



---

# EUROPEAN SPACE IMAGING

Tasking the most capable Optical Satellites

Fény-Tér-Kép 2018 konferencia, GEOIQ

---



# What are these satellites doing?

---

- *Communications*: 792 satellites, a 6.7% increase on last year.
- *Earth observation*: 661 satellites, a 10.9% increase on last year.
- *Technology development/demonstration*: 213 satellites, a 10.4% increase on last year.
- *Navigation/Positioning*: 121 satellites, a 12% increase on last year.
- *Space science/observation*: 76 satellites which is no real change from last year.
- *Earth science*: 23 satellites, which is no real change from last year.

# What are these satellites doing?

---

- *Communications*: 792 satellites, a 6.7% increase on last year.
- *Earth observation*: 661 satellites, a 10.9% increase on last year.
- *Technology development/demonstration*: 213 satellites, a 10.4% increase on last year.
- *Navigation/Positioning*: 121 satellites, a 12% increase on last year.
- *Space science/observation*: 76 satellites which is no real change from last year.
- *Earth science*: 23 satellites, which is no real change from last year.



**WorldView-3 and WorldView-4 are currently the only Satellites that acquire images with 30cm resolution**



---

# COMPANY DEVELOPMENT

---

# COMPANY ESTABLISHMENT

---



European Space Imaging was established in Munich Germany in 2002. Starting with just one employee we have now grown to almost 40 staff members

# OUR HISTORY

2002



European Space Imaging established in Munich, Germany. To lead with the best, a partnership with Space Imaging / GeoEye was formed.

2010



WorldView Global Alliance partnership formed with DigitalGlobe and Space Imaging Middle East.

2017



Significant investment to upgrade the Constellation Direct Access Facility, allowing direct download to the WorldView Constellation near Munich, Germany.

Initial cooperation with the EU Commission & other government bodies established a relationship that continues to this day.



2004

The launch of WorldView-4 significantly increased our offering of 30 cm resolution images to customers.



2016

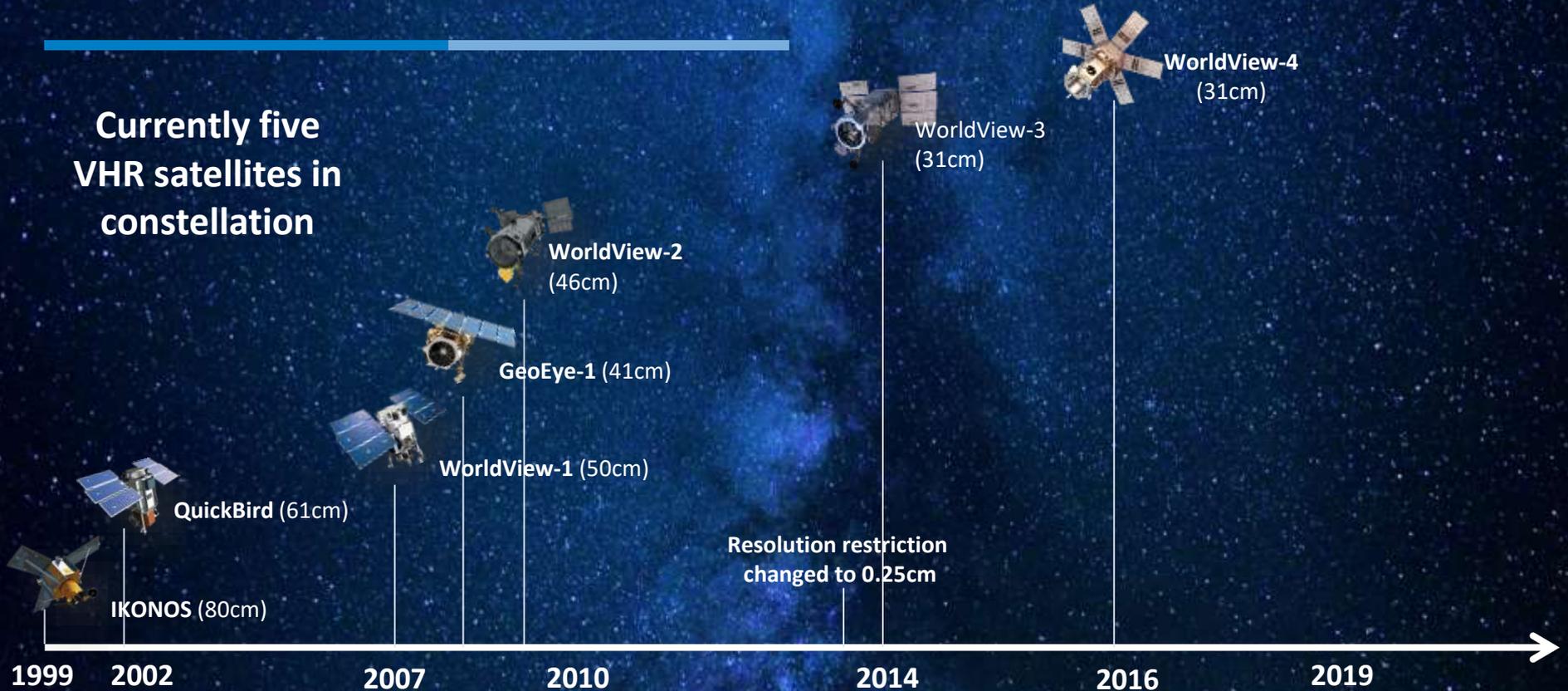
Expanding reseller partner network of more than 60+.



2018

# SATELLITES 1999 - 2018

Currently five  
VHR satellites in  
constellation



# UNIQUE & FLEXIBLE SOLUTIONS



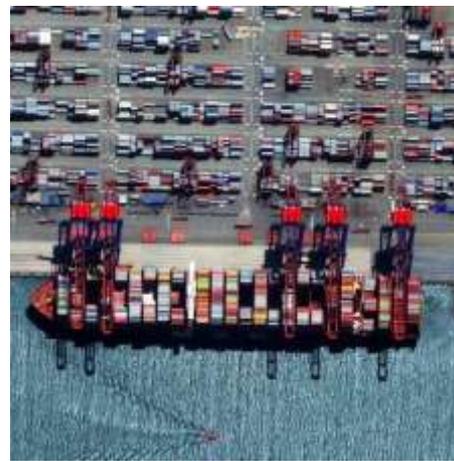
## DEDICATED MULTI-MISSION GROUND STATION

Located in Germany . Allows direct satellite tasking, last minute collection planning and local downlink



## NEAR REAL TIME DELIVERY

We are able to deliver imagery in near real time, 7 days a week.



