Defense & Security – Discovery Day Latvia

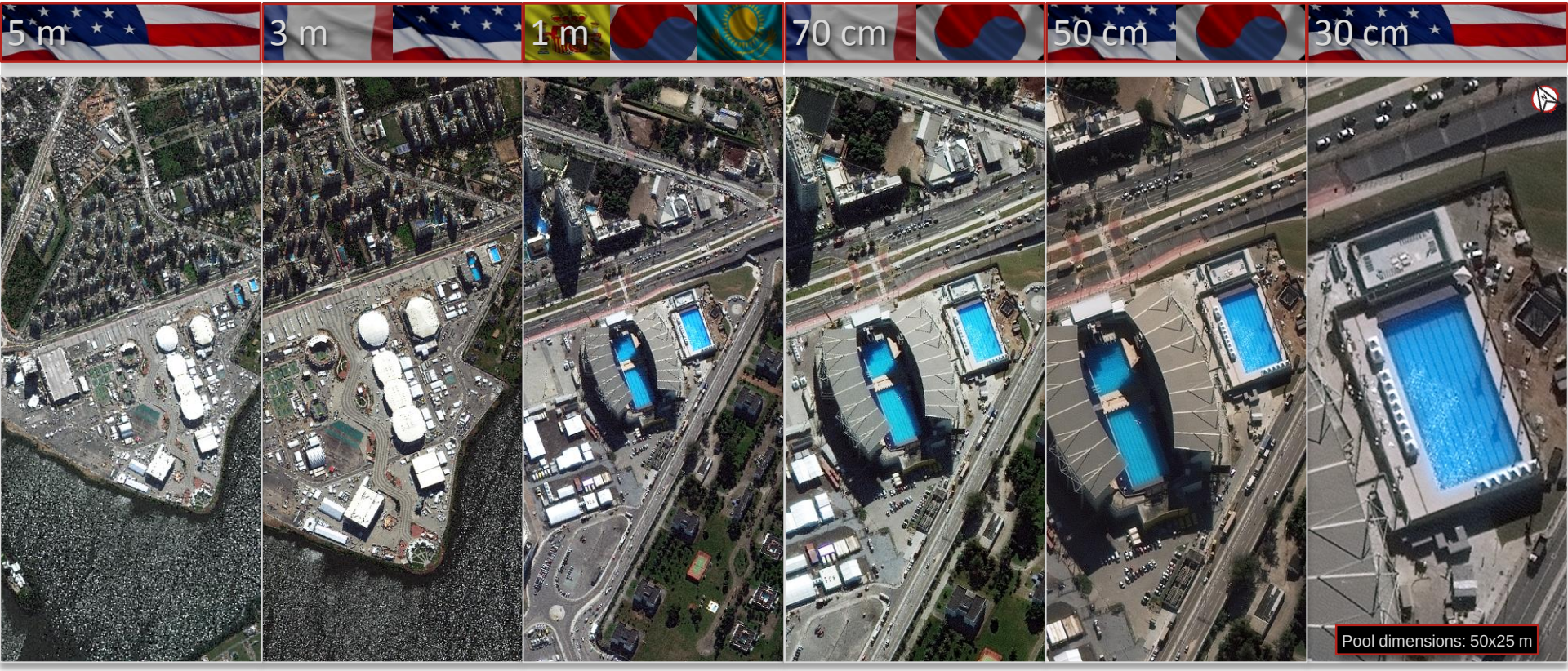
STEVE ALLEN| REGIONAL CHANNEL LEAD| DIGITALGLOBE | EUROPE

See a better world.™

Our World is Full of Threats

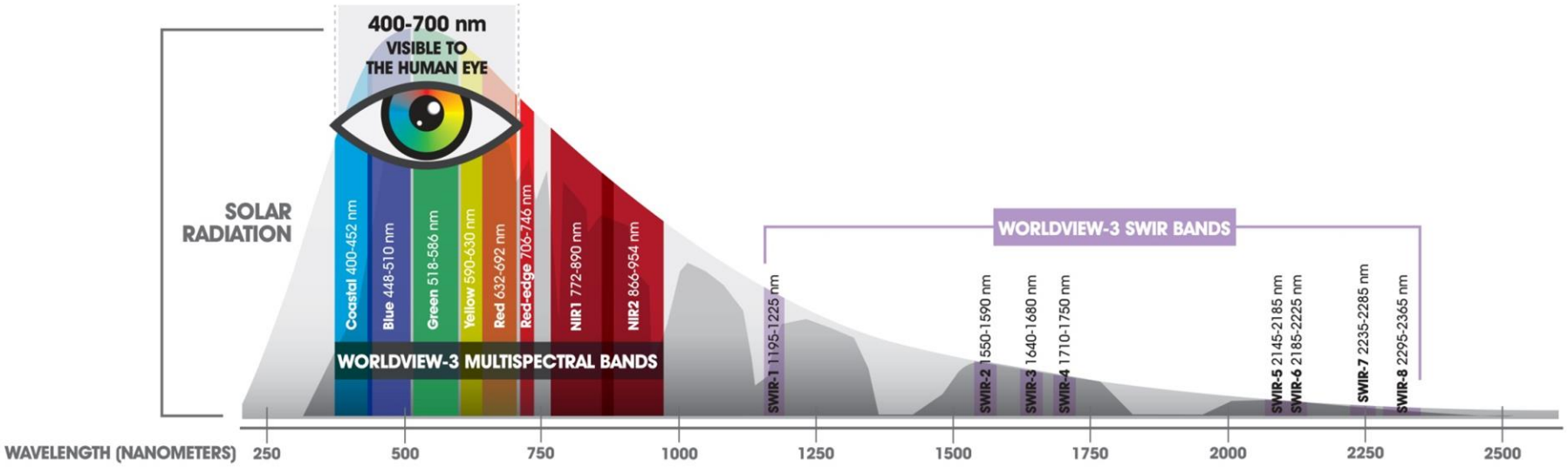
How Imagery Can Help

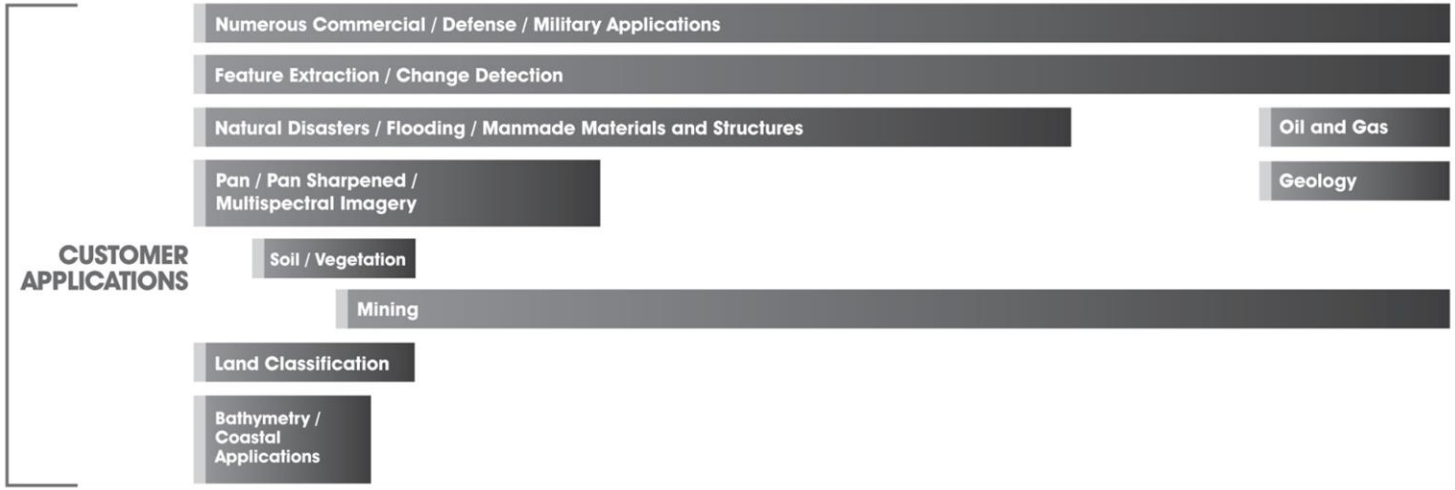
Higher Resolution = More Information



Maria Lenk Aquatics Center | Rio De Janeiro | July 5, 2016 | WorldView-3 | Image and Metadata

