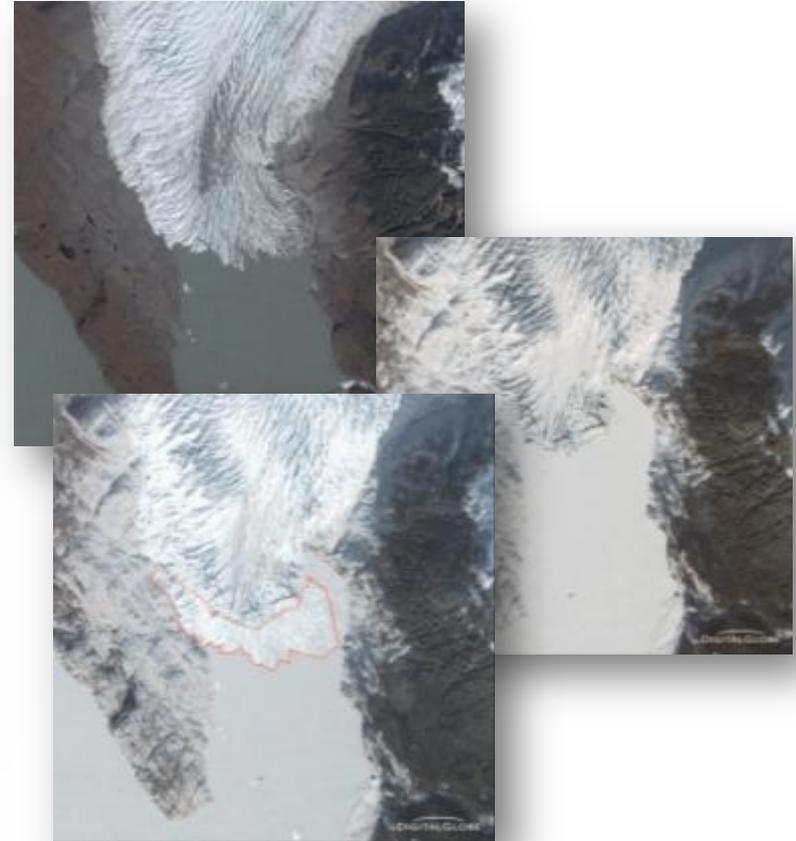
Discover the world the way it was,
the way it is and the way it could be.

Information

Get access to the largest and most up-to-date
collection of earth images available. Anytime. Anywhere.

Insight

Change is happening right now. How will it affect you?
What will you do?



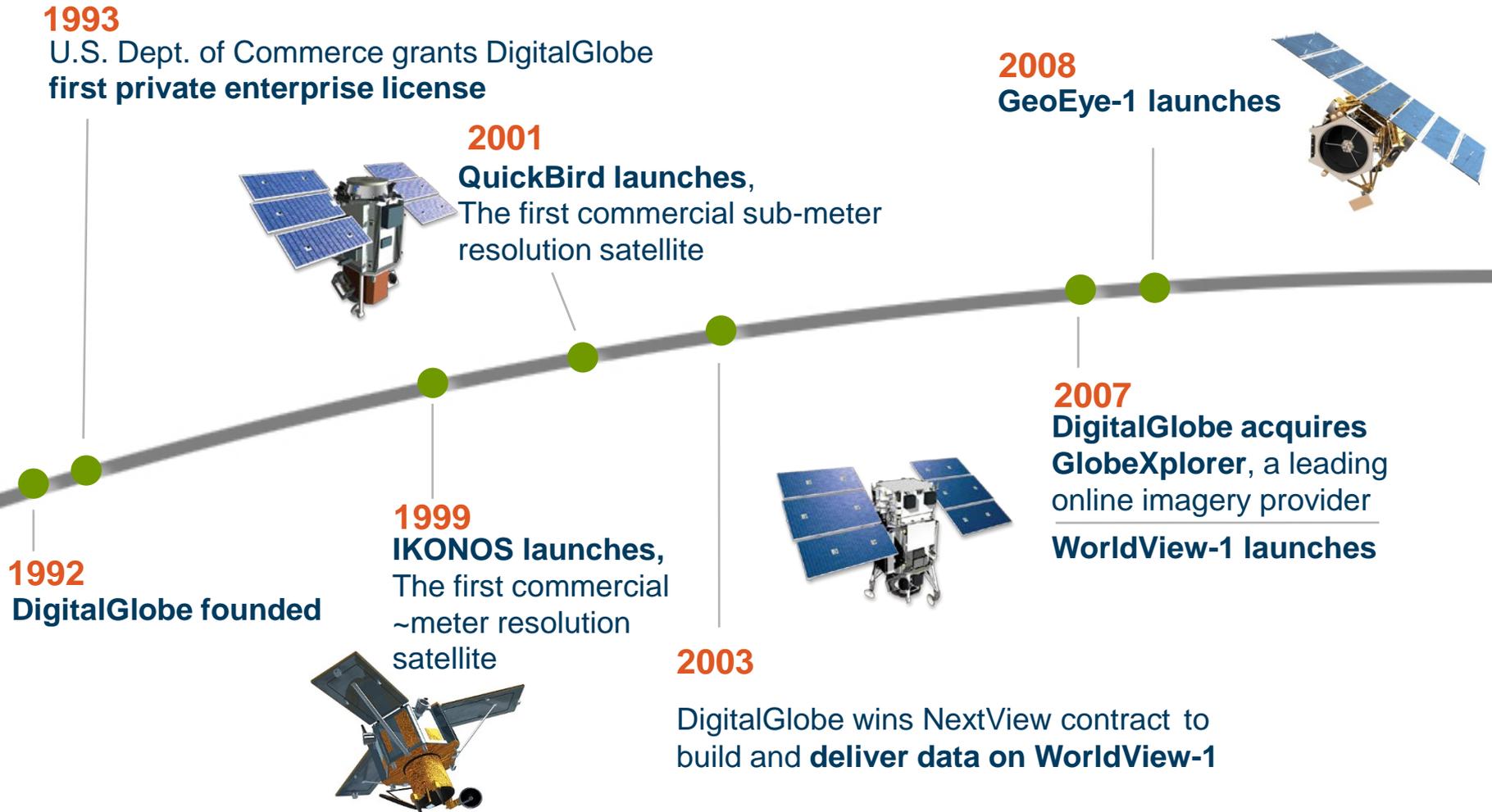
DigitalGlobe/GeoEye - We are now *one!*

DigitalGlobe and GeoEye have combined

- Larger constellation with optimized orbits, coordinated scheduling, and reduced revisit rates
- Better integrated imagery collection, processing, and analytics
- More robust suite of services with the high level of support you have come to expect
- Combined knowledge and expertise of some of the world's top geospatial production and analysis professionals



Advancing our industry one milestone at a time



Advancing our industry one milestone at a time

2009

DigitalGlobe **opens London office** and expands Singapore office

DigitalGlobe begins trading as DGI on NYSE

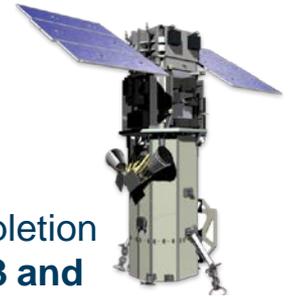


2010

DigitalGlobe **surpasses one billion km² of earth imagery**

2013/2014

Estimated completion of **WorldView-3 and GeoEye-2**



2009

WorldView-2 launches

FirstLook launches

to provide the industry's first information product



2013

DigitalGlobe and GeoEye merge to make DigitalGlobe currently operating five satellites in low earth orbit

