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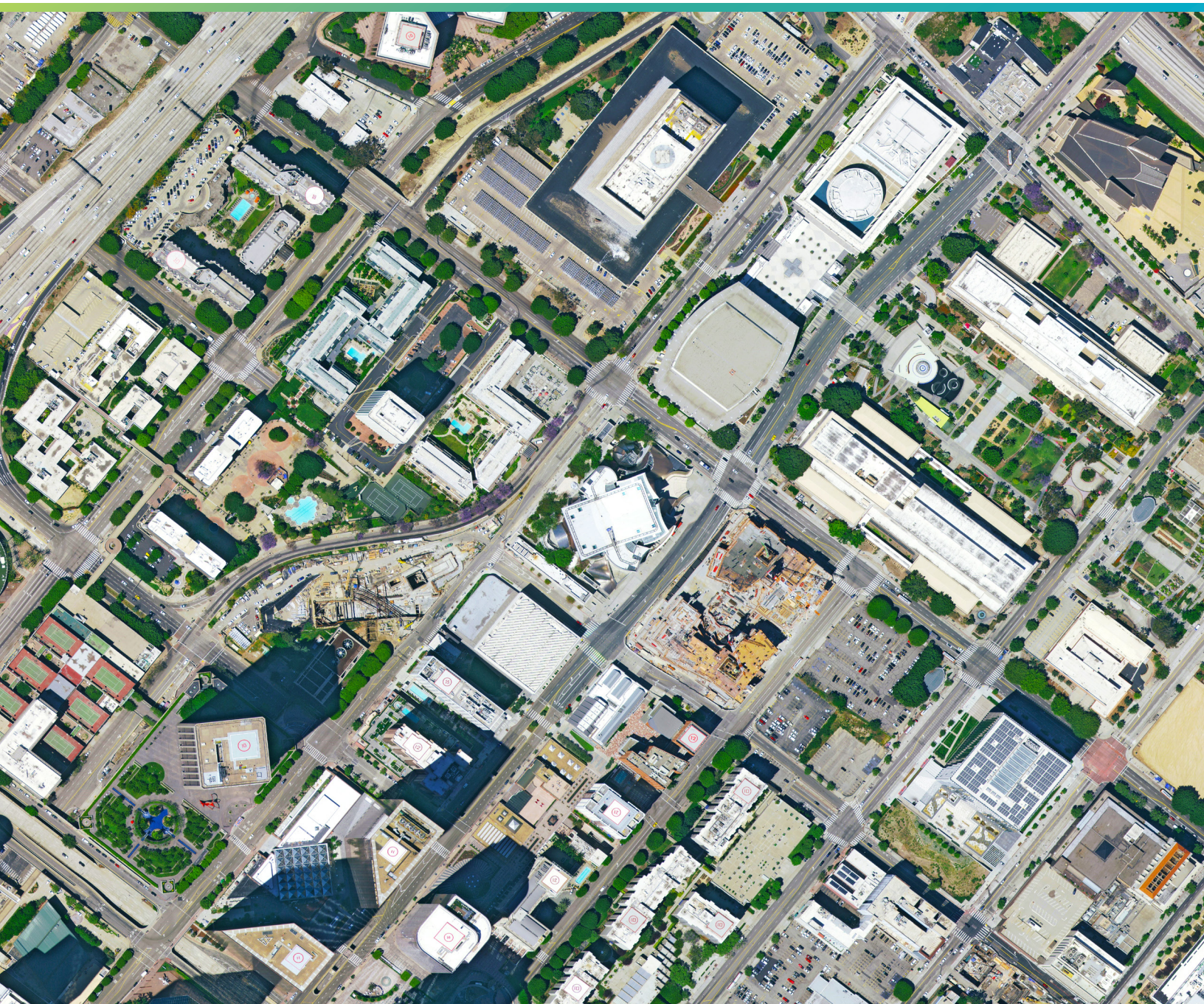
HxGN Content Program