## HIGHEST SPECTRAL RESOLUTION ON VHR SATELLITES

Up to 31cm per pixel. Eight spectral bands on WorldView-2 and WorldView-3, plus an extra eight SWIR bands on WorldView-3



## LARGEST ARCHIVE COLLECTION AVAILABLE

More than 5 billion km<sup>2</sup> imagery dating back as far as 1999. Growing by more than 3 million km<sup>2</sup> every day

# KEY TECHNICAL PARTNERS

## SPACE IMAGING MIDDLE EAST

- Parent company founded in 1997
- At that time, set up the first and only commercial satellite receiving station in the Middle East
- Established an in-house production centre and have become leaders in end-to-end geospatial

## MAXAR TECHNOLOGIES DIGITALGLOBE

- eDAF and upgraded cDAF built by MDA
- DigitalGlobe provides satellite access, direct tasking and processing capabilities

## GERMAN AEROSPACE CENTRE - DLR

- Located near Munich
- Germany's national research centre for aeronautics and space.
- An experienced worldwide satellite ground station operator.
- Innovates machine learning and digitalisation research

## GAF AG

- Offer comprehensive end-to-end geospatial solutions
- highly regarded for their software solutions and product innovations
- Experienced in automation, DEM's, 3D modelling and virtual reality

# KEY ACCOUNTS

---

## EUROPEAN MARITIME SAFETY AGENCY (EMSA)

- One of the EU's decentralised agencies
- Provides technical assistance and support to the EU Commission and member states in the development and implementation of maritime safety, pollution by ships and maritime security
- Key account since 2012

## EU COMMISSION

- Governing body of Europe.
- They have a number of statutory bodies that operates under their direction
- The EU Commission was our first key account and we have been servicing their needs since 2003.

## SATCEN

- The European Satellite Centre supports the decision making and actions of the EU in the field of Common Foreign and Security Policy
- We have been assisting SatCen in their missions since 2003



## VHR LEADER IN EUROPE

---

With hard work and dedication we continue to be the leading provider of the highest resolution imagery to the European market.





---

# GROUND STATION

## UPGRADE

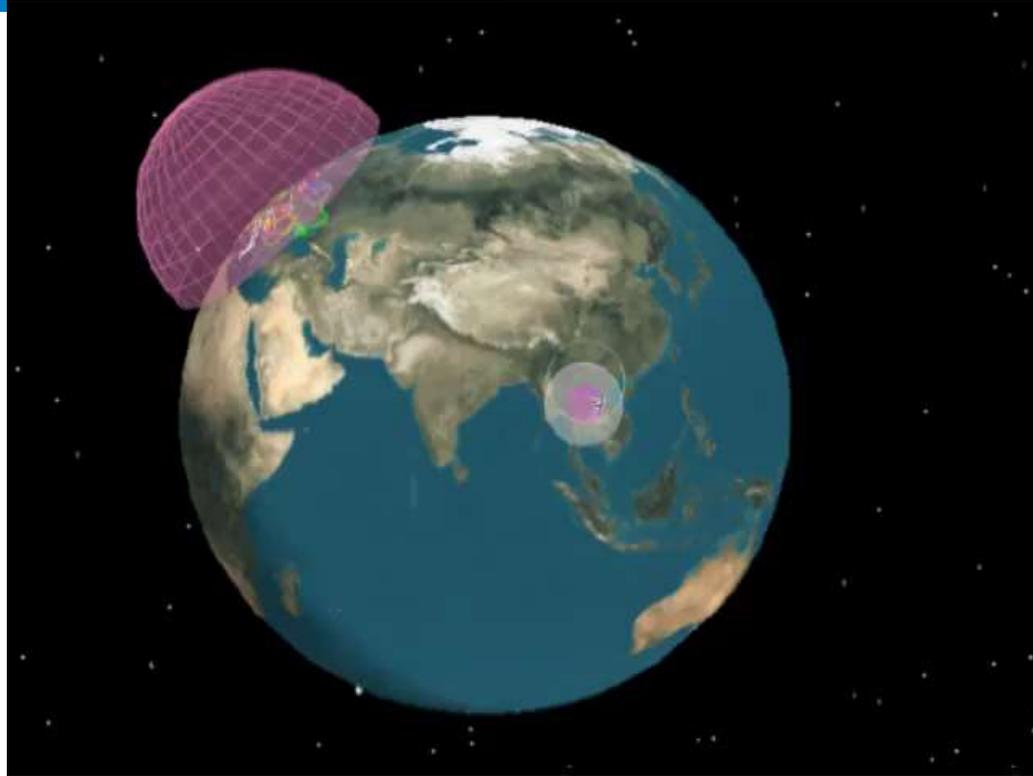
---

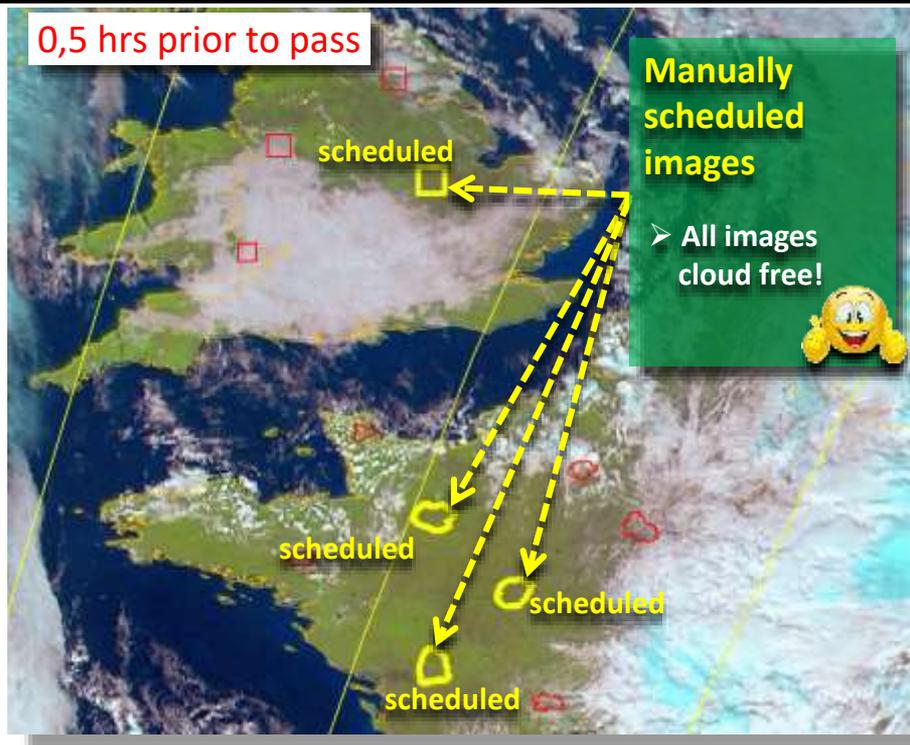
# DIRECT ACCESS TO ALL SATELLITES

---

In 2016 we made a significant investment to upgrade our groundstation located near Munich, Germany