DigitalGlobe **current archive 3.8 Billion km² of earth imagery**

The Current DigitalGlobe Constellation

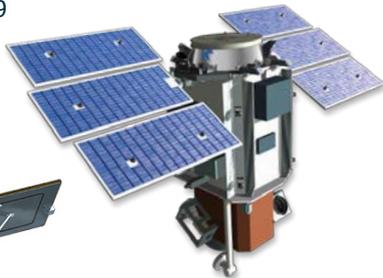
IKONOS

Launched September 1999
4 band multispectral
82 cm resolution



QuickBird

Launched October 2001
4 band multispectral
65 cm resolution



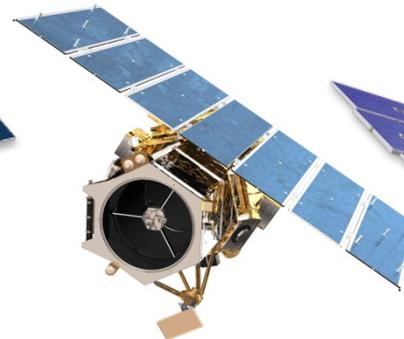
WorldView-1

Launched September 2007
Panchromatic
50 cm resolution



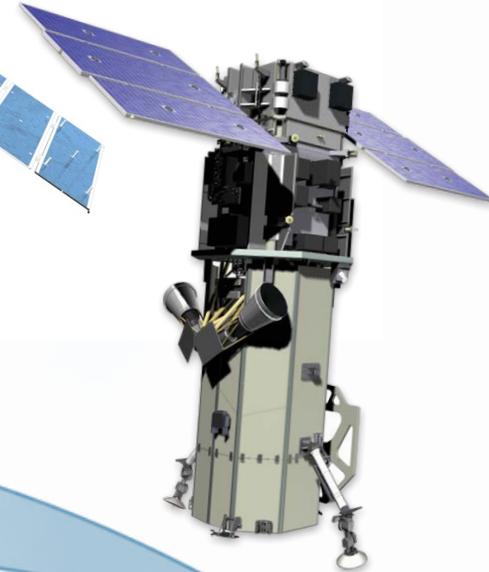
GeoEye-1

Launched September 2008
4 band multispectral
41 cm resolution⁽¹⁾

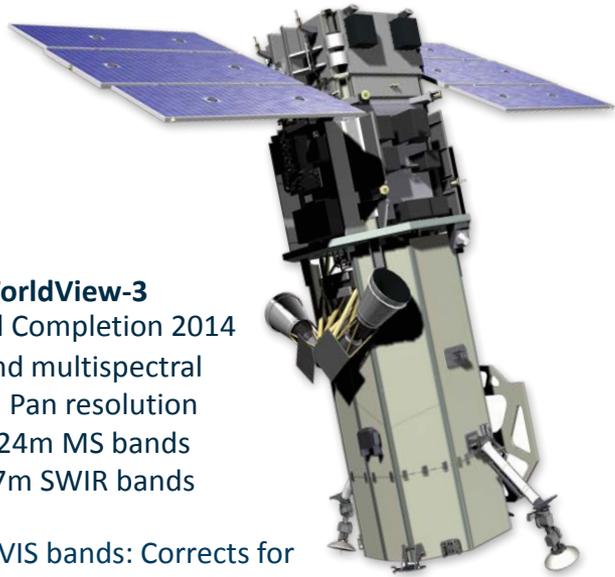


WorldView-2

Launched October 2009
8 band multispectral
46 cm resolution⁽¹⁾



Upcoming DigitalGlobe Constellation Additions



WorldView-3

Expected Completion 2014

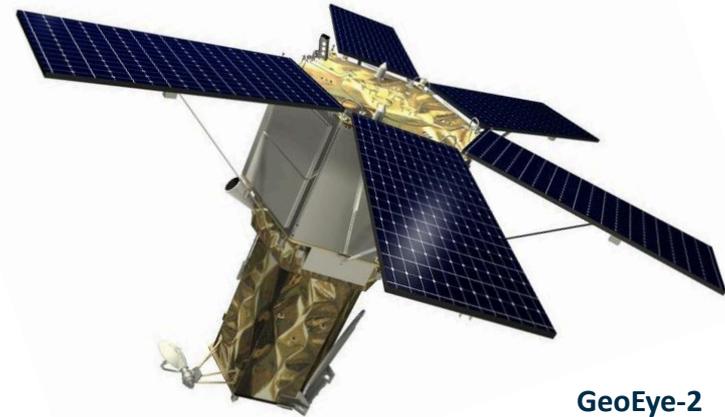
16 band multispectral

31 cm Pan resolution

8 - 1.24m MS bands

8 - 3.7m SWIR bands

12 - 30m CAVIS bands: Corrects for
clouds, aerosols, vapors, ice,
and snow



GeoEye-2

Expected Completion 2013

4 band multispectral

34 cm resolution⁽¹⁾

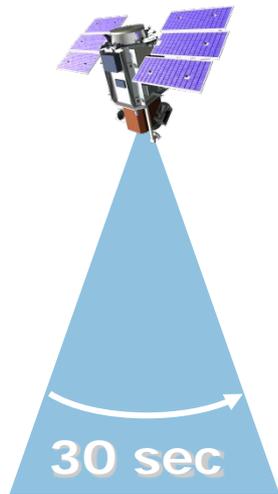


Satellite Agility

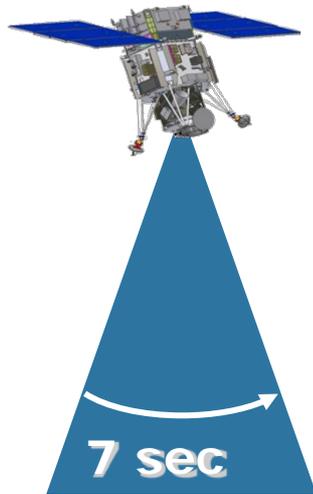
WorldView-1, WorldView-2, WorldView-3 and GeoEye-2 use Control Moment Gyros (CMGs) to provide state of the art acceleration and agility >5x better than reaction wheel vehicles.

Improves collection efficiency, permits rapid collection of point targets and Increases area collection capability.

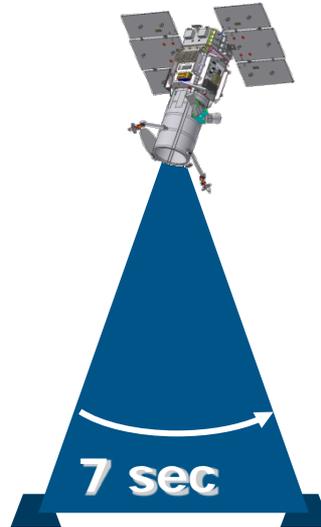
QuickBird



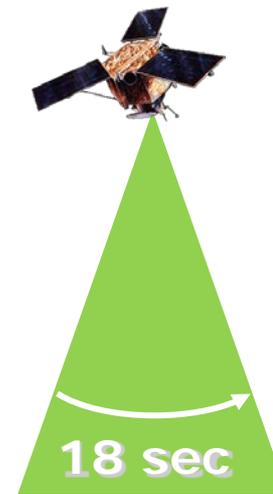
WorldView-1



WorldView-2



IKONOS



GeoEye-1



Target 1 |—— 200 km ——>| Target 2

Positional Accuracy - See the Earth the way it is



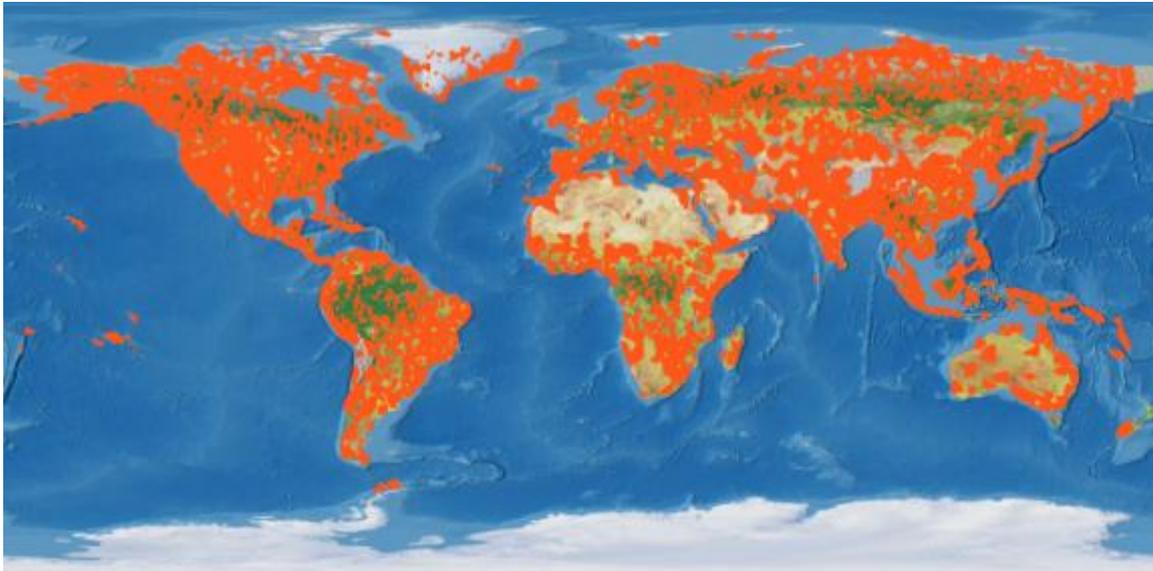
Platform	Accuracy Levels
QuickBird IKONOS	<ul style="list-style-type: none"> • 15 - 23 m CE90 or better • Quick production
WorldView-1 WorldView-2 GeoEye-1	<ul style="list-style-type: none"> • 4.0 m CE90 or better • Broad coverage with high accuracy for mapping and feature extraction