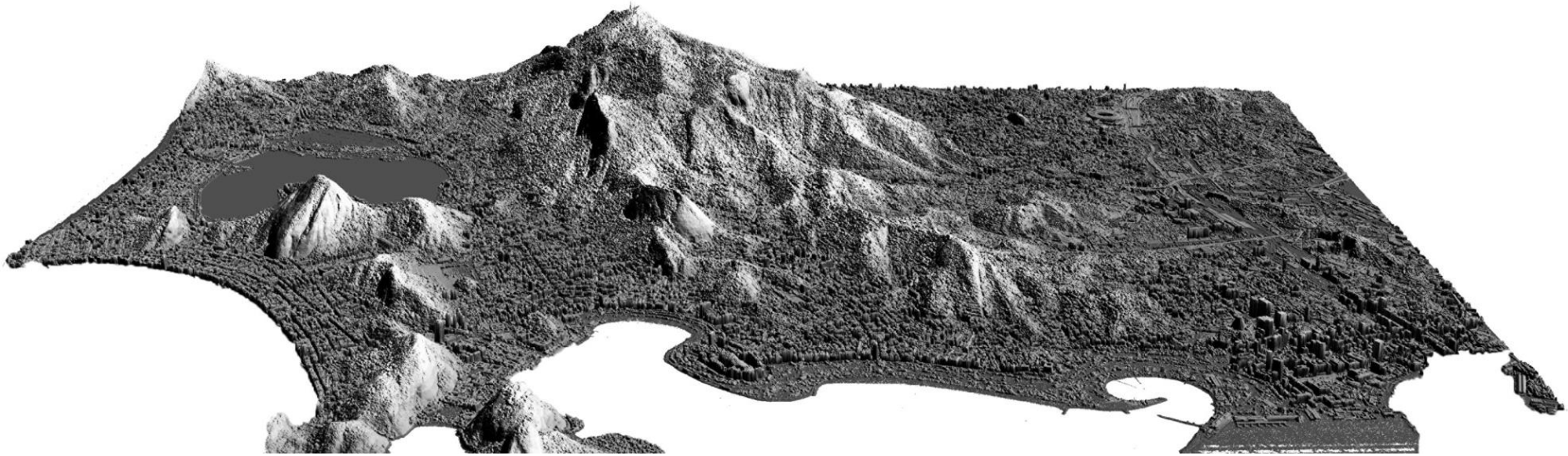
More Bands, More Information



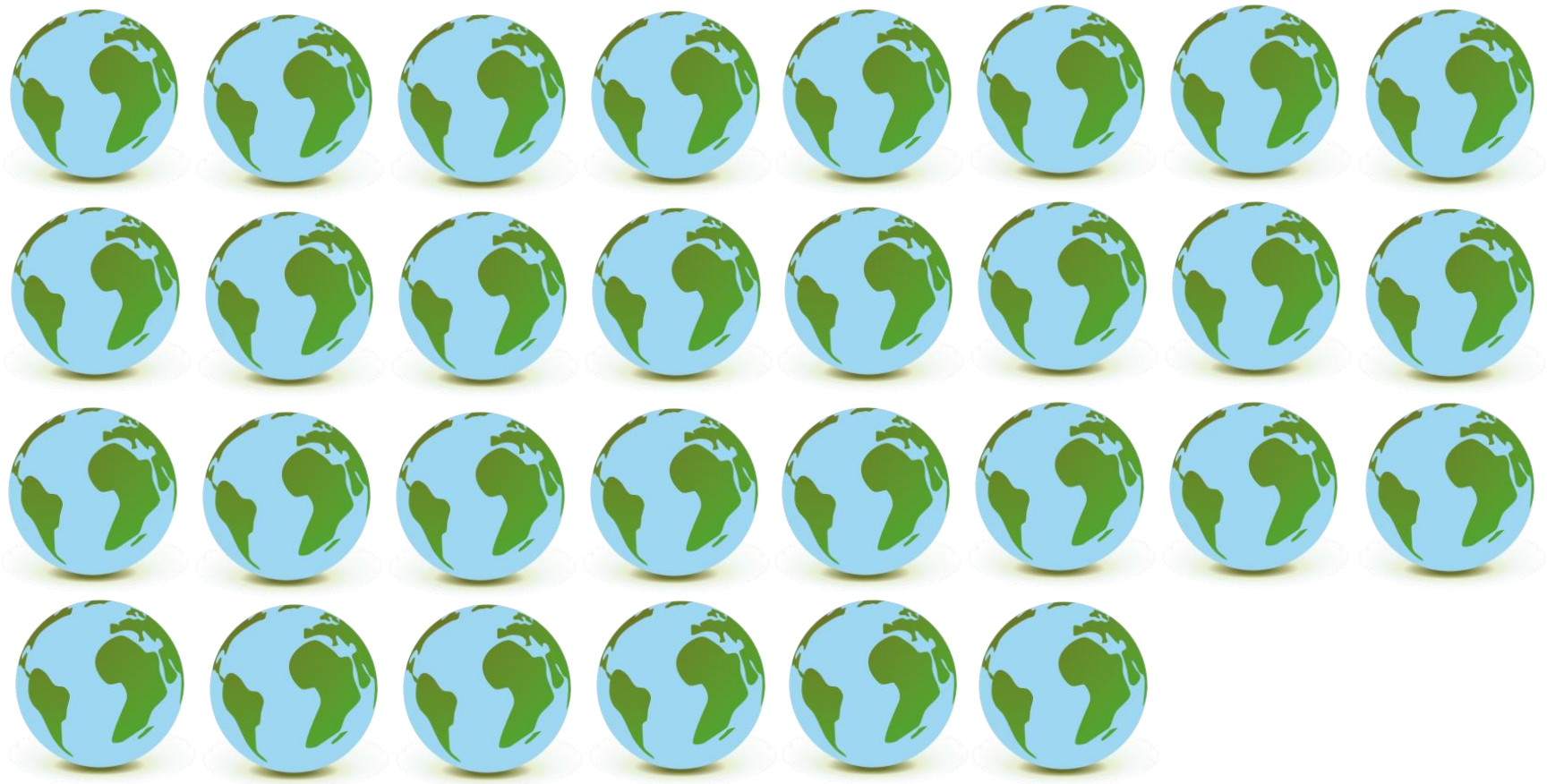


2D – 3D

Digital Surface Model (DSM) is high-resolution elevation data representing every single point on Earth. Using 3D modeling technology, DSM provides the most accurate high-resolution global elevation layer available with a horizontal error of zero relative to True Ortho. The core output is a 0.5m-resolution with an absolute accuracy of 3m in all dimensions. The accuracy is achieved without ground control points and is consistent on all surfaces and terrain types, including building facades.

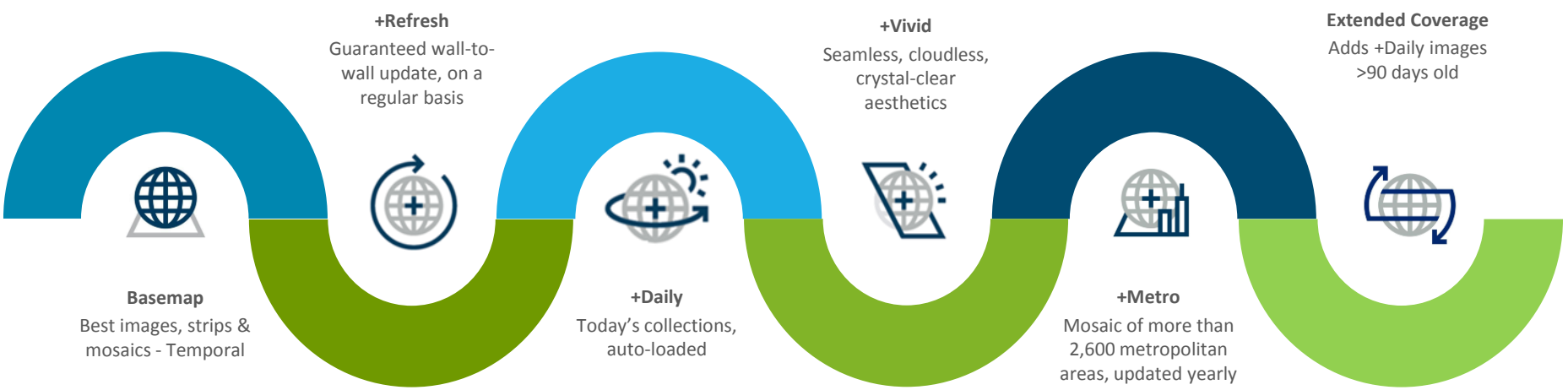


Our image archives are the largest in the world



> 30,000,000 km² of the earth's landmass

Currency, Consistency, Refresh & Coverage



Human Landscape Data Themes and Structure

Communication: TV, radio, telephony, cellular coverage

Demographics: National / regional / local level statistics

Transportation: Roads, railways, airports, bus networks and schedules

Economy: GDP/GNP, labor market

Significant events: HADR

Education: Rates/levels of education and literacy, schools, enrollment

Religion: Faith-based places of worship (churches, mosques, temples)

Ethnicity: Racial composition, tribal and clan groups, alliances and rivals

Medical /Health: Facilities, conditions, basic needs index, nutrition levels

Groups: Civil, political, ideological

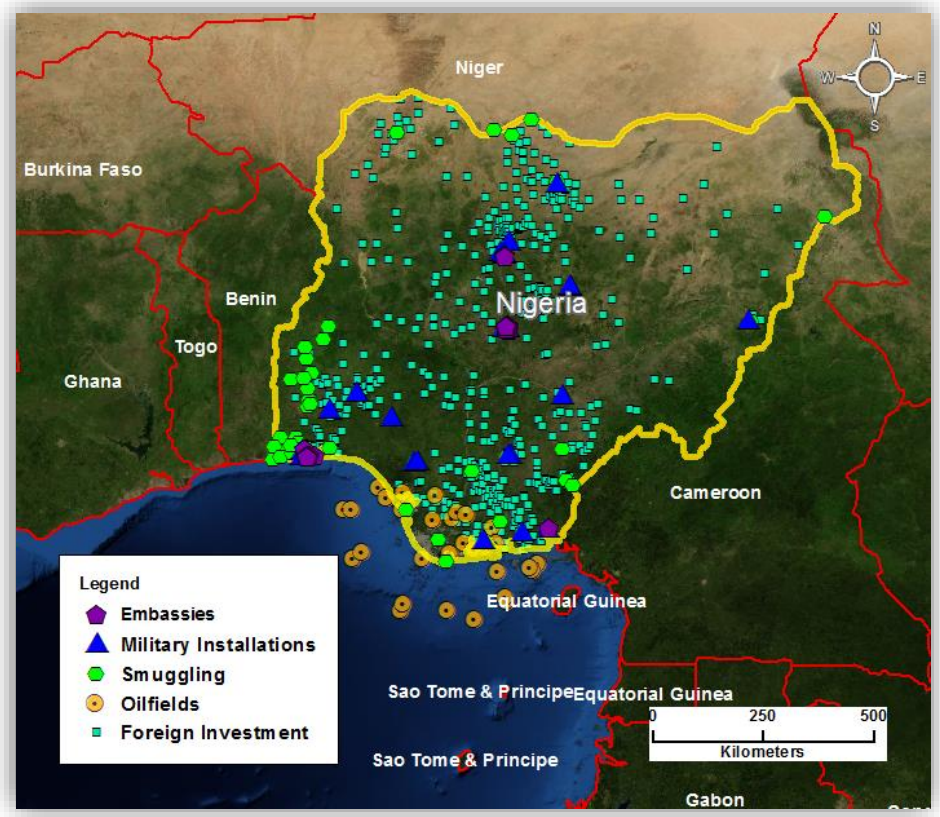
Language: Coincides with ethnicity and groups, language