Extensive database of high-resolution
2D aerial data and 3D digital twins

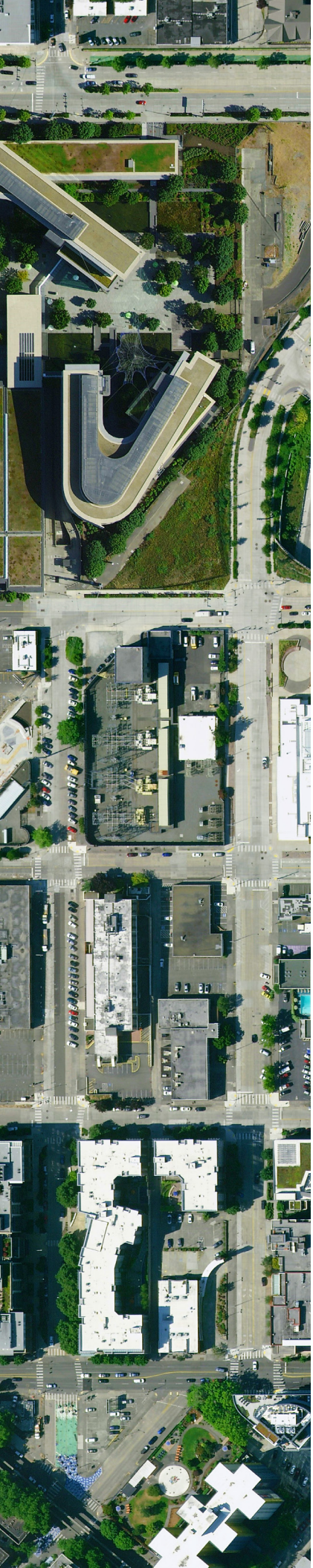


Derive valuable insights with high-quality aerial data

The HxGN Content Program, Hexagon's aerial data program, offers the largest library of high-resolution aerial imagery, elevation data, 3D models and analytics. The aerial data is orthorectified, accurate and available at multiple resolutions across North America and Europe.

The data is captured entirely by aircraft using high-performance airborne sensors from Leica Geosystems. Flexible flight plans allow data collection during optimal conditions, which helps minimise clouds, shadows and other artefacts that negatively impact or obscure the data.

The exceptional consistency over large areas makes the HxGN Content Program ideal for producing derivative products and training machine learning algorithms.



Highly accurate and temporally consistent

Our data is captured during the course of one growing season using high-performance sensors from Leica Geosystems. The aerial data is processed using ground control and rigorous QA/QC routines emphasising data accuracy and clarity.

Reliable refresh cycle

We capture our data according to publicly available, pre-planned refresh schedules, allowing you to budget and prepare in advance.

Comprehensive solutions

As the world's largest aerial data provider, we offer a full stack of high-resolution 2D and 3D data sets that enable you to make well-informed, actionable decisions.

Immediate data access

Deploy quickly with on-demand cloud streaming or pixel download. Flexible consumption endpoints ensure smooth integration with common software platforms and existing workflows.

Machine learning ready

Exceptional data consistency over large areas makes our data sets ideal for training artificial intelligence and machine learning algorithms.

Flexible use terms

Flexible data use terms allow users to build derivative products, analytics and value-added layers.

Program overview

The HxGN Content Program offers two aerial data solutions focused on countrywide and urban data sets to help you reach new levels of insight and information.

Countrywide data sets

The program offers high-resolution, countrywide orthoimagery, digital surface models and stereo imagery of the contiguous United States (plus Hawaii, Puerto Rico and the U.S. Virgin Islands) and Western European countries.

Data sets are offered at 15 cm and 30 cm resolutions in the United States and between 12.5 cm to 30 cm resolution across Europe.

The following countrywide data sets are available for streaming and pixel download:

- **Orthoimagery** (normal colour and colour-infrared)
- **Digital surface models** (imagery-derived)
- **Stereo imagery**

Reliable imaging sensor technology for wide area mapping

The HxGN Content Program captures high-quality multispectral aerial imagery using the latest airborne sensors developed by Leica Geosystems.

Leica ContentMapper

Configured for large-scale imagery projects, such as entire states and countries, the ContentMapper sensor captures 40,000 pixels across swath and doubles the image resolution at the same flying parameters compared to previous systems.