See more of the Earth

Coverage

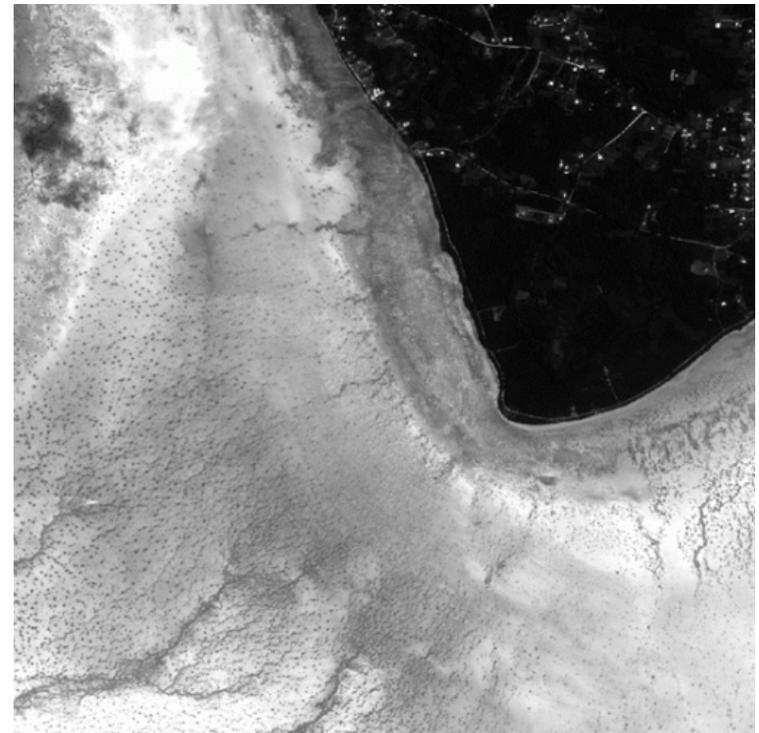
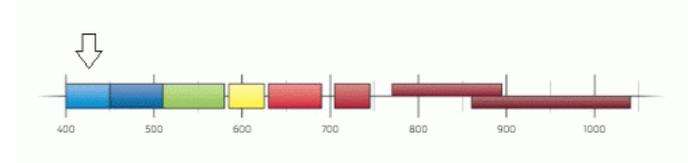
■ 30 days collection



- **~3.5 million km²** added each day
- **More access** – three satellites with the some of the most agile technology
- **Better collection** – we can capture the earth's landmass in 60 days
- **Content leader** – over 3.8 billion km² archived imagery available

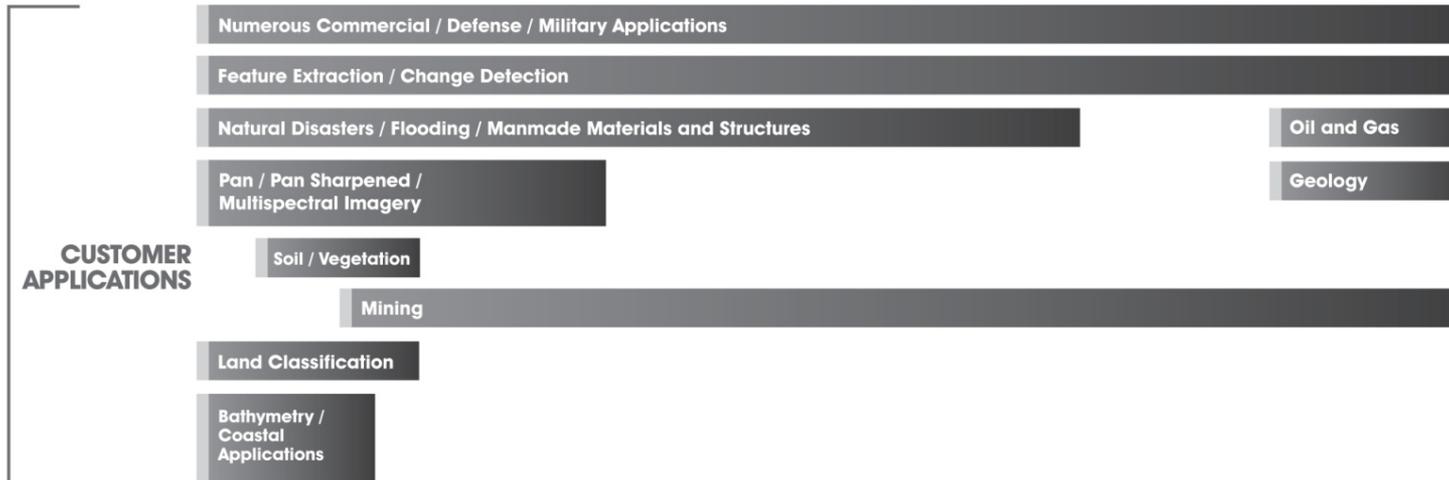
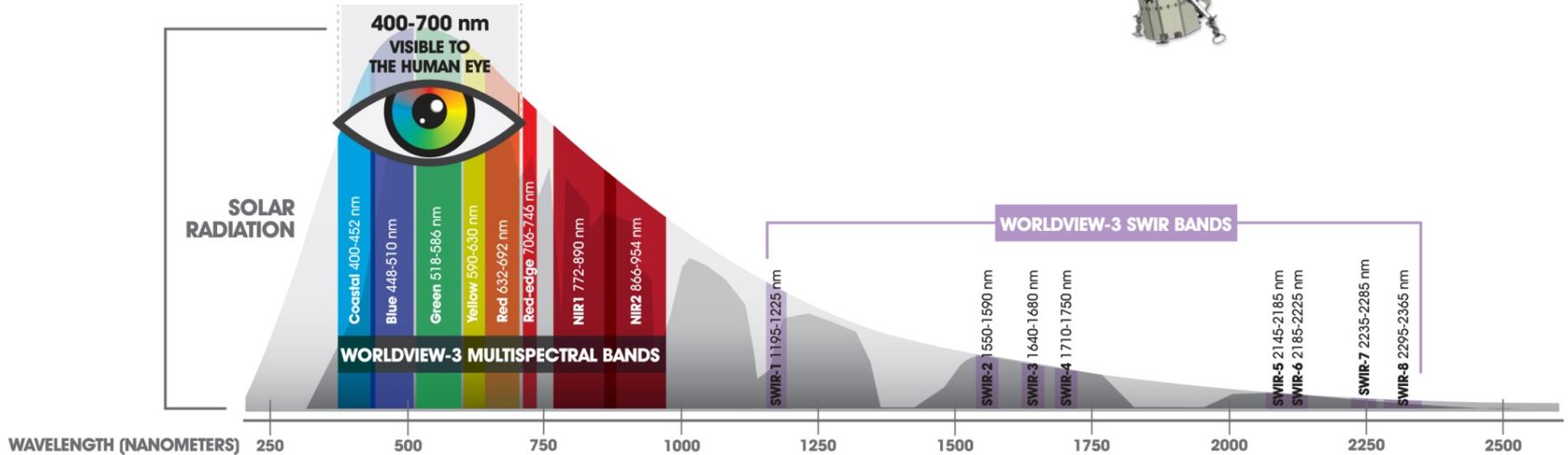
WorldView-2 Multispectral Imagery