Land: Use, cover, ownership

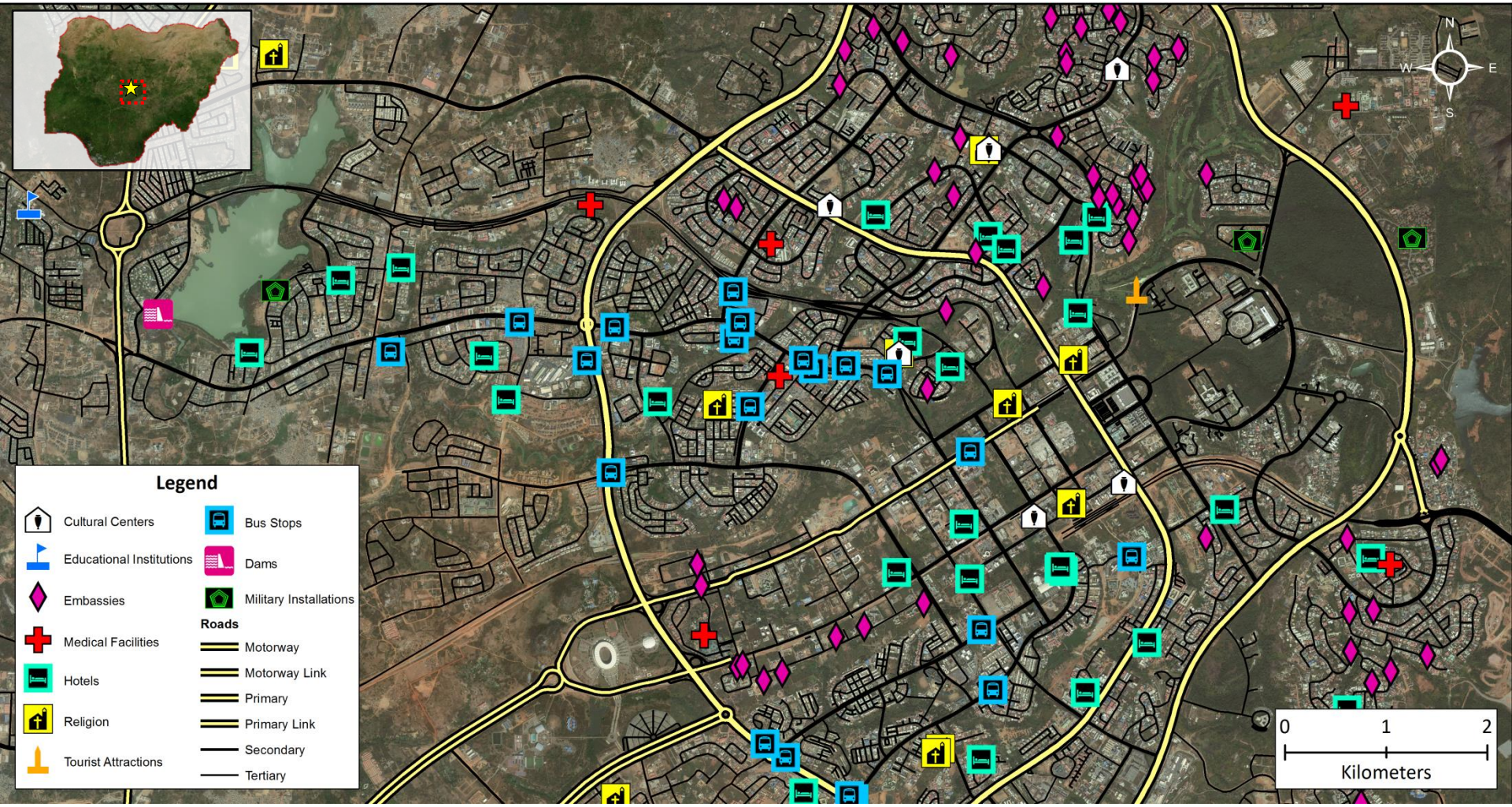
Water: Hydrology layers, watershed, seasonal fluctuations

Nigeria Human Landscape Dataset

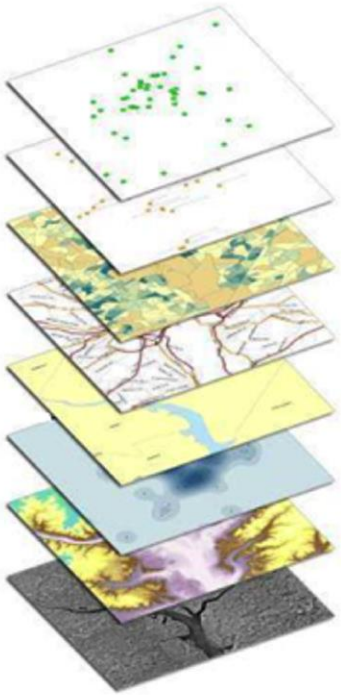
- **Over 3,000 Points of Interests (POIs)**
  - 116,118 total records
- **84 Vector and Raster layers**
- **103 Sources consulted**
  - DigitalGlobe imagery was utilized in conjunction with the 103 sources
  - to verify POIs
- **Example data layers include:**
  - 551 Religious Institutions
  - 541 Bus Stops
  - 153 Medical Facilities
  - 39,234 Kilometers of Roads
  - 713 Foreign Investment Projects
  - 2,711 Border Crossings



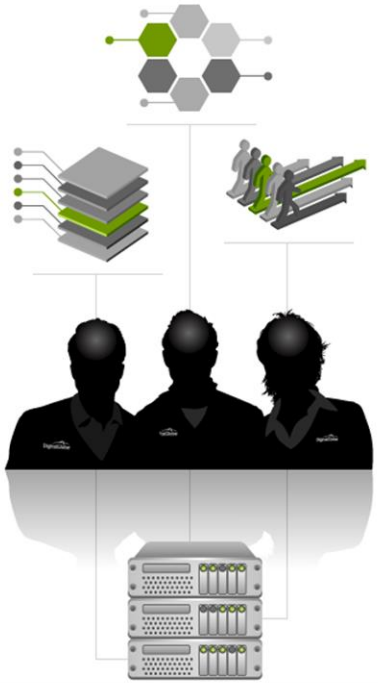
Human Landscape Example – Abuja, Nigeria POI Data



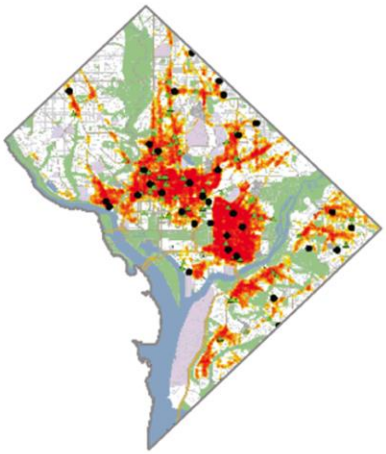
Physical geography, human geography & spatial event data