Leica DMC-4

With over 31,500 pixels across swath, the DMC-4 mapping solution maximises acquisition efficiency and image fidelity using CMOS technology with mechanical forward-motion-compensation (FMC) to deliver the highest image detail.

Leica ADS100

The ADS100 digital camera uses pushbroom technology to capture full colour (RGBN) in the forward, nadir and backward views, offering greater flexibility for stereo interpretation.

Metro HD data sets

The Metro HD offering provides a full data stack of urban digital twins, enabling you to analyse, model and visualise the city landscape. The high-definition 2D and 3D data sets are derived from 5 cm resolution aerial imagery and 20 points/m² density LiDAR data, delivering superior positional accuracy and temporal consistency.

The following data layers are offered in select majors cities:

- **True orthoimagery**
- **Oblique imagery**
- **LiDAR point cloud**
- **Digital surface model** (LiDAR-derived)
- **Digital elevation model** (LiDAR-derived)
- **Mesh model**
- **Building model**
- **Tree model**
- **Land cover map**

High-performance hybrid sensor technology for city mapping

The HxGN Content Program utilises the Leica CityMapper-2 true hybrid airborne sensor to simultaneously capture high-resolution nadir, oblique and LiDAR data sets for the Metro HD data offering.

Leica CityMapper-2

The CityMapper-2 sensor collects concurrent multi-modal aerial data using best-in-class passive and active imaging technology. It is a true hybrid sensor specifically designed for airborne urban mapping and offers twice the data collection performance to address rigorous structural specifications for robust 3D data.

Aerial data products

Hexagon builds its aerial data solutions from the ground up. Our in-house team designs and integrates airborne sensors, schedules and flies missions, as well as processes the data using optimised software to the highest levels of photogrammetric and radiometric quality. Hexagon controls the entire workflow to ensure excellence at every stage.

Make mission-critical decisions with the HxGN Content Program's extensive data stack of aerial imagery, elevation data, 3D models and analytics.

Aerial Imagery

Orthoimagery

The multispectral countrywide coverage and data consistency over a single growing season make Hexagon's orthoimagery ideal for deriving analytics and extracting features using artificial intelligence and machine learning algorithms. The aerial-derived orthoimages are available at multiple resolutions depending on the region.

Resolution: 5 cm (2 in), 12.5 cm (5 in), 15 cm (6 in), 25 cm (10 in), 30 cm (12 in)
Deliverable format: GeoTIFF, JPG, PNG

True orthoimagery

Get an accurate vertical view of your city without the occlusions caused by leaning buildings, engineered structures and other surface features. Because each pixel is depicted in its true orthographic representation, as if viewed directly from above, aerial-derived true orthoimages are optimal data for projects that demand an unobscured view of the ground.

Resolution: 5 cm (2 in)
Deliverable format: GeoTIFF

Oblique imagery

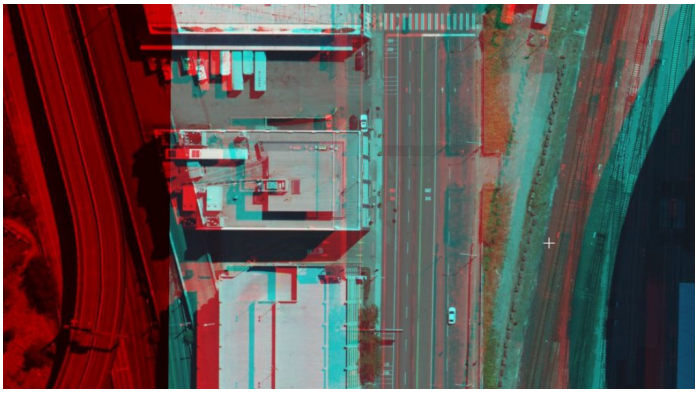
Captured at a 45-degree angle in each cardinal direction, the high-resolution obliques show the top and sides of structures. You can view properties, streets and assets from multiple viewpoints—without ever visiting the site—allowing you to save time and resources.

Resolution: 6.7 cm (2.64 in) average
Deliverable format: GeoTIFF

Stereo imagery

Stereo imagery adds a third dimension to aerial maps, providing photogrammetric data users with valuable information to create 3D visualisations. The highly accurate stereoscopic pairs are great for feature and topography extraction, as well as creating 3D object databases and vector maps.