<p>Coastal Blue (400-450 nm)</p> <ul style="list-style-type: none"> ▪ New band ▪ Absorbed by chlorophyll in healthy plants and aids in conducting vegetative analysis ▪ Least absorbed by water, and will be very useful in bathymetric studies ▪ Substantially influenced by atmospheric scattering and has the potential to improve atmospheric correction techniques 	<p>Red (630-690 nm)</p> <ul style="list-style-type: none"> ▪ Narrower than the red band on QuickBird and shifted to longer wavelengths ▪ Better focused on the absorption of red light by chlorophyll in healthy plant materials ▪ One of the most important bands for vegetation discrimination ▪ Very useful in classifying bare soils, roads, and geological features
<p>Blue (450-510 nm)</p> <ul style="list-style-type: none"> ▪ Identical to QuickBird ▪ Readily absorbed by chlorophyll in plants ▪ Provides good penetration of water ▪ Less affected by atmospheric scattering and absorption compared to the Coastal Blue band 	<p>Red-Edge (705-745 nm)</p> <ul style="list-style-type: none"> ▪ New band ▪ Centered strategically at the onset of the high reflectivity portion of vegetation response ▪ Very valuable in measuring plant health and aiding in the classification of vegetation
<p>Green (510-580 nm)</p> <ul style="list-style-type: none"> ▪ Narrower than the green band on QuickBird ▪ Able to focus more precisely on the peak reflectance of healthy vegetation ▪ Ideal for calculating plant vigor ▪ Very helpful in discriminating between types of plant material when used in conjunction with the Yellow band 	<p>NIR1 (770-895 nm)</p> <ul style="list-style-type: none"> ▪ Narrower than the NIR1 band on QuickBird to provide more separation between it and the Red-Edge sensor ▪ Very effective for the estimation of moisture content and plant biomass ▪ Effectively separates water bodies from vegetation, identifies types of vegetation and also discriminates between soil types
<p>Yellow (585-625 nm)</p> <ul style="list-style-type: none"> ▪ New band ▪ Very important for feature classification ▪ Detects the “yellowness” of particular vegetation, both on land and in the water 	<p>NIR2 (860-1040 nm)</p> <ul style="list-style-type: none"> ▪ New band ▪ Overlaps the NIR1 band but is less affected by atmospheric influence ▪ Enables broader vegetation analysis and biomass studies



8-Band Animation

WorldView-3





Calibrated Imagery Comparison

LANDSAT and WorldView-2

Moving through different zoom levels over the same region Landsat imagery shows similar surface candidate areas to WorldView-2 yet Landsat loses definition quickly when moving to a closer scale.