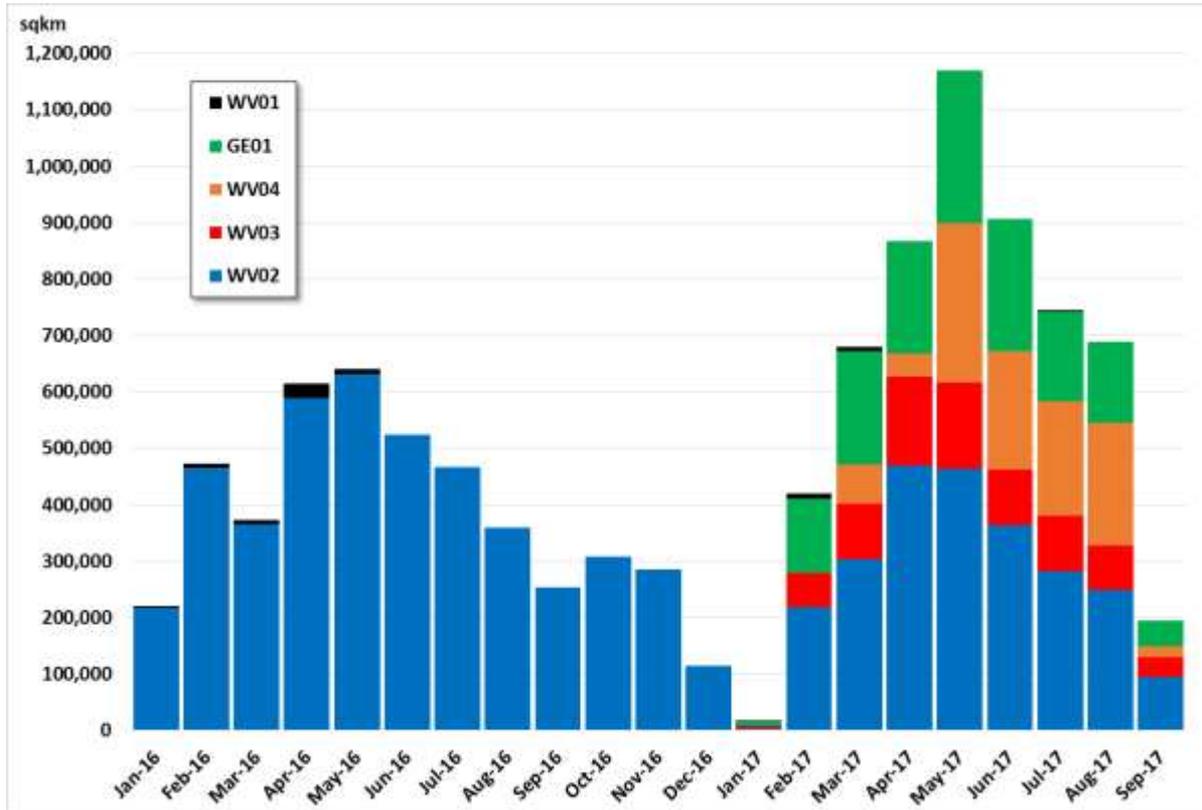
### Average collection results over Europe using different levels of weather information:

- No weather forecast → 30 % good 70 % bad images
- Weather forecast files → 50 % good 50 % bad images
- Real-time weather → 80 % good 20 % bad images

# HOW IT WORKS - CDAF DIAGRAM



# cDAF COLLECTIONS 2016-2017









---

# WORLDVIEW

## CONSTELLATION

---

# GEOEYE-1 SPECIFICATIONS

---

**Operating at an expected altitude of 681 km, GeoEye-1 is capable of collecting up to 350,000 km<sup>2</sup> per day. GeoEye-1 offers geolocation features to less than 5 m enabling the creation of maps in remote areas.**

A detailed illustration of the GeoEye-1 satellite in orbit above the Earth. The satellite is a complex structure with a central body and two large, rectangular solar panel arrays extending outwards. The Earth's surface is visible below, showing blue oceans, white clouds, and green landmasses. The sun is visible on the left side of the frame, creating a bright glow and casting a shadow on the satellite.

**Launched 6 September 2008  
41 cm panchromatic resolution  
1.65 m multispectral resolution  
4 band multispectral**

# WORLDVIEW-1 SPECIFICATIONS

---

**Operating at an expected altitude of 496 km, has an average revisit rate of 1.7 days and is capable of collecting over 1 million sq km per day. In addition the satellite is able to geolocate to less than 5 m to create maps in remote areas.**

**Launched 18 September 2007  
50 cm panchromatic resolution**



# WORLDVIEW-2 SPECIFICATIONS

---

**Operating at an expected altitude of 770 km, WorldView-2 incorporates industry-leading geolocation accuracy and is able to collect very high resolution 8-band multispectral imagery. The satellite has an average revisit rate of 1.1 days and is capable of collecting up to 1 million sq km per day.**