Expertise, tradecraft & tools



Geospatial insight



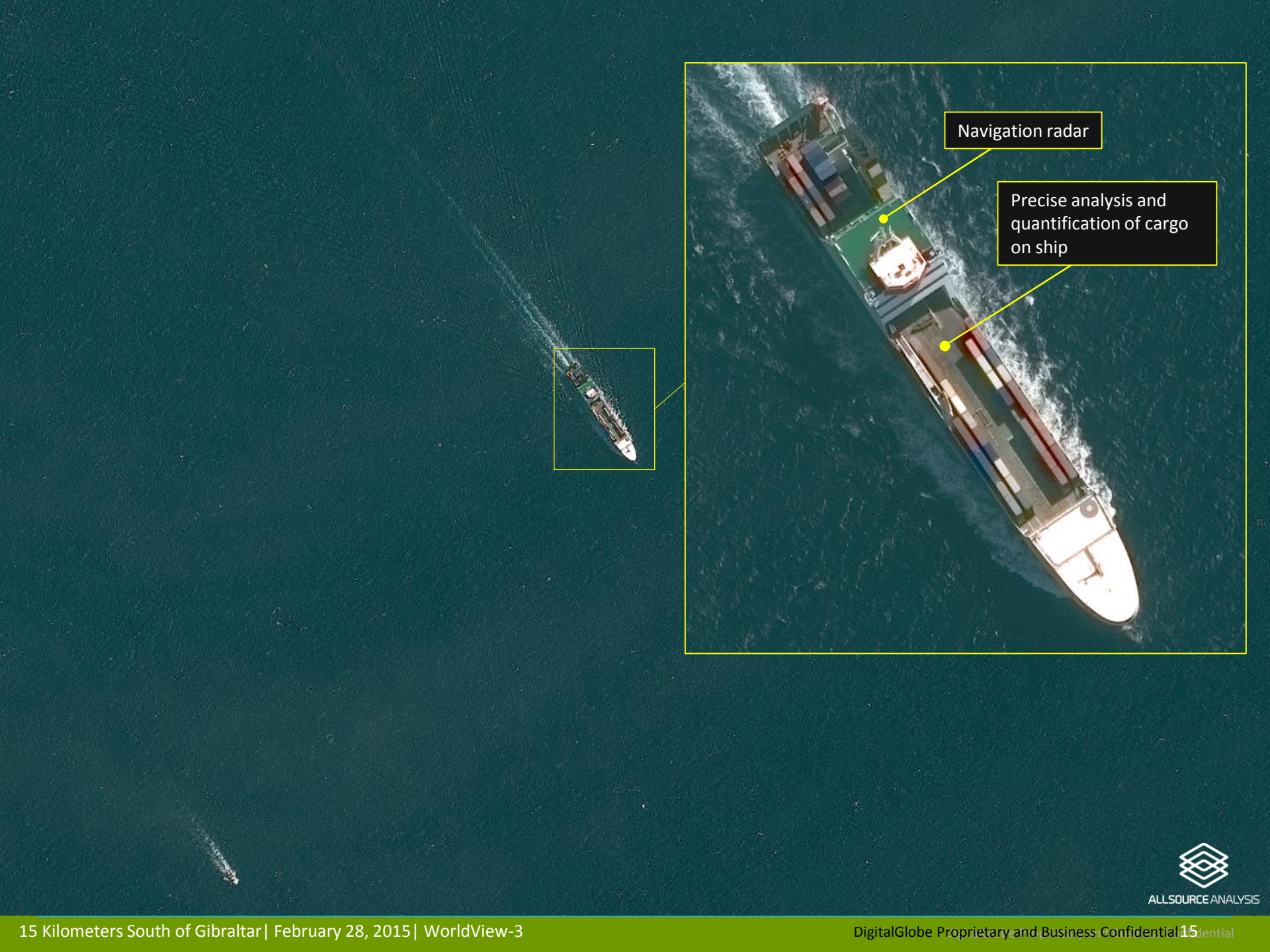
Defense & Intelligence applications

DigitalGlobe

D&I APPLICATIONS

Maritime domain awareness applications

DigitalGlobe



ALLSOURCE ANALYSIS

D&I APPLICATIONS

Monitoring: Critical Infrastructure

DigitalGlobe

D&I APPLICATIONS

Monitoring: Proliferation & Weapons of mass destruction

DigitalGlobe

D&I APPLICATIONS

Monitoring:
Damage assessments

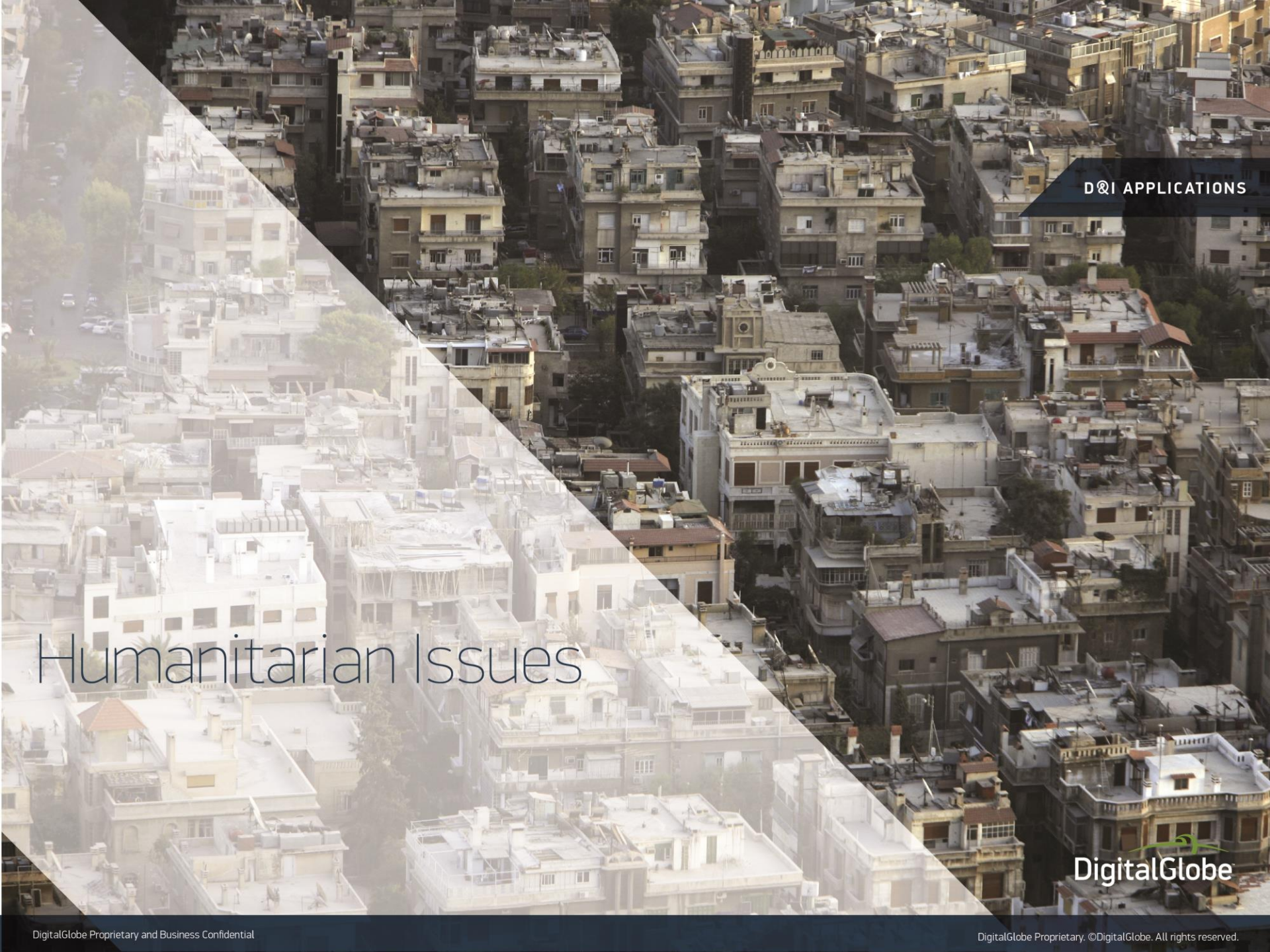
DigitalGlobe

ALLSOURCE ANALYSIS

D&I APPLICATIONS

Order of battle

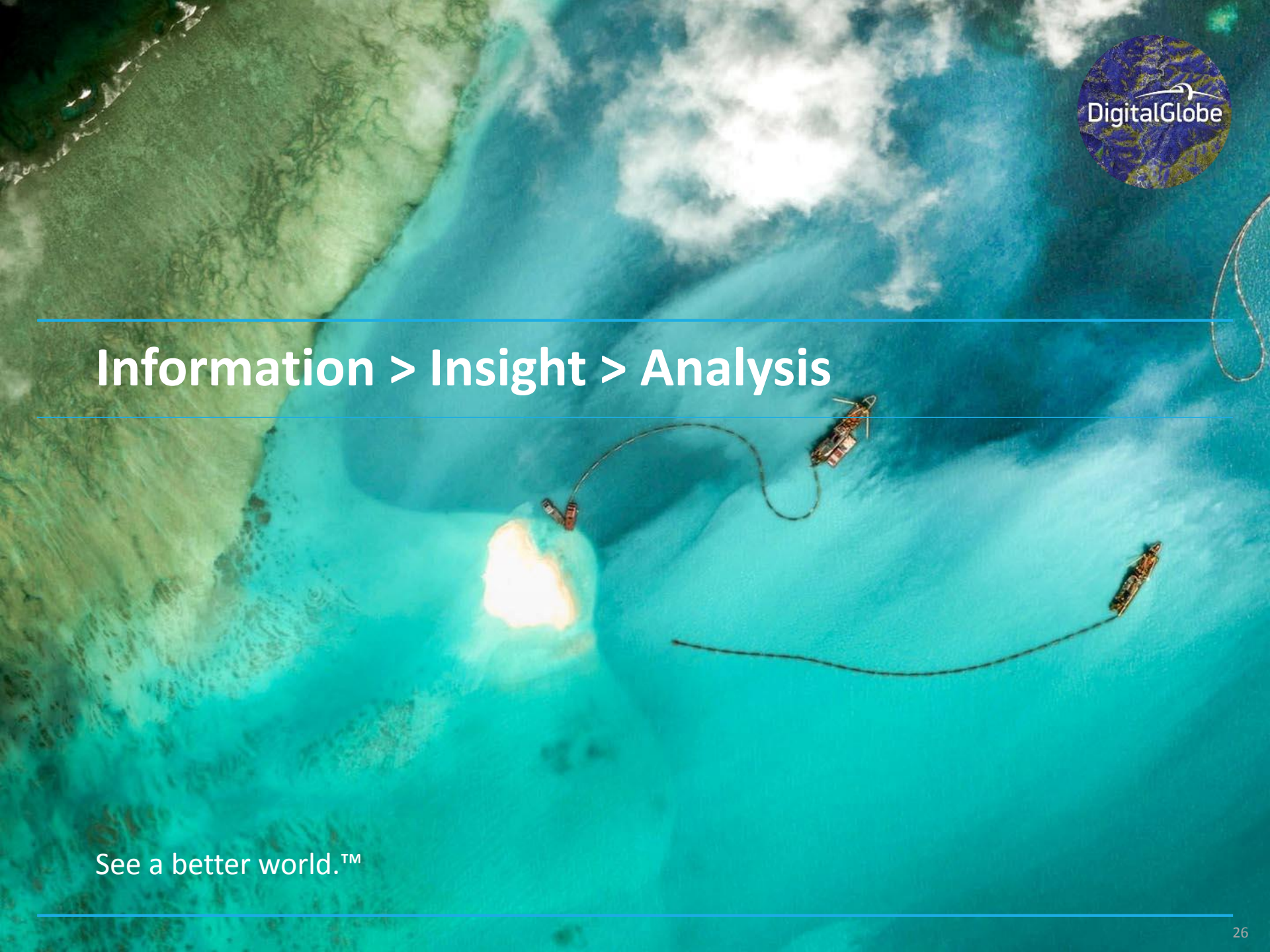