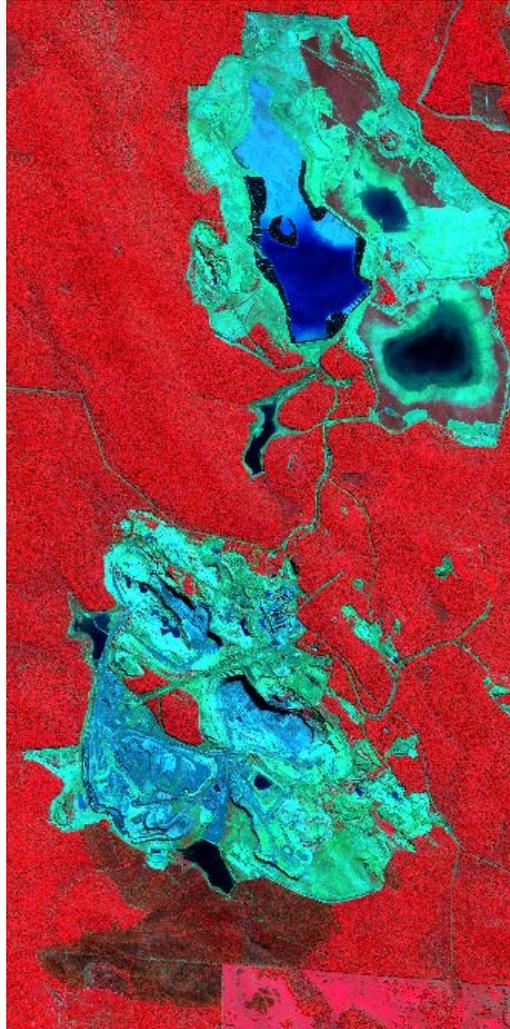


WorldView-2
Landsat

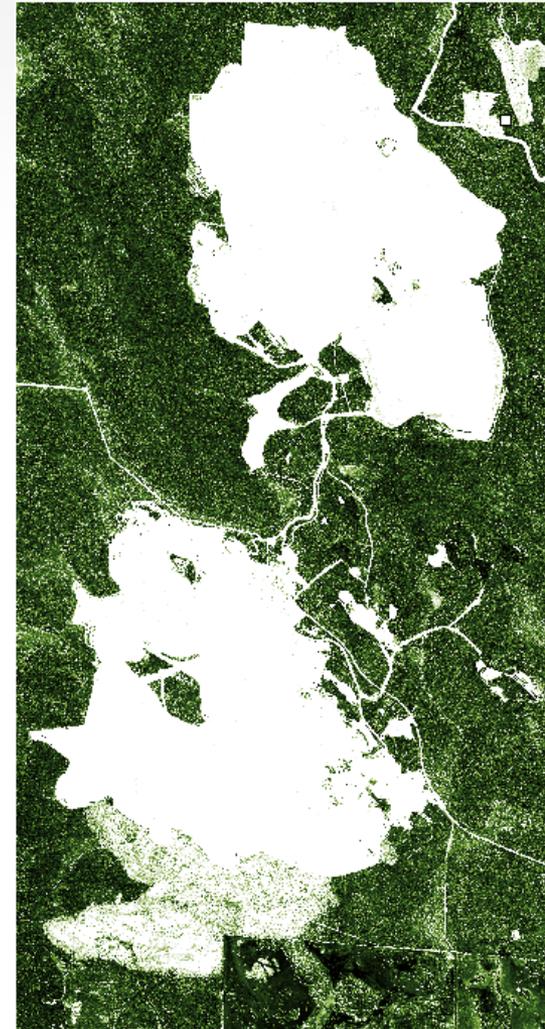
Getting the most out of your imagery



Natural Color

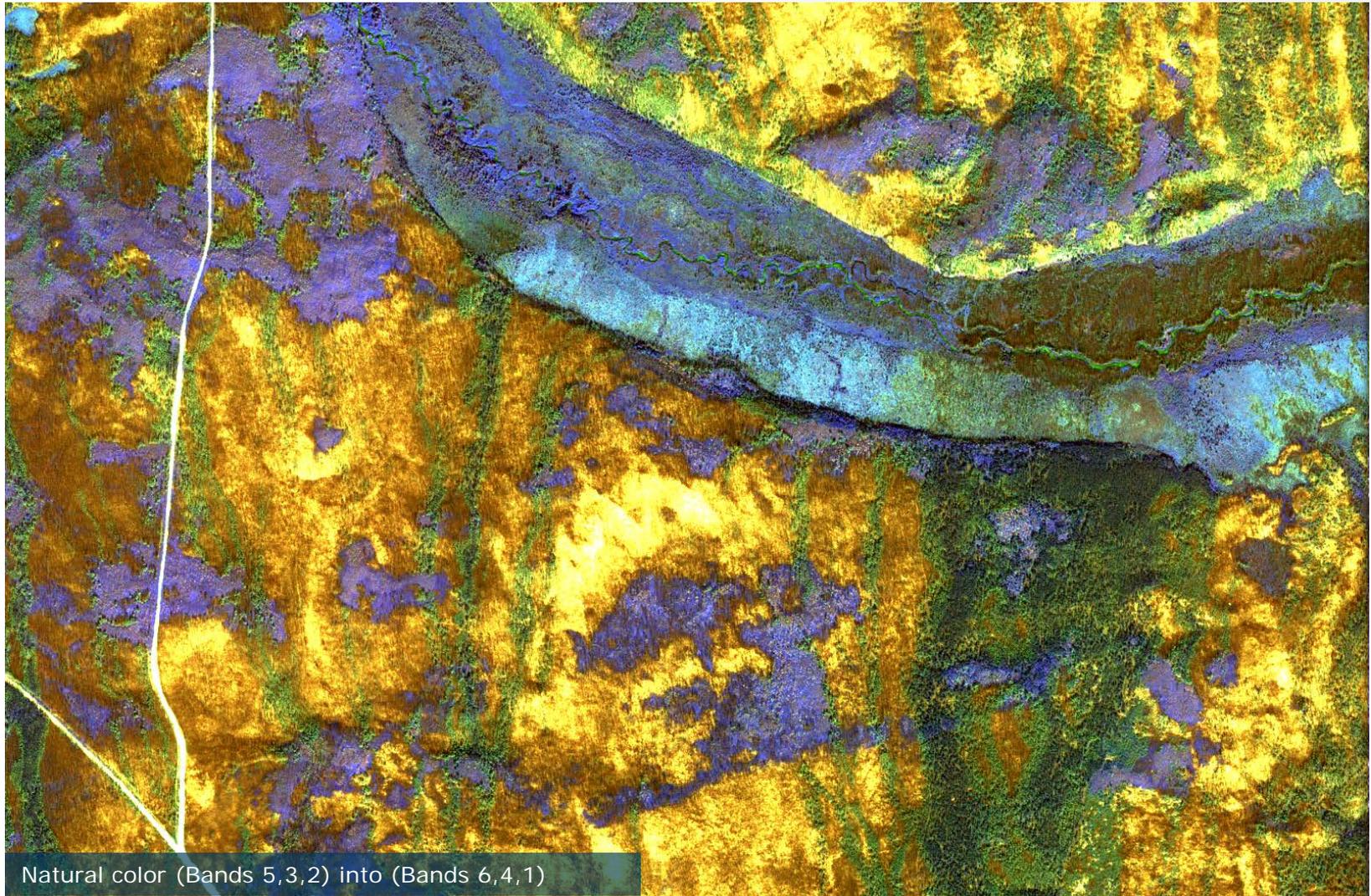


False Color

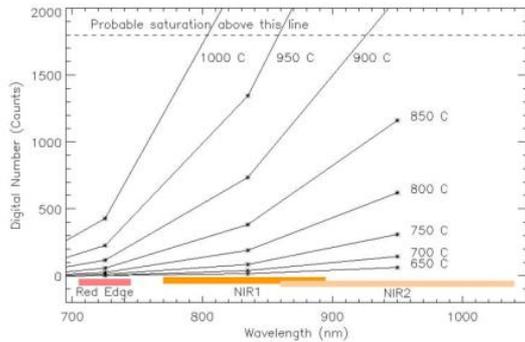


NDVI

Fire Damage



Damaged Forest in the eyes of WorldView-2

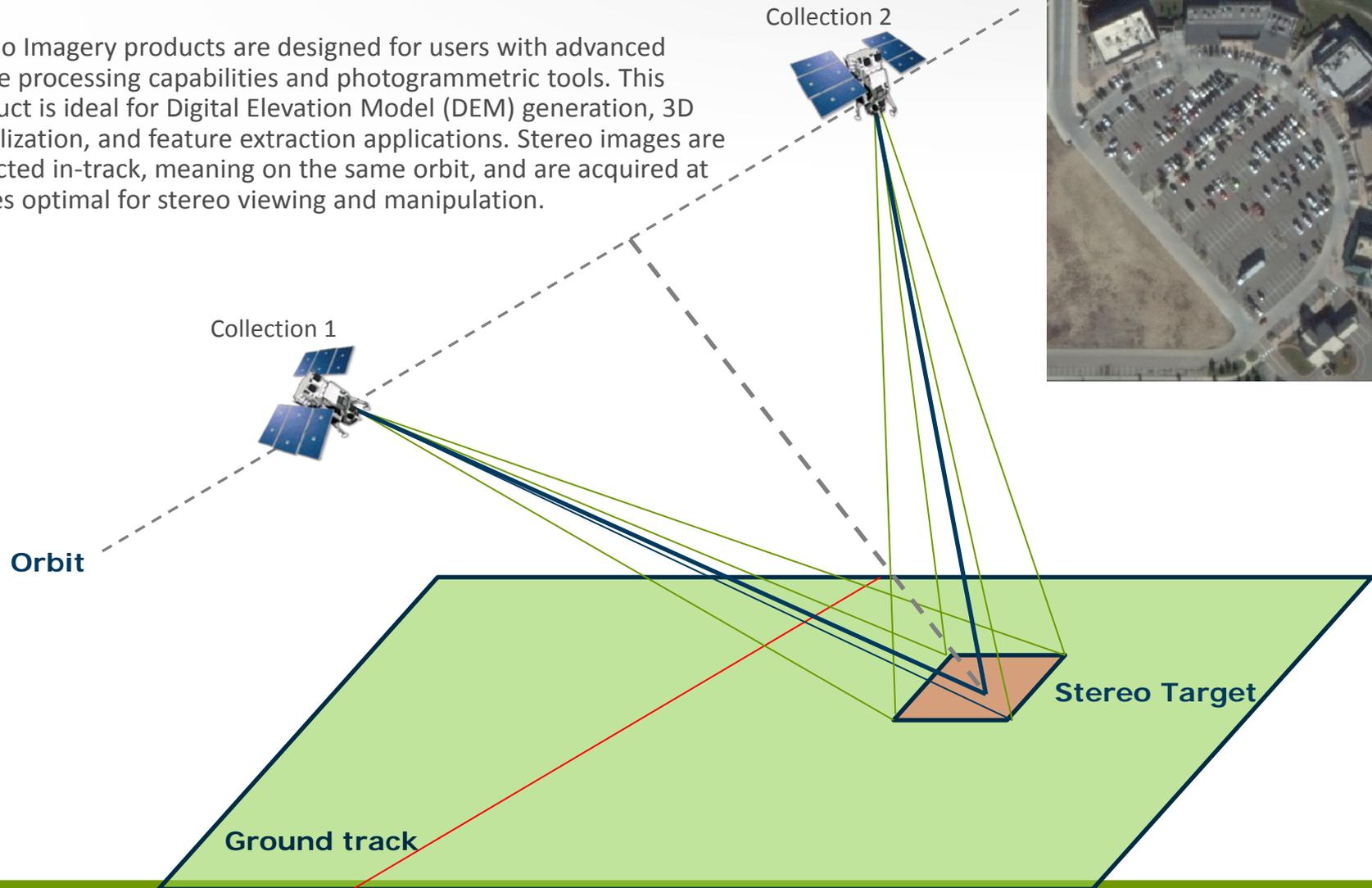


- In this autumn image healthy changing foliage appears green when highlighted by the yellow band (4).



Stereo Imagery

Stereo Imagery products are designed for users with advanced image processing capabilities and photogrammetric tools. This product is ideal for Digital Elevation Model (DEM) generation, 3D visualization, and feature extraction applications. Stereo images are collected in-track, meaning on the same orbit, and are acquired at angles optimal for stereo viewing and manipulation.