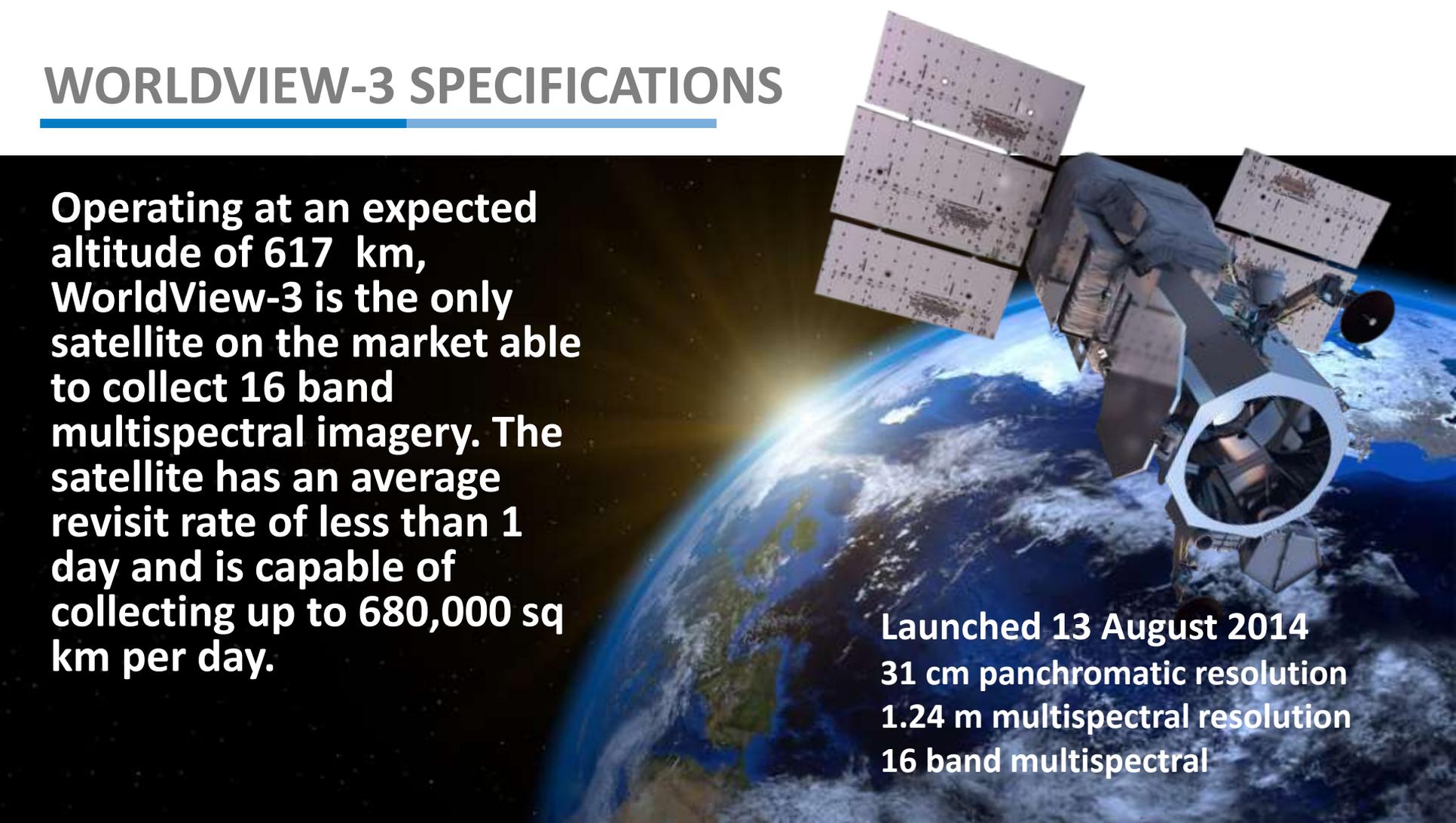
A detailed illustration of the WorldView-2 satellite in orbit above the Earth. The satellite is a complex, multi-faceted structure with several large, rectangular solar panel arrays extending from its main body. The Earth below is shown with a clear blue atmosphere, white clouds, and visible landmasses. The satellite is positioned in the upper right quadrant of the frame, with the Earth's horizon curving across the middle.

**Launched 8 October 2009  
46 cm panchromatic resolution  
1.85 m multispectral resolution  
8 band multispectral**

# WORLDVIEW-3 SPECIFICATIONS

---

**Operating at an expected altitude of 617 km, WorldView-3 is the only satellite on the market able to collect 16 band multispectral imagery. The satellite has an average revisit rate of less than 1 day and is capable of collecting up to 680,000 sq km per day.**

A detailed illustration of the WorldView-3 satellite in orbit above the Earth. The satellite is a complex structure with multiple solar panel arrays and a large central instrument bay. The Earth below shows a clear view of the Western Hemisphere, including North and South America, with a bright sun on the left side of the frame.

**Launched 13 August 2014  
31 cm panchromatic resolution  
1.24 m multispectral resolution  
16 band multispectral**

# WORLDVIEW-4 SPECIFICATIONS

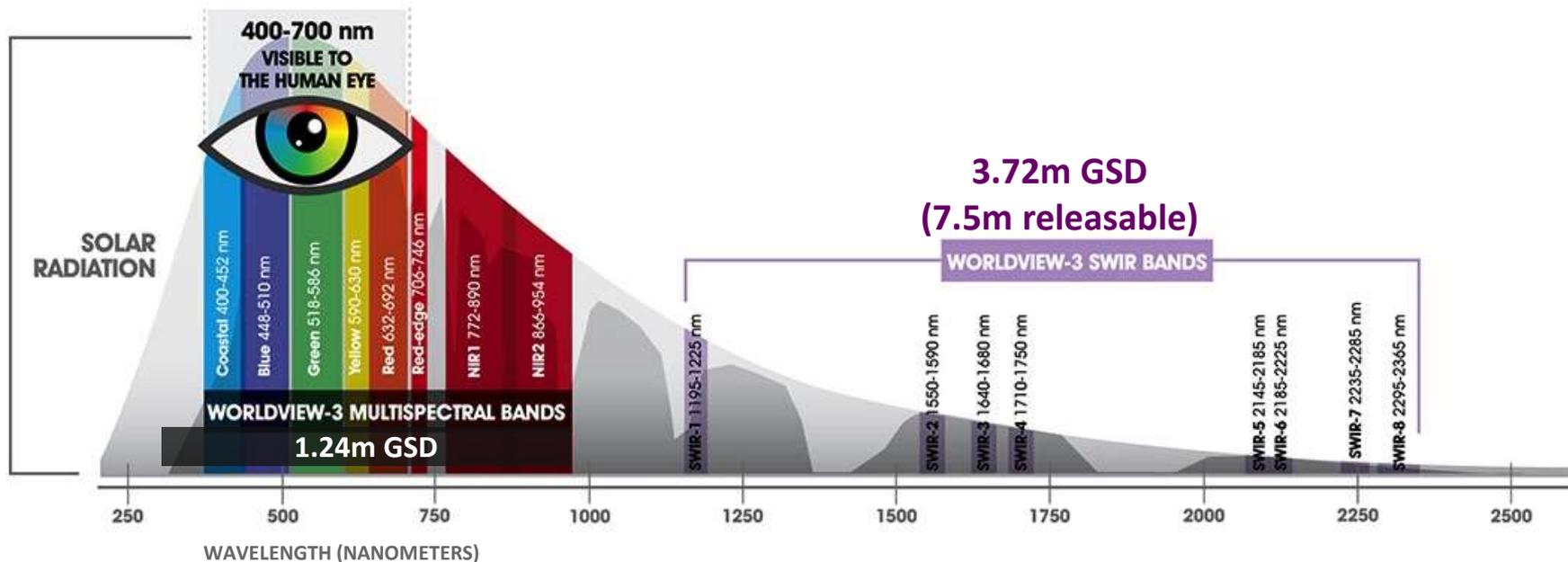
---

**With WorldView-4 joining in the DigitalGlobe constellation, our total constellation has the capability to image a location an average of 4.5 times/day at 1m GSD or less.**



**Launched 11 November 2016  
31 cm panchromatic resolution  
1.24 m multispectral resolution  
4 band multispectral**

# SPECTRAL CAPACITIES



WORLDVIEW-3 MULTISPECTRAL BANDS

1.24m GSD

3.72m GSD  
(7.5m releasable)