DigitalGlobe



D&I APPLICATIONS

Humanitarian Issues

DigitalGlobe



Information > Insight > Analysis

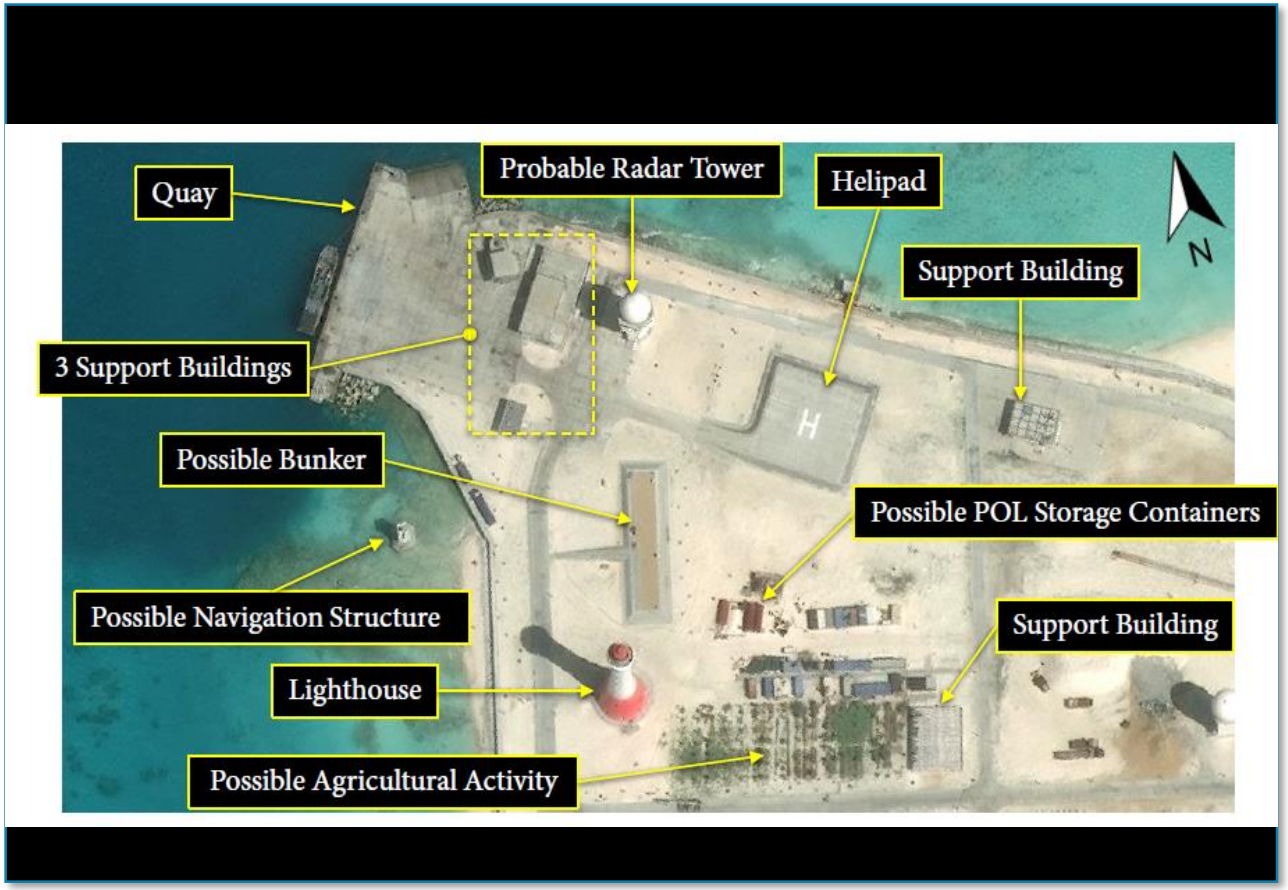
See a better world.™

Geospatial Status Report (GSR)

GSRs give a “quick look” into a spot target designed to give rapid analysis geared toward answering “Is something going on here?” questions.

Small AOI
20 km2

Some Analysis

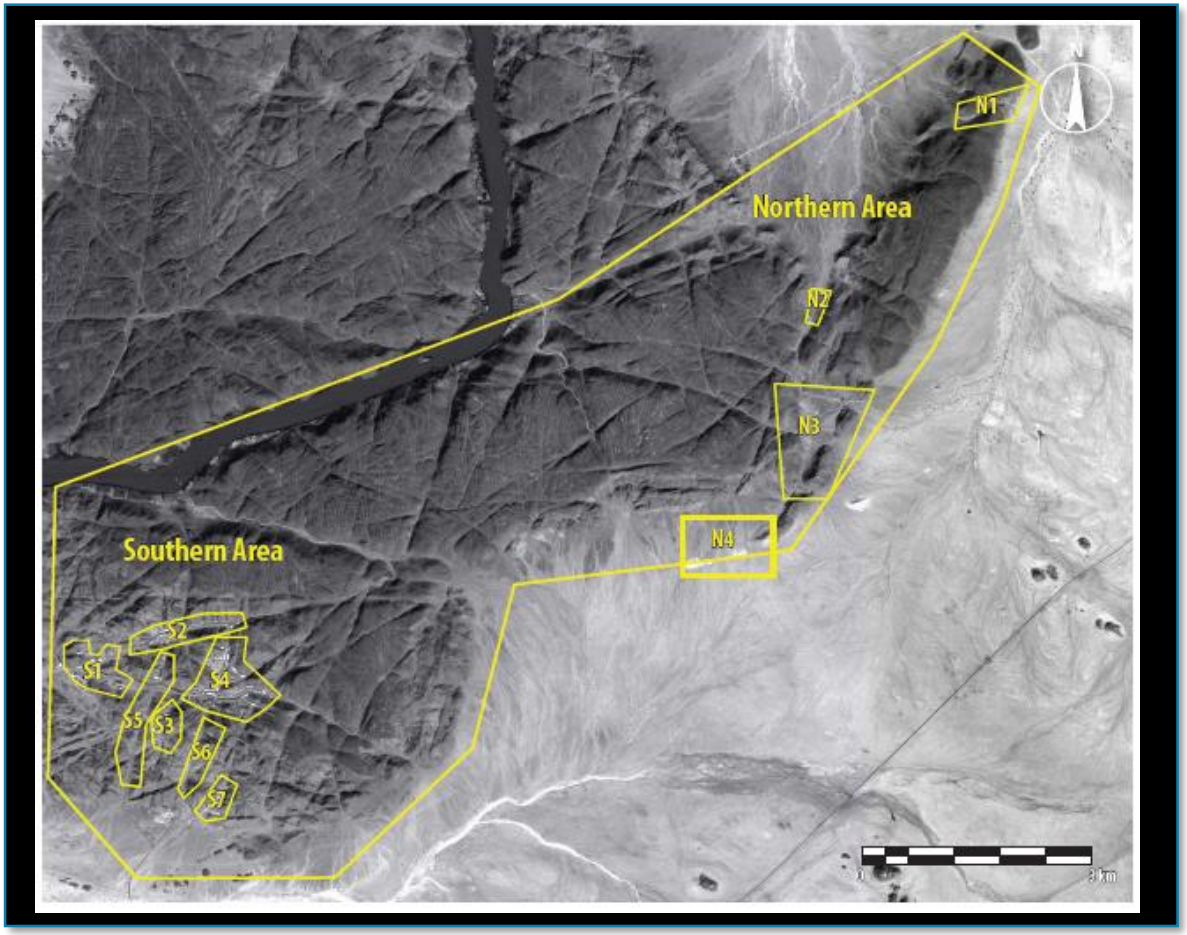


Situation Report (SITREP)

SITREPS are a hybrid between a GSR and an Analysis Report designed to give a more in depth look into a neighborhood or small city.