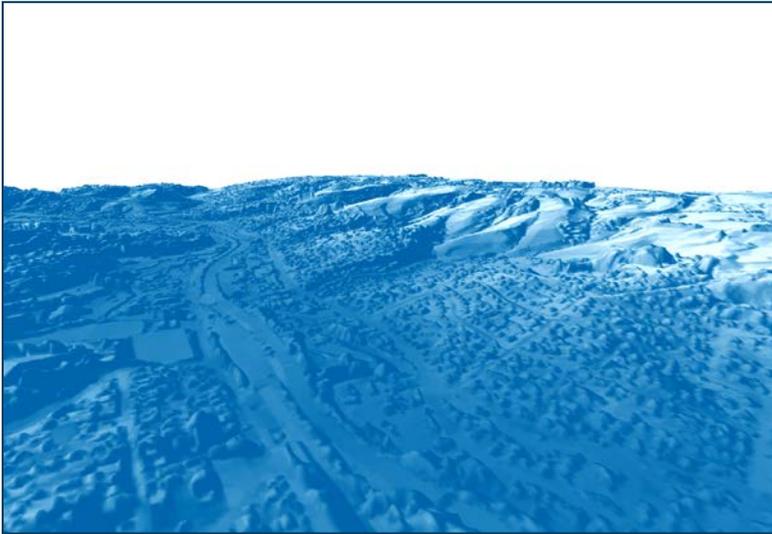


Multi-shot over Longmont, CO

DigitalGlobe - Advanced Elevation Series

DSM

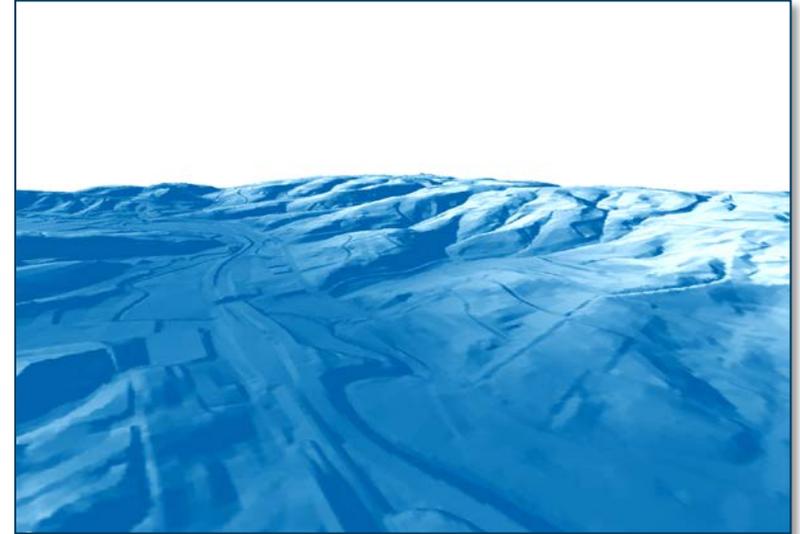
Digital Surface Model



Includes vegetation and buildings

DTM

Digital Terrain Model



Bare earth

Modeling the Environment



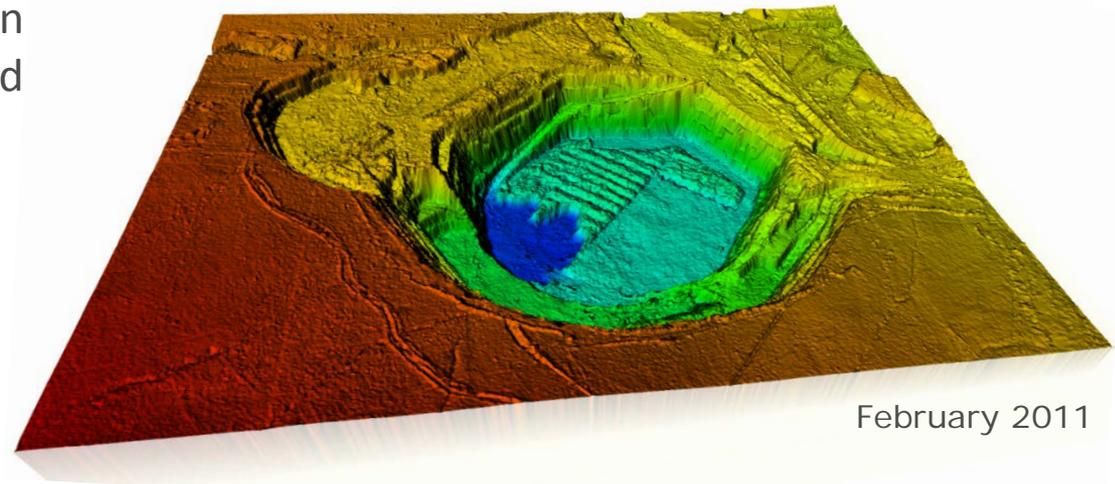
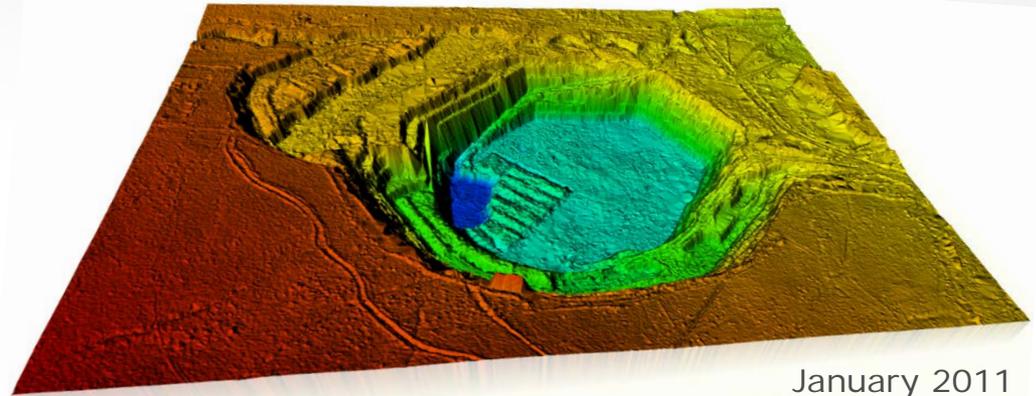
Uluru (Ayers Rock) Australia



Monitoring Mining Operations

The time sequence on the right visibly shows the material extracted from an open pit mine in Mexico.

Using converging WorldView-1 or WorldView-2 stereo pairs, elevation and surface features can be derived down to 1 meter.



Some Use Cases for Imagery

- DigitalGlobe imagery has been used in mining applications:

Exploration and Planning

Mine Operations

Environmental Compliance and Reclamation

Asset Management



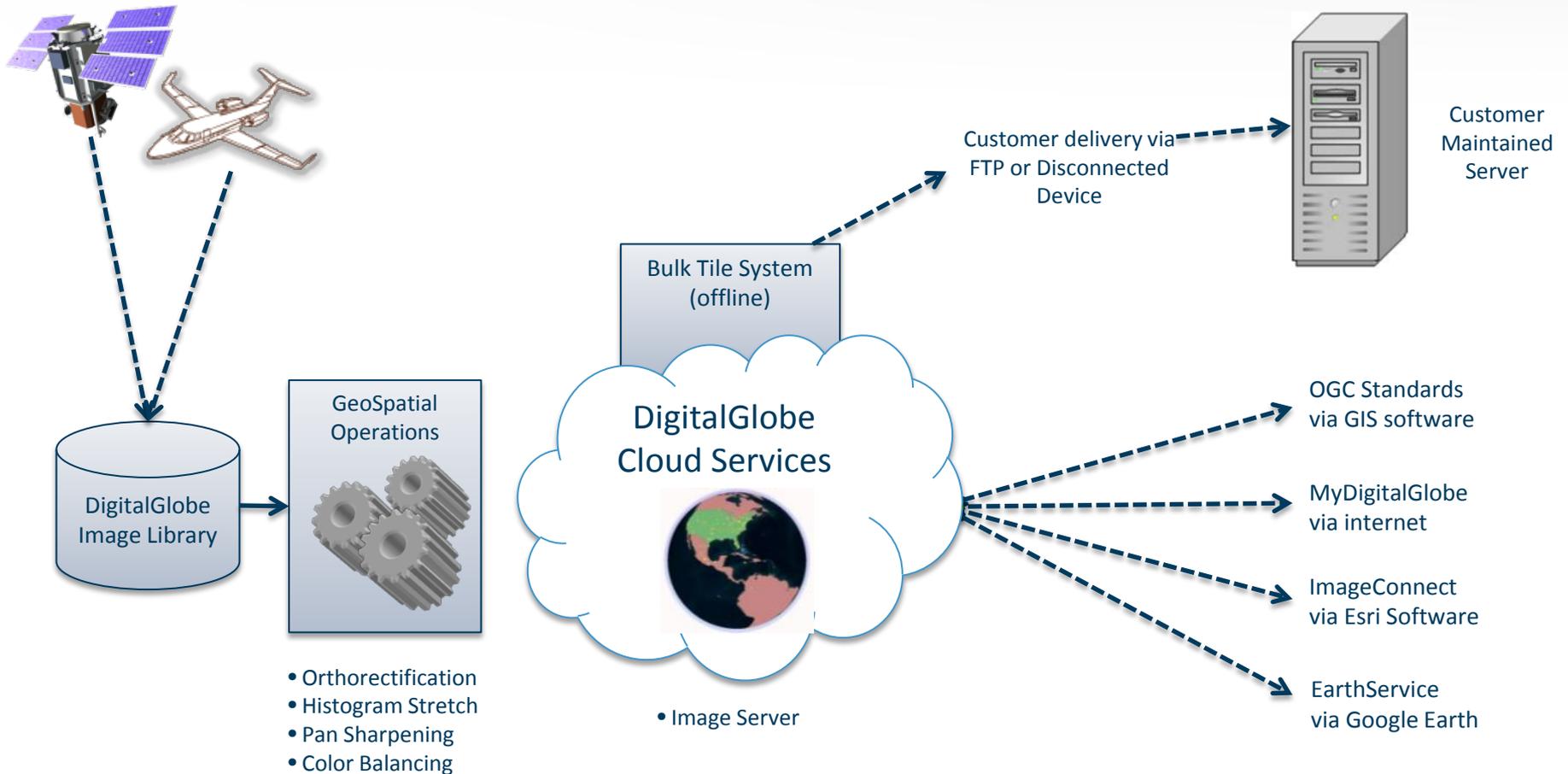
Cerro Colorado Open Pit Copper Cathode Mine, Chile – 2007 and 2008