WORLDVIEW-3 SWIR BANDS

Pan: 0.31m GSD

# 30 CM CONSTELLATION CAPACITY

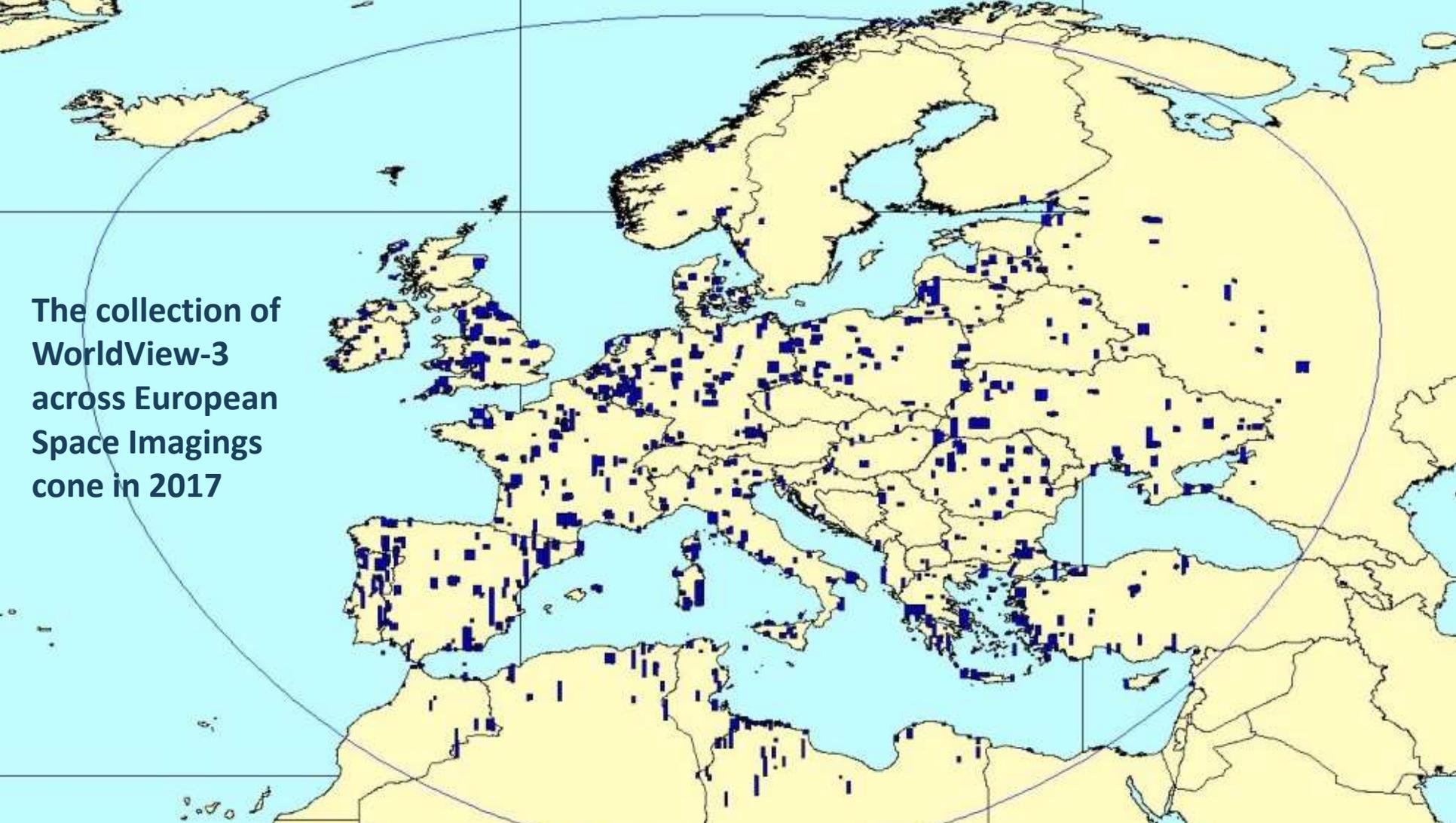
---

With this spatial resolution objects can be easily identified, such as:

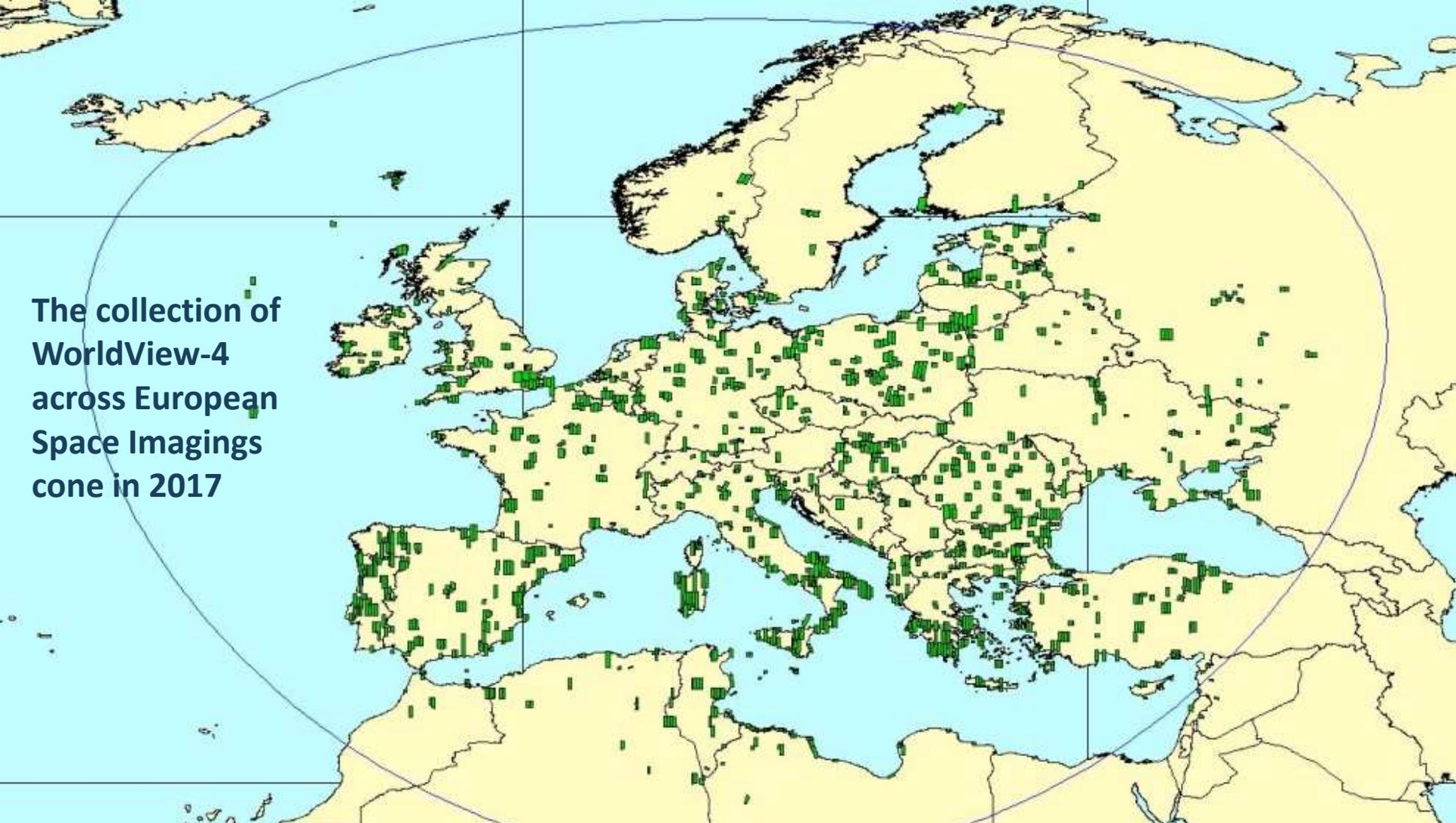
- People and animals
- Car types and road lines
- Patterns and individual vegetation
- Individual plants