Mid Size AOI
100 km2

More Analysis

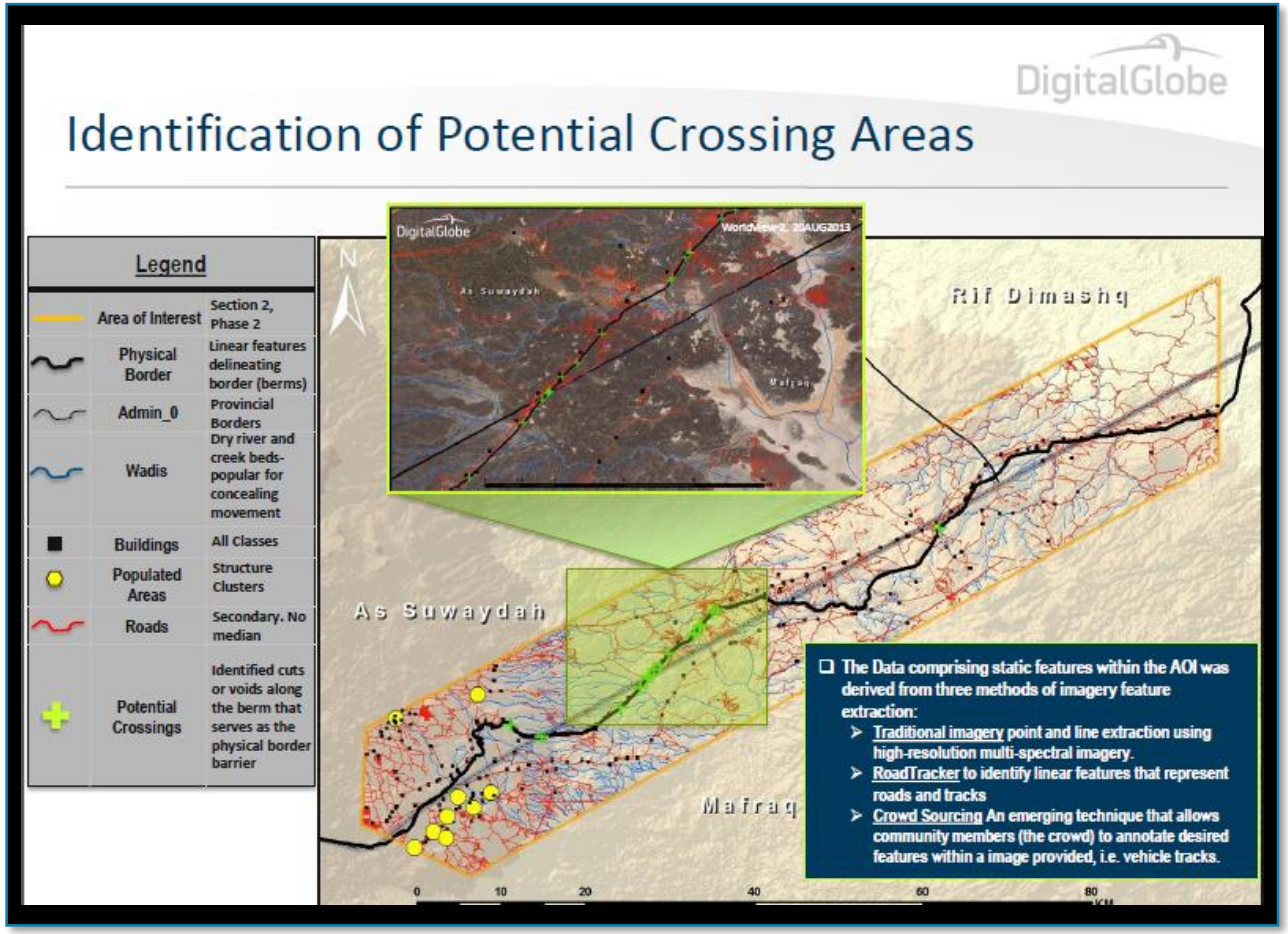


Analysis Report

A comprehensive report depicting full scale awareness of ongoing activity in an area of conflict.

Larger AOI
300 km2

Deeper Analysis

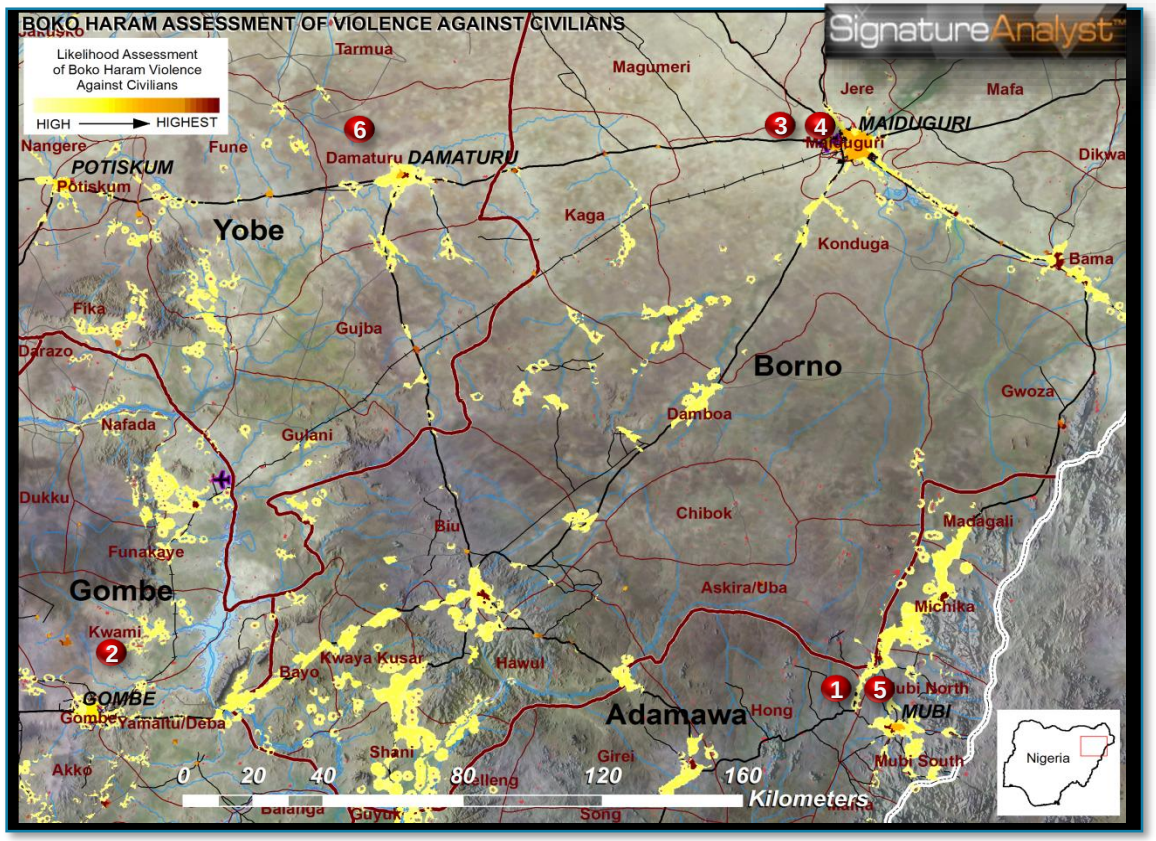


Predictive Analysis Report

A fully customizable report designed to help customers focus resources for maximum impact. Signature Analyst™ is used to deliver actionable information for decision-makers and can be paired with information gained from on the ground polling.

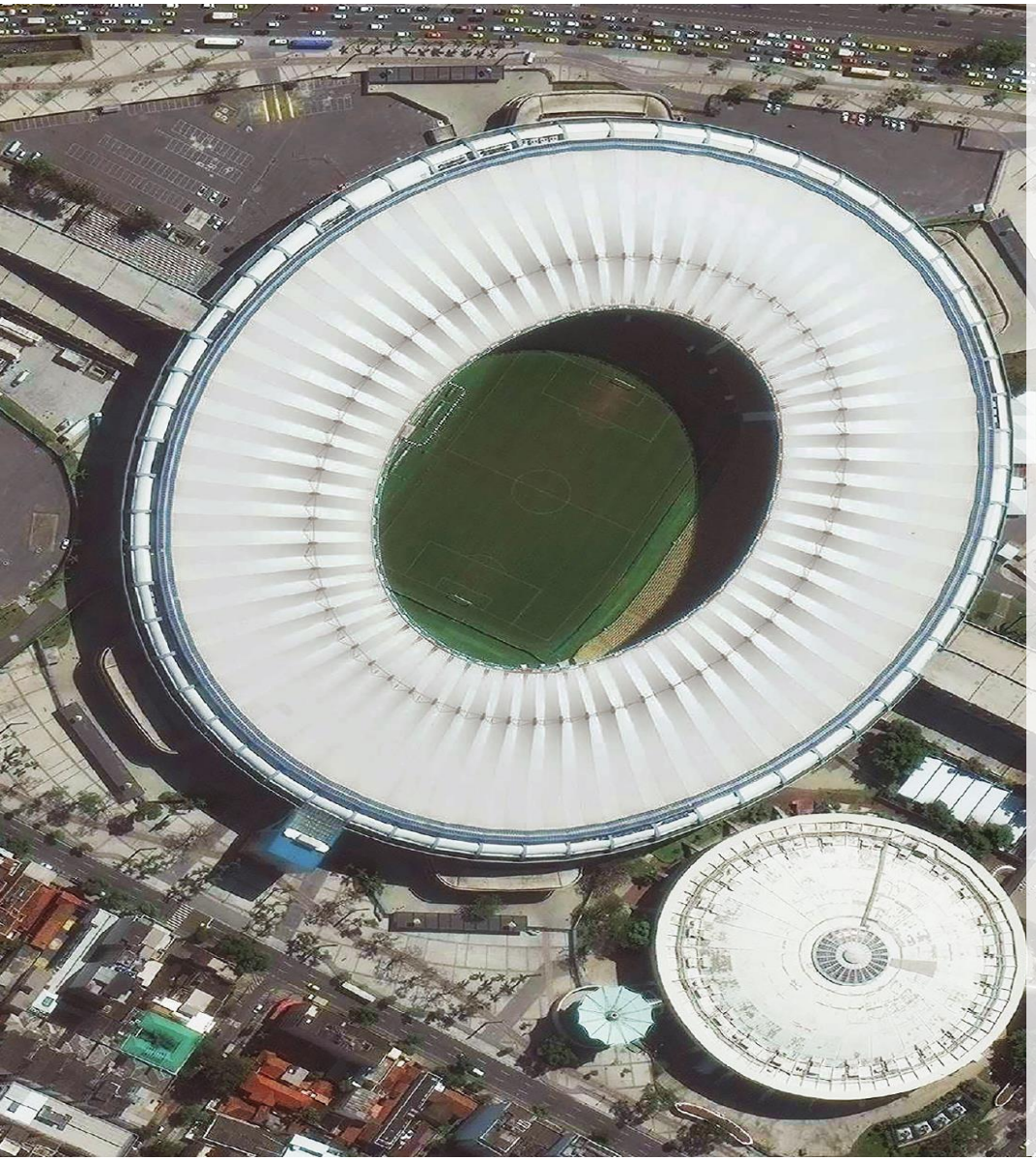
Larger AOI
Polling Option

More Analysis



Spatial Output – Assessment Conducted in 2012 proved to be 95% Accurate for Attacks in 2013