Resolution: Variable
Deliverable format: Stereo models in sensor-specific (i.e. pushbroom or frame) and software-specific (i.e. SOCET SET, DATEM) formats.



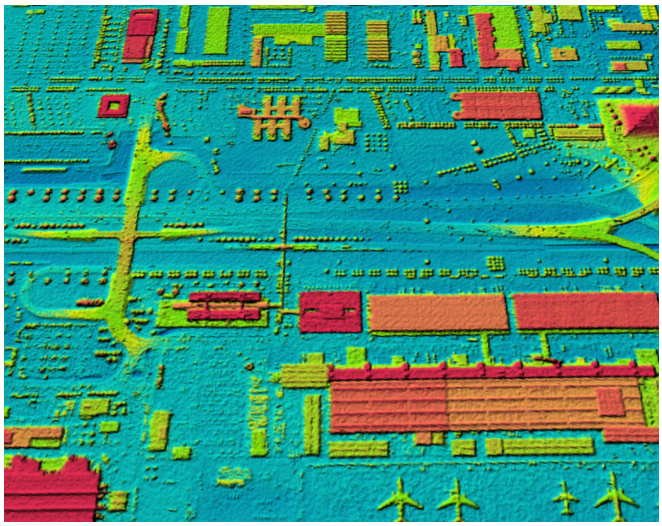
Elevation Data

Digital surface model (DSM)

Leverage DSMs to extract elevation data of built-up and natural features. Countrywide photogrammetrically-derived DSMs of North America and Europe are offered at multiple resolutions and corresponding point densities for the highest elevation of each pixel. LiDAR DSMs, available through the Metro HD offering, are generated using first return point data.

Imagery-derived resolution: Variable
Deliverable format: Point Cloud: LAS/LAZ
Raster: GeoTIFF

LiDAR resolution: 20 points/m^2
Deliverable format: Point Cloud: LAS/LAZ
Raster: GeoTIFF

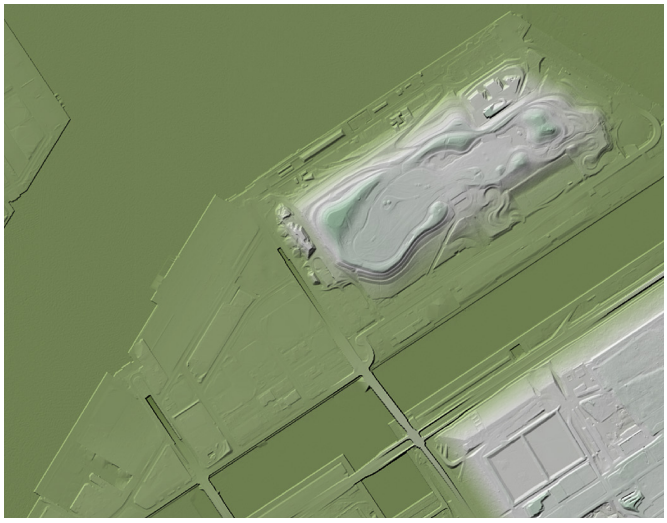


Digital elevation model (DEM)

DEMs provide direct and interpolated heights of the earth's topographic surface devoid of all above-ground built-up features such as buildings and vegetation. LiDAR (direct) DEMs are produced using classified ground data returns, while photogrammetric (interpolated) DEMs rely upon interpolation to remove surface features and provide a topographic surface in the data.