The collection of  
WorldView-3  
across European  
Space Imagings  
cone in 2017



The collection of  
WorldView-4  
across European  
Space Imagings  
cone in 2017





# EXPERIENCED CUSTOMER SERVICE

---



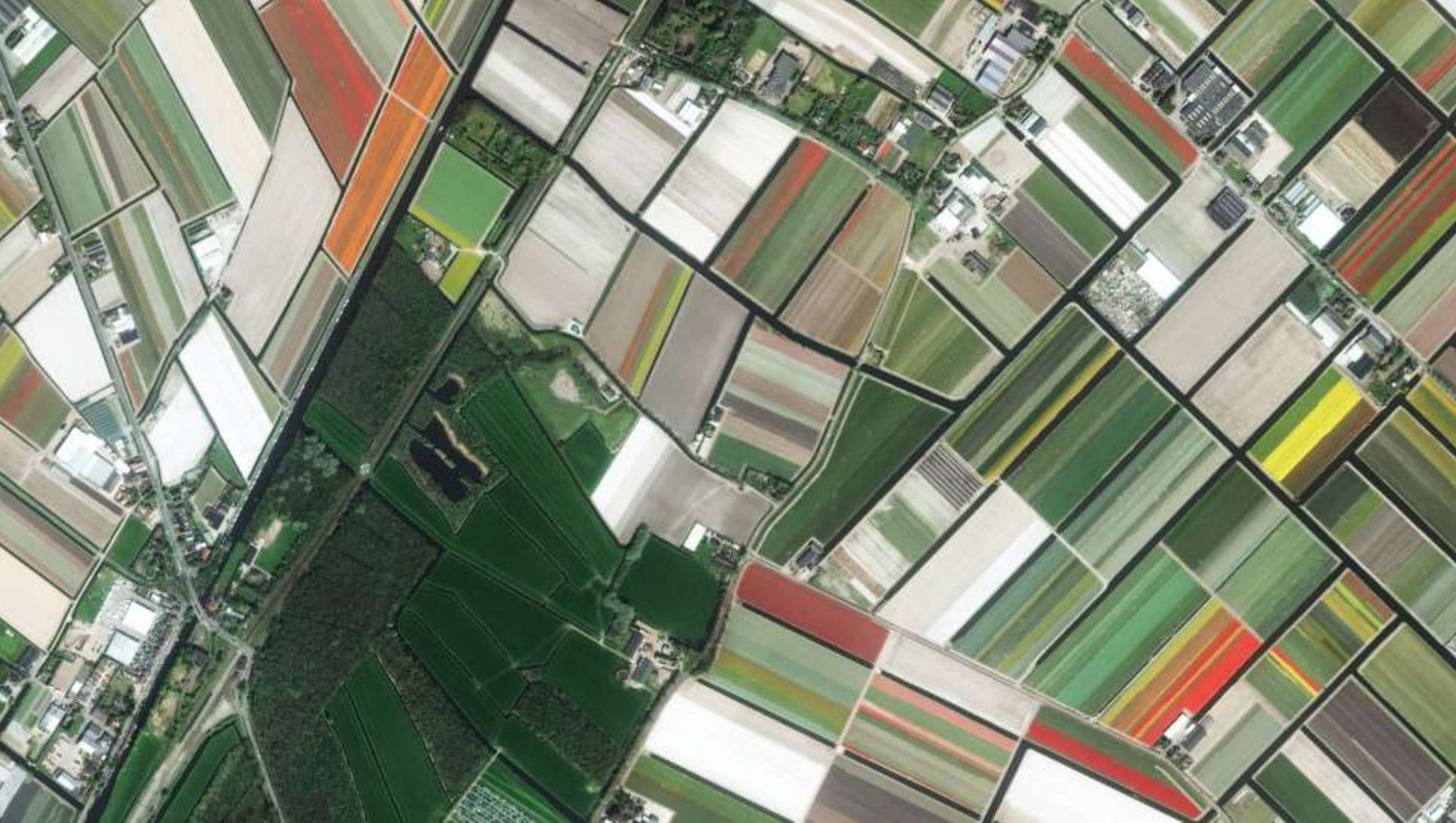
Our customer base covers more than 1700 customers in 59 countries in Europe, North Africa, CIS Countries, Russia, Middle East. Each year we process 3500-4500 orders.















---

# BUSINESS APPLICATIONS

## AND SOLUTIONS

---

# BUSINESS APPLICATIONS

---

Geospatial data is used for a wide variety of business applications to see the world as it is, and how it is changing.



- Urban planning
- Migration
- Asset management
- Disaster response
- Utilities management
- Sustainable development
- Maintaining cadastral maps
- Monitoring compliance

## MARITIME

- Identification of vessels
- Detection of illegal fishing
- Detection of pollution
- Validation of AIS Data
- Detection of coastal erosion
- Identification of algal blooms
- Bathymetric data analysis
- Updating navigational maps



- Early warning of plant health
- Yield calculations
- Optimising harvest timing
- Irrigation system planning
- Soil quality management
- Water resource management
- Calculating carbon stocks
- Natural resource protection

## AGRICULTURE & FORESTRY



MARITIME NEWS

# Major Oil Spill in the Mediterranean

OCTOBER 10, 2018 | BY EUROPEAN SPACE IMAGING

## EDUCATION & RESEARCH

- Environment monitoring
- Impact assessment
- Monitor urban development
- Monitor soil losses
- Disaster impact
- 16 band spectral analysis
- Crime predication software
- Monitoring historical data



- Predict likelihood of fires
- Estimate path of flooding
- Detect geological movement
- Aid in development planning
- Analyse effects of disaster
- Crowd management
- Insurance analysis
- Response implementation

## EMERGENCY MANAGEMENT





[← Back to Contents](#)

[- Previous](#) [Next -](#)

## GENOA, ITALY: Satellite Images of Morandi Bridge Collapse

Satellite imagery supplied by European Space Imaging highlights the devastating extent of damage that was sustained to the Morandi Bridge as it collapsed during a violent storm on Tuesday.