Summer Olympics in Rio de Janeiro 2016



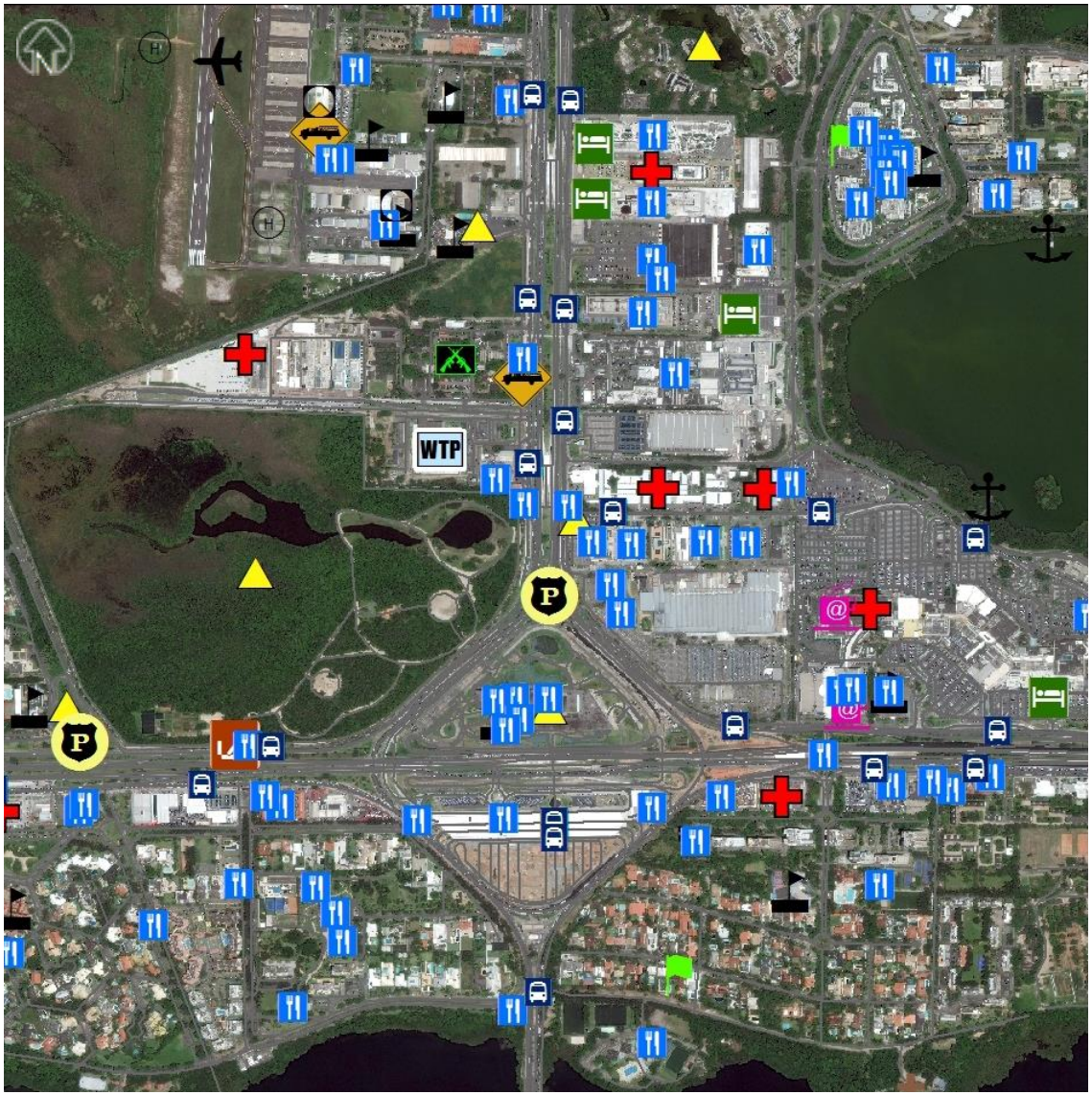
- First Time a South American country has hosted the games
- 10,500 Athletes from 206 countries
- 85,000 soldiers and police will be deployed
- 32 sporting venues over 4 regions across Rio de Janeiro
- Sporting venues can hold a total of 540,650 spectators at any given time
- 7.5 Million individual tickets available to visitors

Building Footprints

- Used a semi-automated method to extract high resolution building polygons across the city of Rio de Janeiro.
- The building polygons feature class contains over 1,200,000 features.
- Task completed in 3 weeks.
- Generated utilizing data from DigitalGlobe's Worldview-2 pan-sharpened ortho-rectified satellite imagery.

Enriched POI Layers

- Human Landscape POI layer provide details not found in open-source geospatial databases. Significant number of POIs confirmed with current DigitalGlobe imagery
- Final dataset contains 100s of conflated sources