Global Basemap

Product Overview



GBM leverages the DGCS platform to offer multiple delivery options depending upon customer needs



Global Basemap Coverage



 - 86,000,000 km² total unique coverage

Global Basemap Coverage



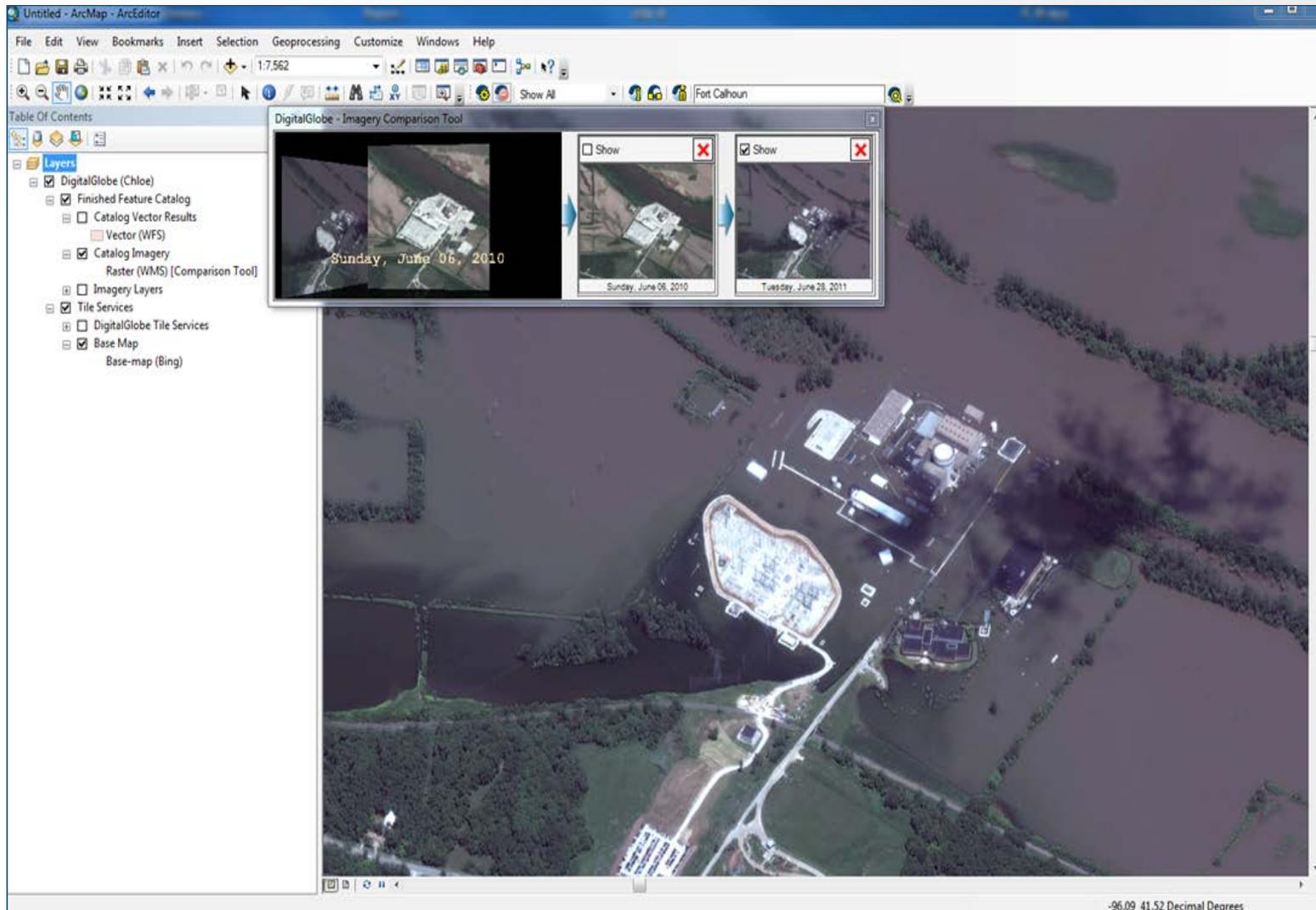
 - Coverage added/updated within last 12 months

GBM offers configurable options to meet varying customer requirements

- Configurable options have associated cost implications and can be chosen according to the top user priorities in order to maximize cost-effectiveness

	Coverage	Display Resolution	Updates	Users	Usage	Profile
Online	<ul style="list-style-type: none"> City Country Global 	<ul style="list-style-type: none"> 240 cm 120 cm 60 cm 30 cm 	<ul style="list-style-type: none"> Annual Semi-Annual Quarterly Continuous None 	<ul style="list-style-type: none"> 1 2-5 6-10 11-20 21-50 51-100 101-250 251-500 500+ 	<ul style="list-style-type: none"> View only View and download 	<ul style="list-style-type: none"> Consumer Color Cloud Cover Currency Accuracy
Offline	<ul style="list-style-type: none"> Country Global 	<ul style="list-style-type: none"> 120 cm 30 cm 	<ul style="list-style-type: none"> Annual Semi-Annual Quarterly 	<ul style="list-style-type: none"> 1 2-5 6-10 11-20 21-50 51-100 101-250 251-500 500+ 	<ul style="list-style-type: none"> n/a 	<ul style="list-style-type: none"> Consumer Color