Italian PM Giuseppe Conte has today declared a 12 month period of emergency as the death toll has risen to 39 people with a further 15 injured. Some 10,000 rescue workers are continuing to sift through the piles of concrete with sections of debris reaching three stories high in the search of finding remaining survivors. At least seven victims have already been pulled from the rubble alive. There are grave concerns that the remaining structure may collapse and this has led to the evacuation of at least 630 people who reside near the bridge.

Due to the high resolution of the 30 cm satellite imagery released by European Space Imaging, we can identify a 300 meter convey of rescue vehicles at the rubble site along with a scattering of other vehicles around the perimeter totaling almost 100 vehicles. In addition several tent sites have been erected to service the crews and remaining survivors.

\*Satellite Imagery is useful for first responders of any crisis to assess the scope of damage and get

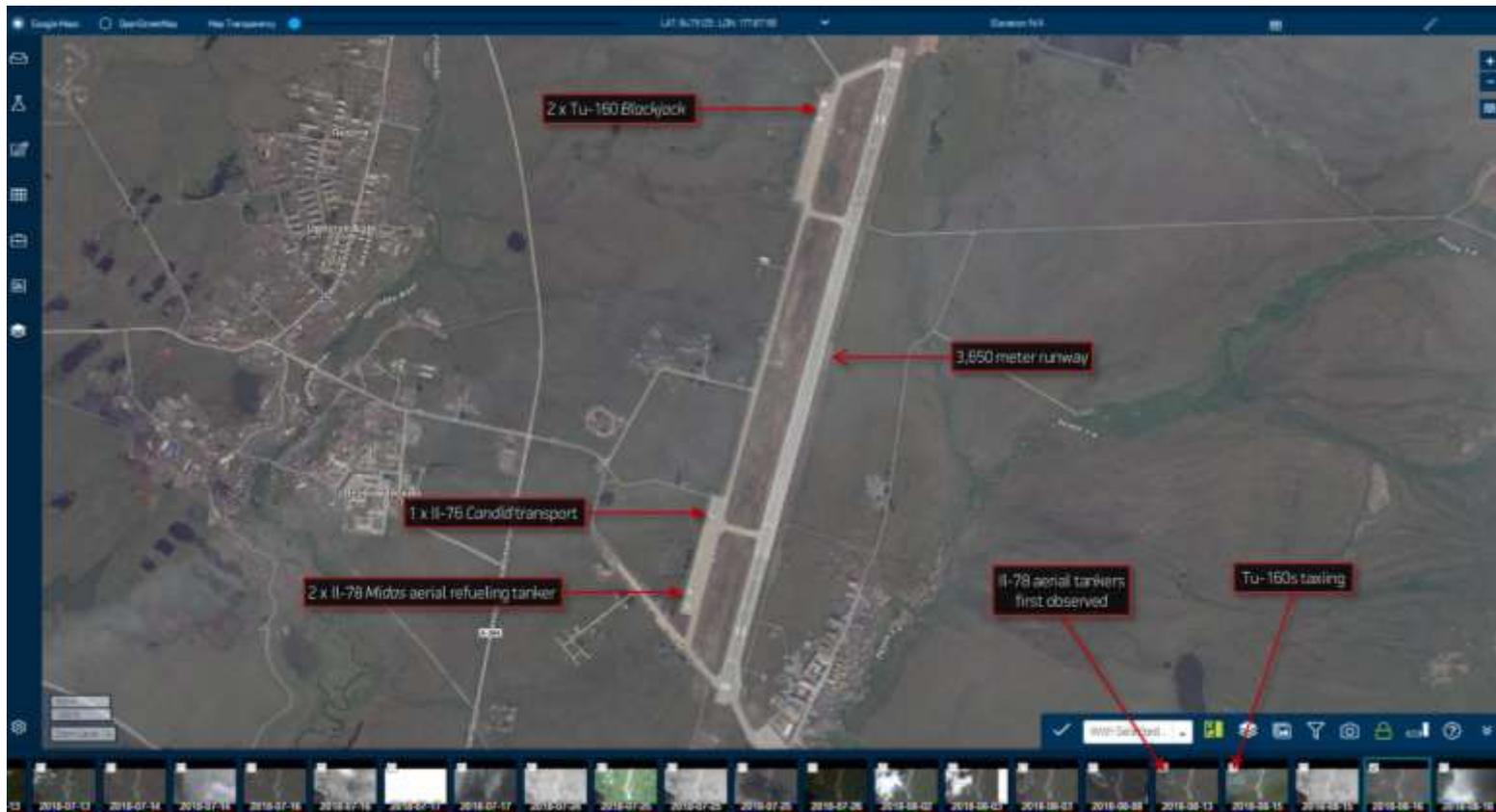
## DEFENCE & INTELLIGENCE

- Movement of equipment
- Damage from attacks
- Offensive / defensive systems
- Test camouflaged bunkers
- Mission planning
- Search & rescue operations
- Precise mapping
- Movement of people



- Asset management
- Competitor auditing
- Resource exploration
- Compliance analysis
- Material detection
- Leak detection
- Pipeline mapping
- Inventory analysis

## ENERGY & MINING



## 3D PRODUCTS

Whether your mission is to plan for a security crisis, or to sustainably manage an urban environment, seeing the world as it really is can be the difference between success and failure. We offer a complete range of visualisation packages – regardless of the resolution you require or the size of your AOI, we have a solution to suit your project. Partner GAF, Vricon, NTT



## ONLINE SOLUTIONS

Through our partnerships, we offer web services with powerful hosting and infrastructure. We have solutions for every application allowing you to monitor areas of interest, detect any changes and stay up to date with the latest data available.