Lodging

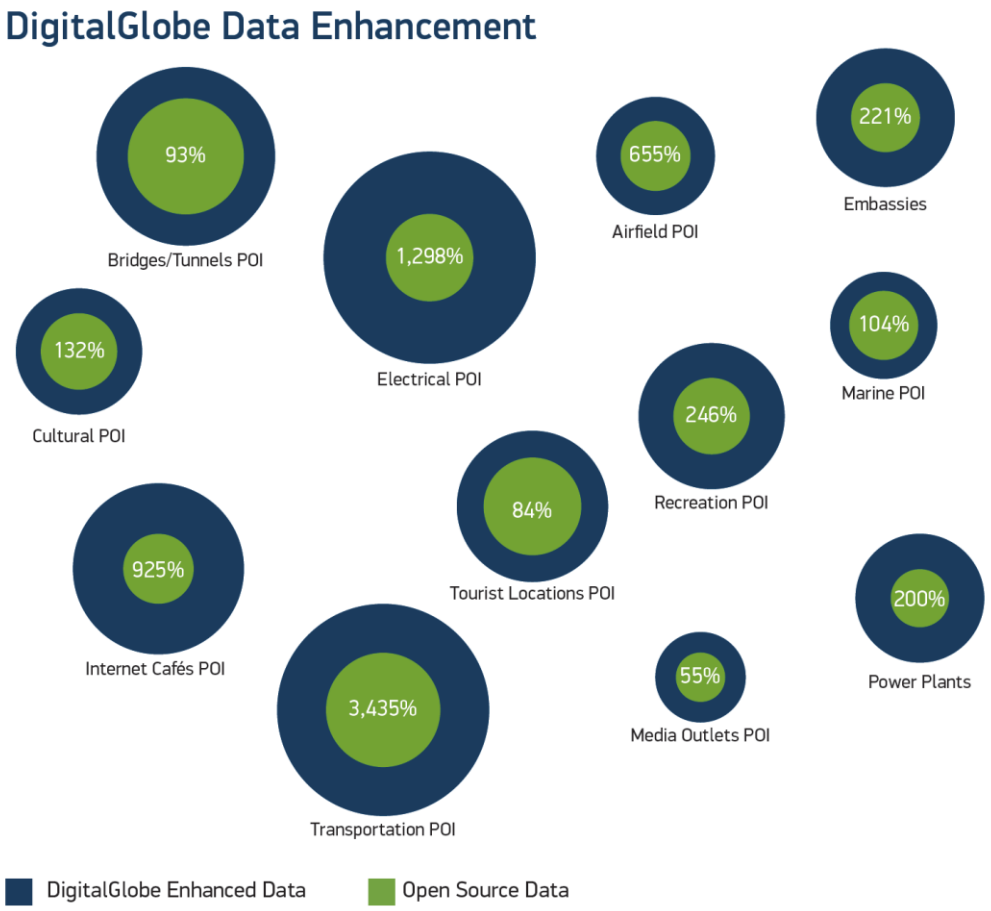
Restaurant

Public Transportation

Public Security

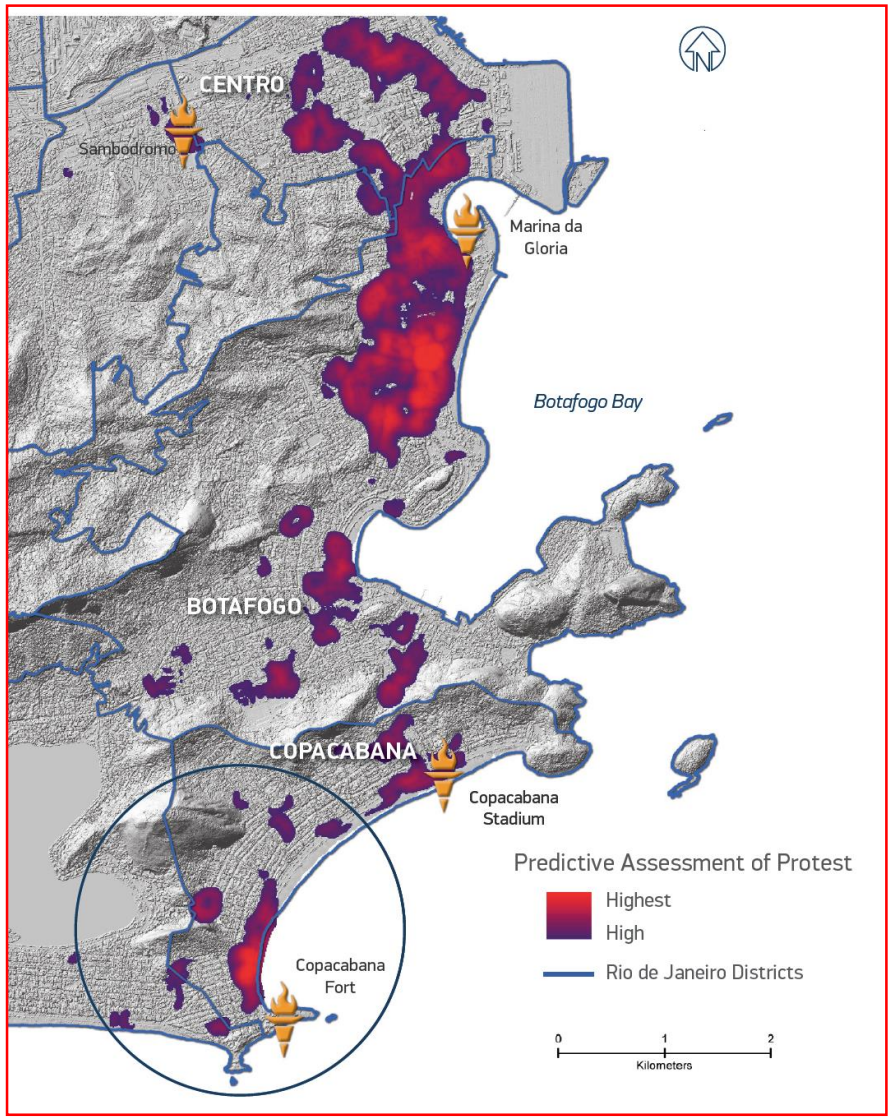
Medical Facility

DigitalGlobe Data Enhancement



- The Rio dataset contains 37,000 highly detailed POIs across the city.
- DigitalGlobe enriched available POIs by 600%
- 1.2 million building polygons were semi-automatically extracted from our high resolution satellite imagery.
- The level of research in our POI enrichment led us to street level data that included locating traffic signals, trash cans, and benches.

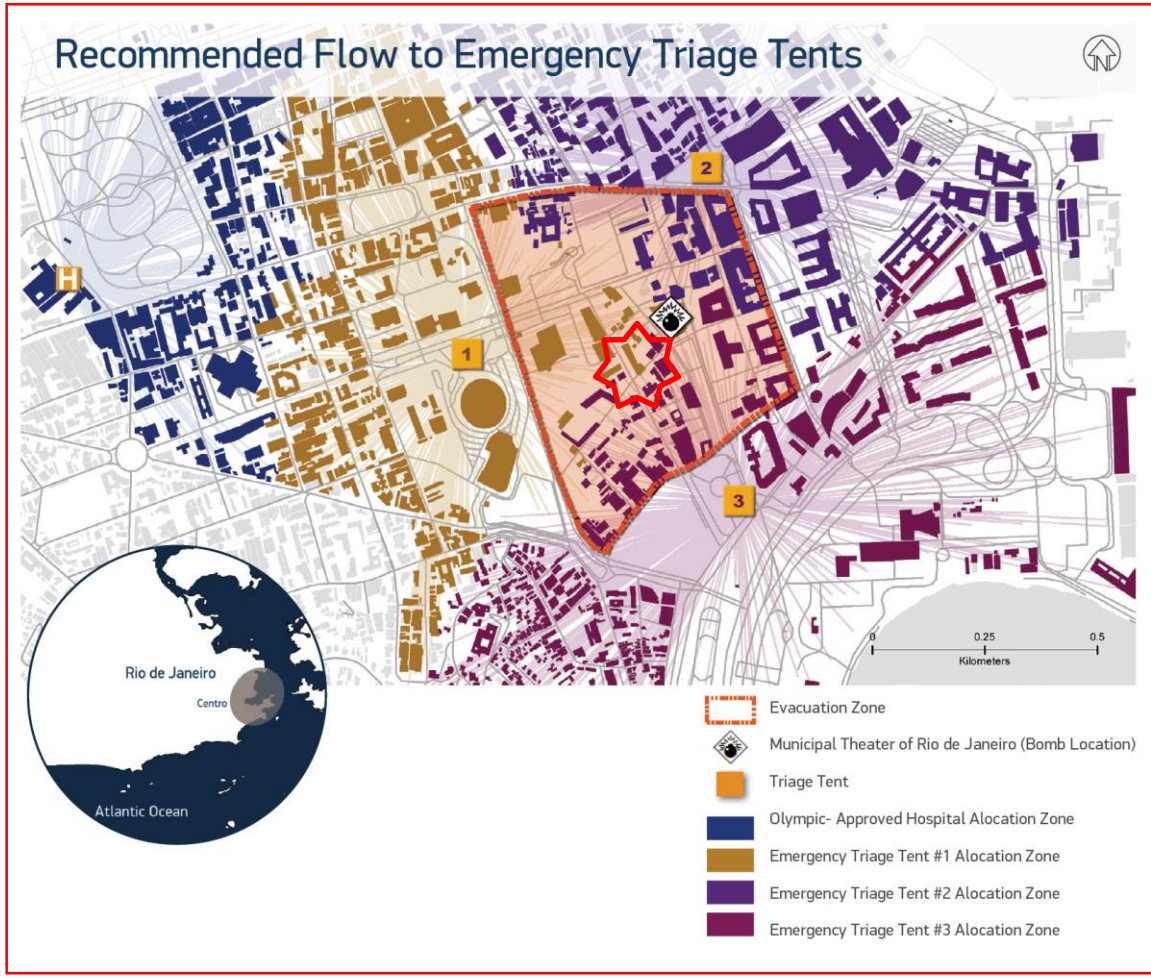
Predictive Analytics
Scenario One: Protests



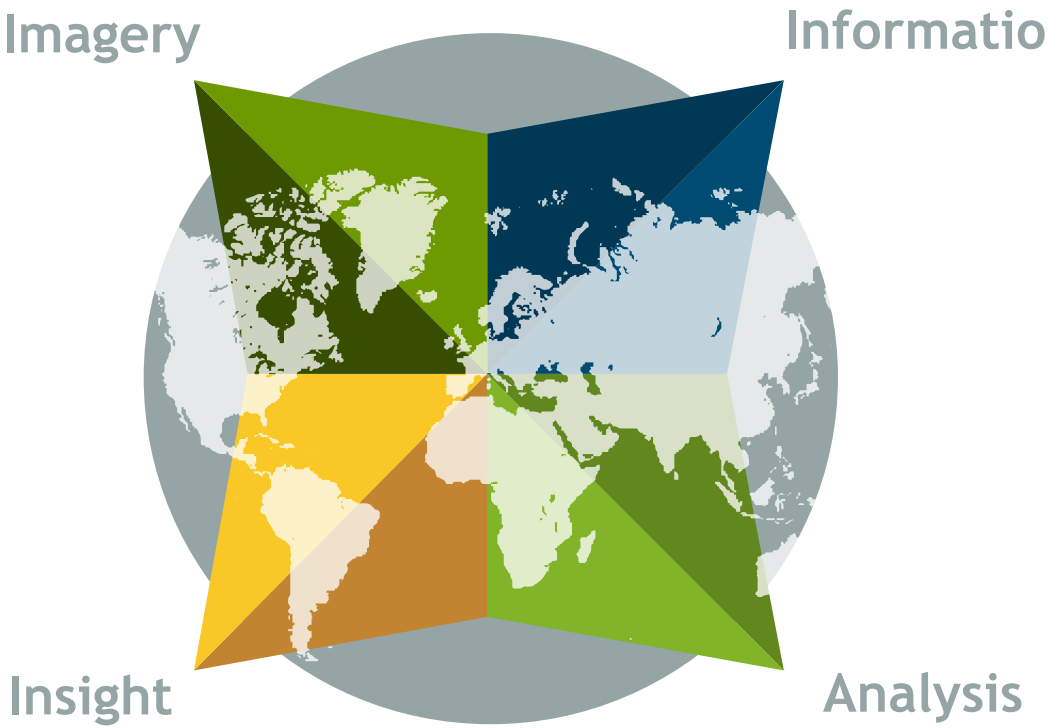
- Large scale protests have become common in Rio –many with over a million protestors
- Geospatial modeling allows us to help predictive likely location of protests during the Rio Games.
  - Highly correlated factions include: pedestrian roads, subways, and bicycle rental kiosks.
- Pedestrian roads are a huge draw for protestors because they attract the attention of drivers and tourists.
- Subways a frequent mode of transportation for protestors.
- Allows planners to understand areas to avoid during protest.

Predictive Analytics
Scenario Two: Terrorism

- Rich geospatial data and analysis allows better response planning
- Scenario Two: Highlights an attack by a suicide bomber in downtown Rio de Janeiro
- Analysis allows first responders to rapidly develop COAs to respond to critical events.
- Analysis shows triage zones and victim flow from affected area.
- Another possible analysis includes line of sight analysis, route planning, closest medical facilities, police response times



How can I Access This Information?



Cloud

Crowd

Algorithm

Report


DigitalGlobe