ESRI ImageConnect Plugin



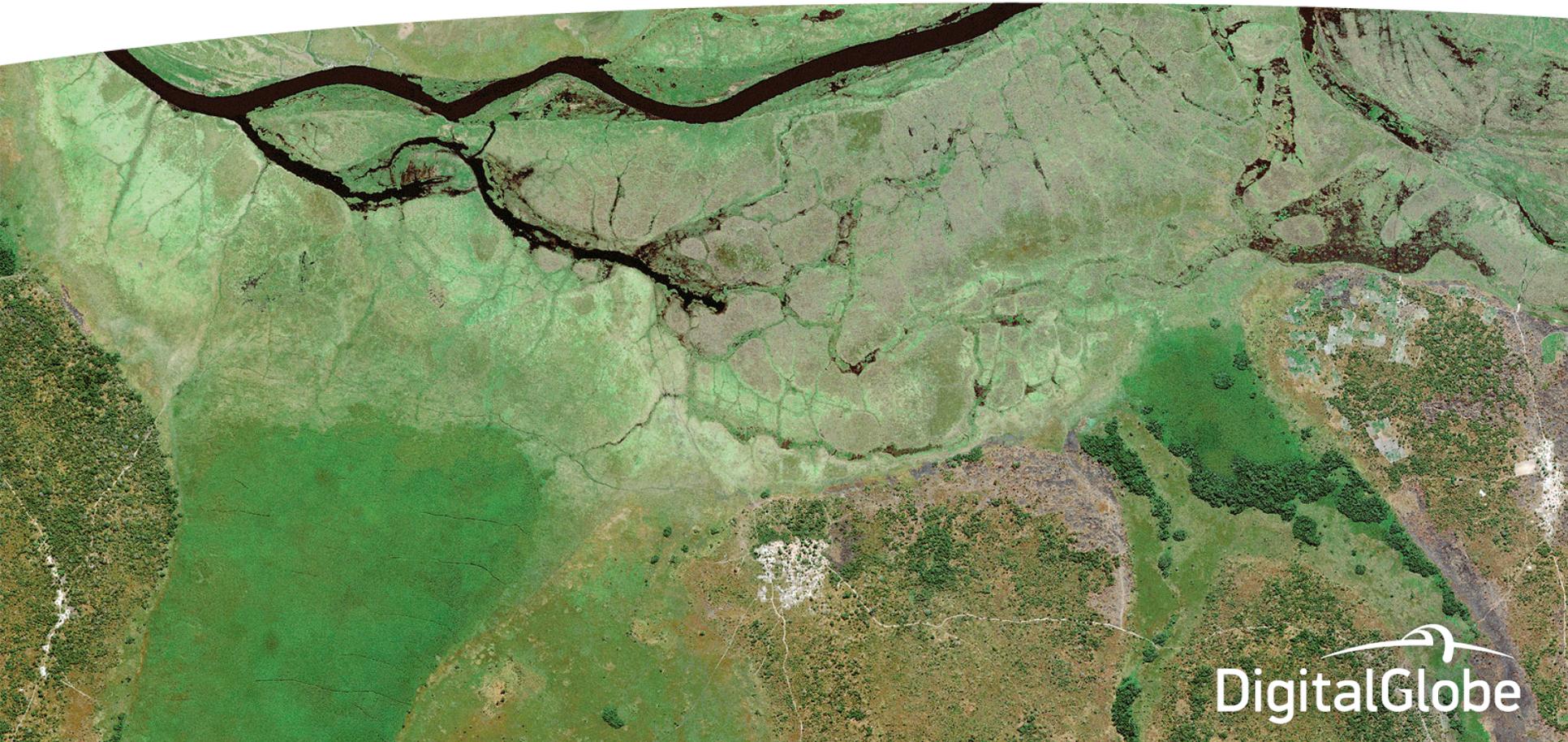
FirstLook

- Provides 24X7 monitoring of world events
- Centralized location for relevant imagery
 - Images straight from the source
 - Direct integration into planning process
- Services
 - DigitalGlobe monitoring team
 - Priority tasking
 - Online imagery viewing
 - Rapid access to pre and post event imagery



Analysis

Providing deep insight to inform critical decisions




DigitalGlobe

Providing deep insight to inform critical decisions

Analysis

- Imagery + Analysis = Insight
- Empower better decision making
- Custom solutions for customers

Japan Crisis 2011

More than 95,000 downloads of rapid imagery and analysis details of the aftermath of the tsunami and the status of the damaged Fukushima Daiichi nuclear power plant came from our website.



Vermont Floods 2011

Hurricane Irene caused widespread damage in Pico Mountain Resort, Killington, Vermont.



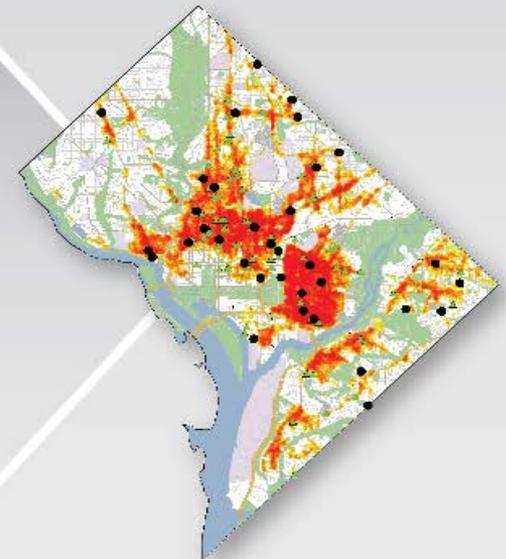
Providing deep insight to inform critical decisions

DigitalGlobe Analytics Methodology

Multisource Data Fusion & Analysis



Geospatial Insight

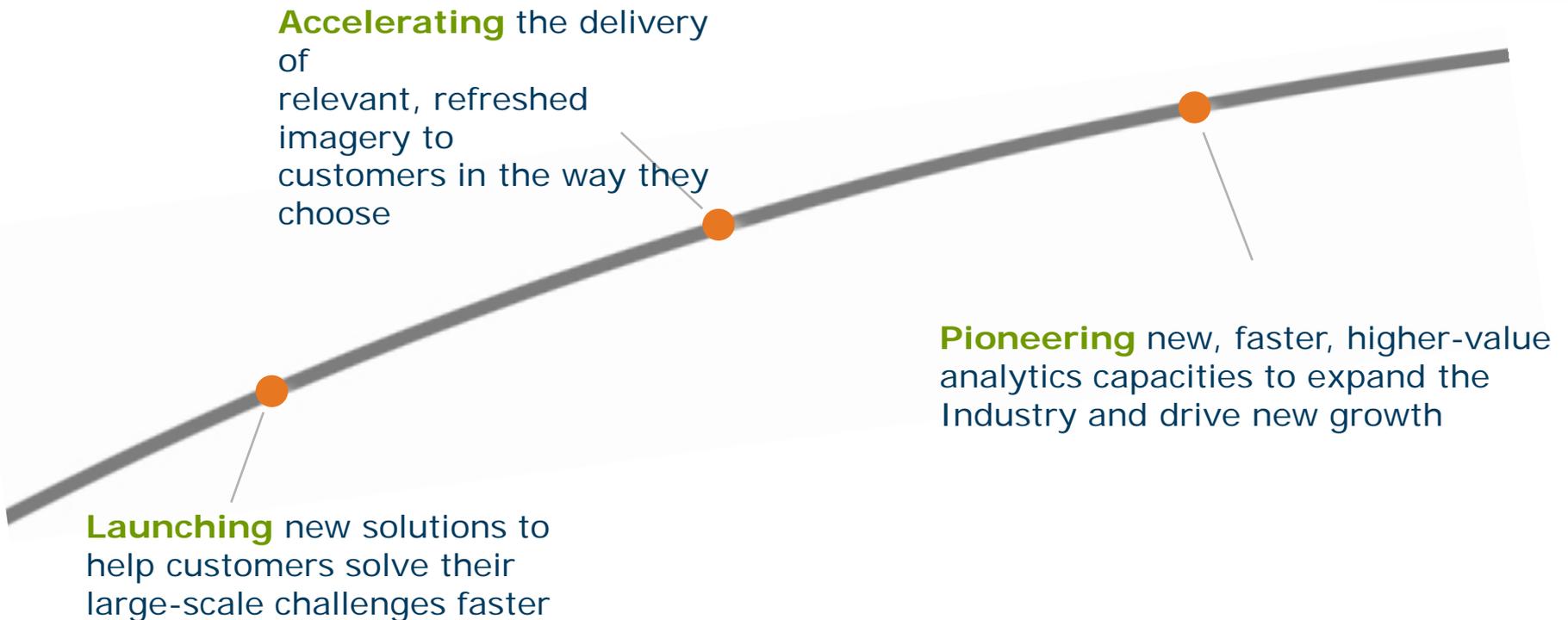


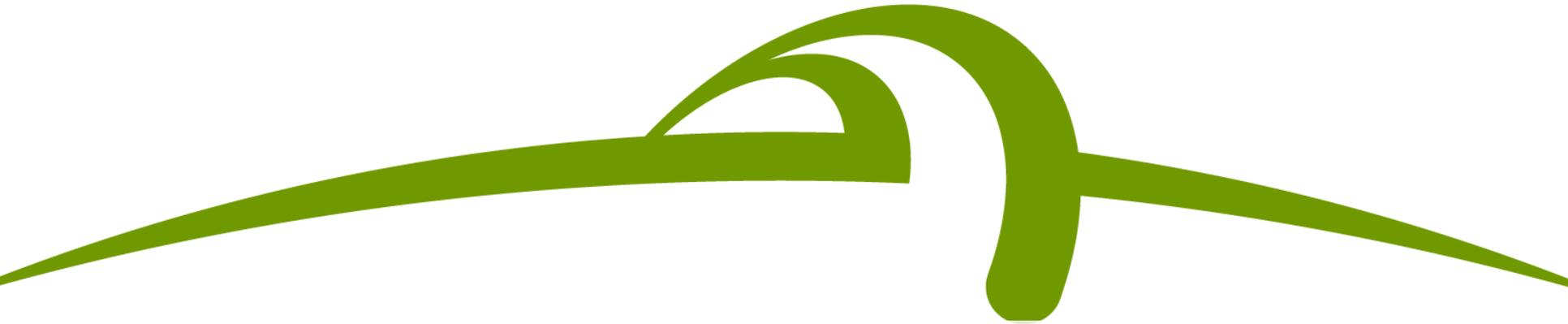
What's next?

Observing a better world



Observing a better world





Brett Thomassie
Director, U.S. Federal Civilian Government Sales
(303) 588-4129
brett.thomassie@digitalglobe.com
www.digitalglobe.com