# EARTHWATCH

---

See the world, in more ways than just one



## Premium Content

- Most comprehensive imagery library
- Best mosaics on Earth



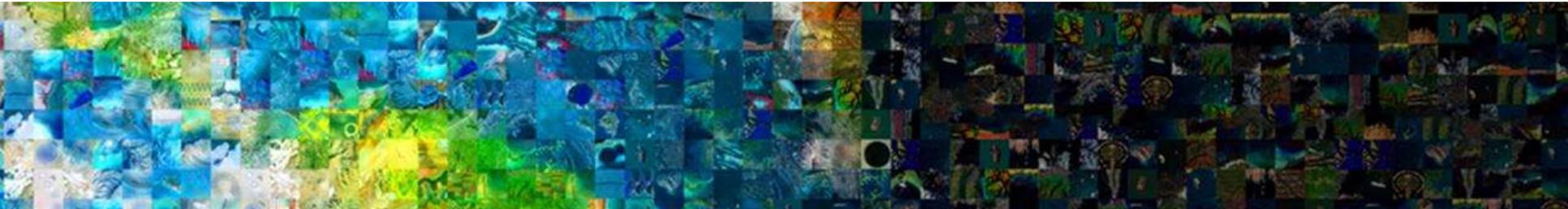
## Global Access

- Pay only for what you use
- No complex licensing



## Best Value

- No AOI Restrictions
- Unlimited Users



# EARTHWATCH SNAPSHOT

---

 **17** years  
Historical Library

 **Daily Updates**  
Latest Content Available

 **Complete**  
Global Coverage

 **6,000**  
Metro Areas

 **Global Access**  
Access Anywhere Anytime

 **#1** Aesthetics  
Most Beautiful Visuals

# GLOBAL CLOUD ACCESS



- View and download privileges to any areas of interest (AOI)
- Access from anywhere
- Unlimited users
- Intuitive browser interface
- New imagery alerts
- GIS tool integration
- Browser or API available



# BUILDING FOOTPRINTS

---

- Complete 2D shapefile polygons showcasing the accurate geometric footprint of all structures visible in imagery
- Created through a proven, semi-automated process of machine learning
- Highly scalable over any location in the world



## FAST

- 30,000,000 footprint production capacity per month



## ACCURATE

- Less than 5% false positives/negatives



## CURRENT

- Use the most recent
- imagery available



# PRODUCT SPECIFICATIONS



<b>Extraction Accuracy</b>	>95% of features on the ground
<b>Capture Guidelines</b>	90%- 110% of structure footprint
<b>Minimum Capture Size</b>	9m <sup>2</sup> (~100sqft)
<b>Partial Obstructions</b>	Inferred based on the average building at that location
<b>Adjoining Building</b>	Separated based on visual features
<b>Samples</b>	Standard Samples Available Globally



90%-110% Capture Guideline



Partial Obstructions



Minimum Capture 9m<sup>2</sup>



Adjoining Buildings

# Census/Population Monitoring – large scale, accurate, up-to-date

---





## DIRECT SATELLITE TASKING

Direct satellite tasking significantly increased the effective collection capacity of the satellites. It allows for:

- Greatest quality image
- Flexibility in collection
- Detailed feasibility analysis
- Minimal cloud coverage

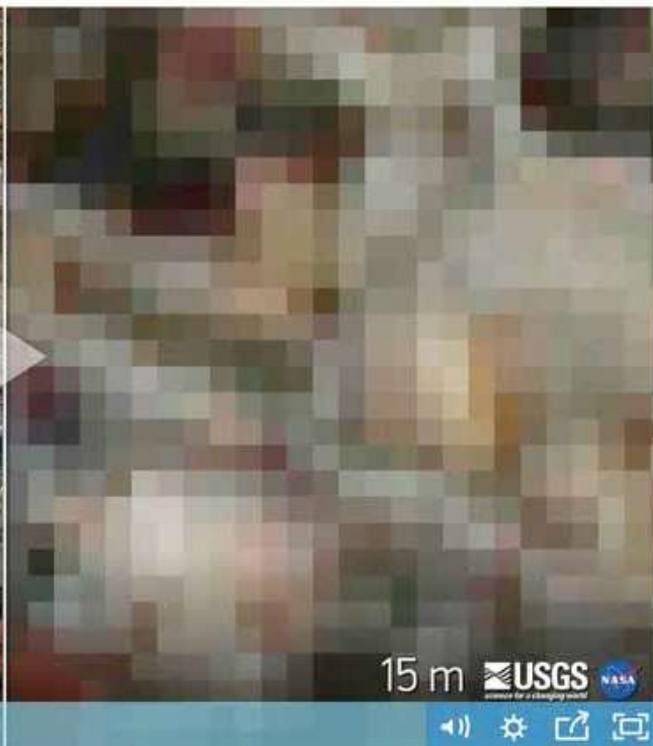
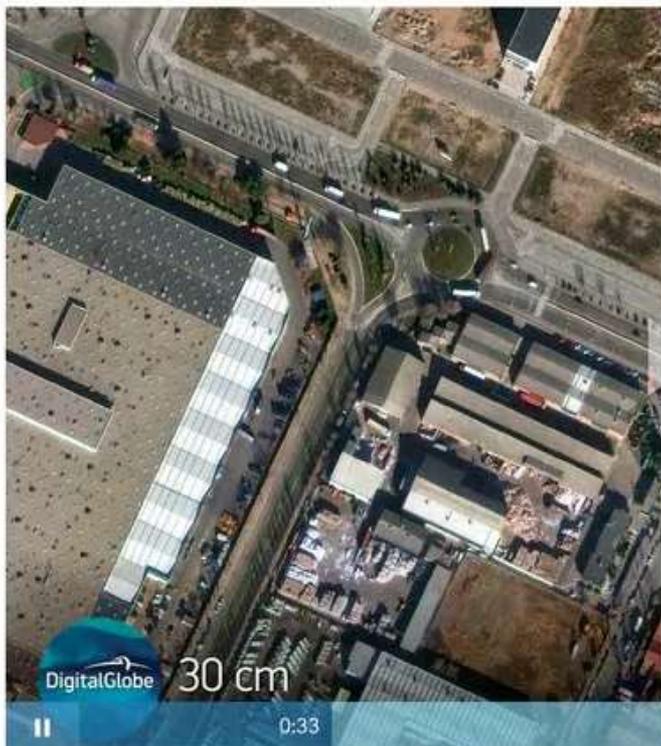


## IMAGE ARCHIVE

We have been collecting VHR imagery on an almost daily basis for over 15 years. Our library currently has more than 4 billion sq km of data acquired by us and our partner DigitalGlobe.



PRODUCT SOLUTIONS







Satellite image at 30 cm resolution showing the collapsed section of Morandi Bridge in Genoa, Italy. The high quality of the data makes it possible to zoom in on the image and thereby identify the extent of the damage. ■ 15/8/2018 by WorldView-4 © European Space Imaging

An aerial photograph of a large, ornate building complex, likely a palace or government building, surrounded by dense green trees and manicured lawns. The building features two large, octagonal courtyards with intricate designs. The text "Thanks! Köszönöm" is overlaid on the right side of the image.

**Thanks!**  
**Köszönöm**