Imagery-derived resolution: Variable
Deliverable format: GeoTIFF

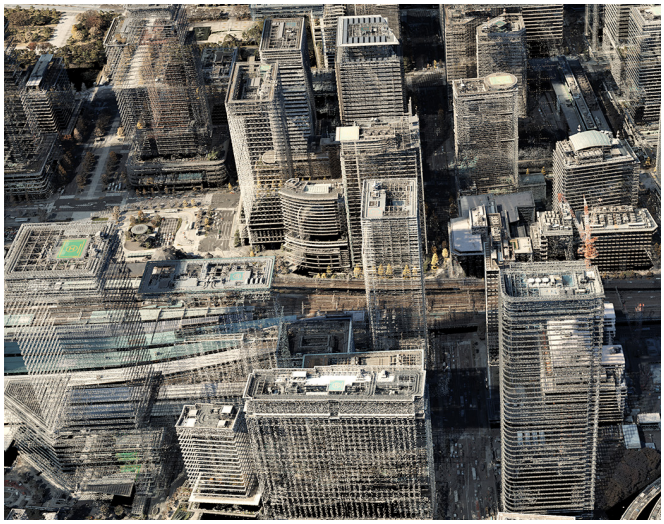
LiDAR resolution: Variable
Deliverable format: Point Cloud: LAS/LAZ
Raster: GeoTIFF



LiDAR point cloud

A multifunctional data set that enables 3D modelling, LiDAR point clouds provide high-accuracy spatial data of physical objects and terrain using a collection of dense point measurements. The point clouds are encoded with spectral information from corresponding aerial imagery and include intensity, return number and scan angle as attributes.

Resolution: 20 points/m^2
Deliverable format: LAS



3D Models

Mesh model

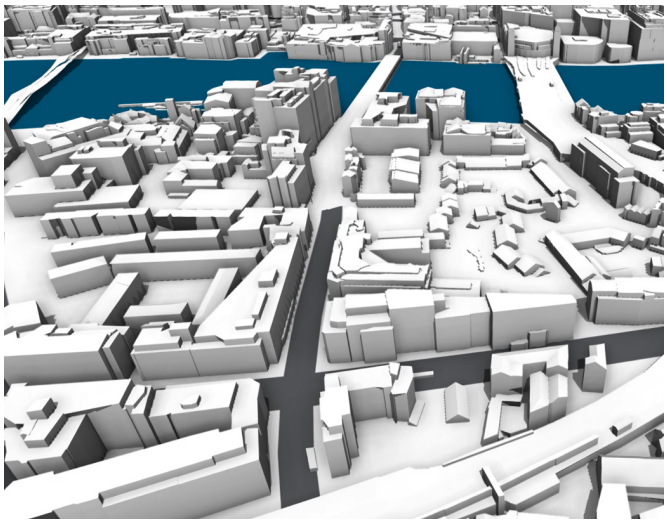
The mesh model is derived by combining concurrent aerial imagery (nadir and oblique) and LiDAR point clouds to create a high-resolution urban digital twin with photorealistic texture. This hybrid data method results in greater detail, accuracy and consistency in areas where traditional imagery-only approaches often fail, making our mesh models perfect for smart city integration and analysis, urban planning, infrastructure optimisation and city modelling.

Resolution: 5 cm (2 in)
Deliverable format: SLPK, OBJ, OGC 3D Tiles

Building model

Generated from the aerial mesh process, our city models represent buildings as standardised, untextured 3D objects. The model displays the building's footprint and height as well as the roof's surface, pitch and orientation, facilitating efficient visualisation and data analysis.

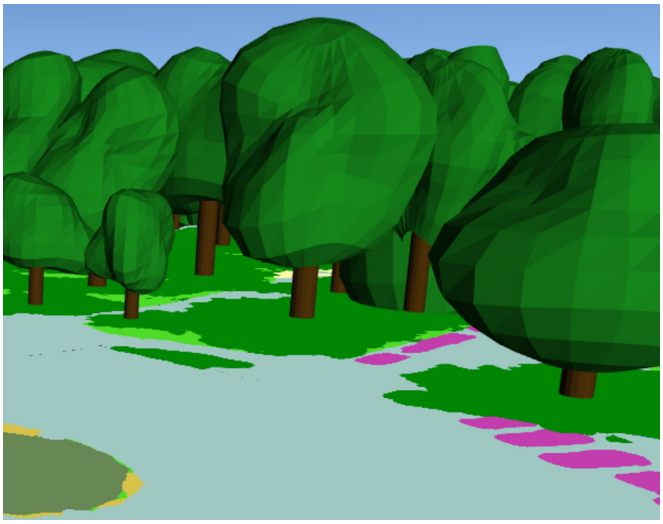
Resolution: Based upon nominal resolution of input data
Deliverable format: GPKG (vector), OBJ (volumetric)



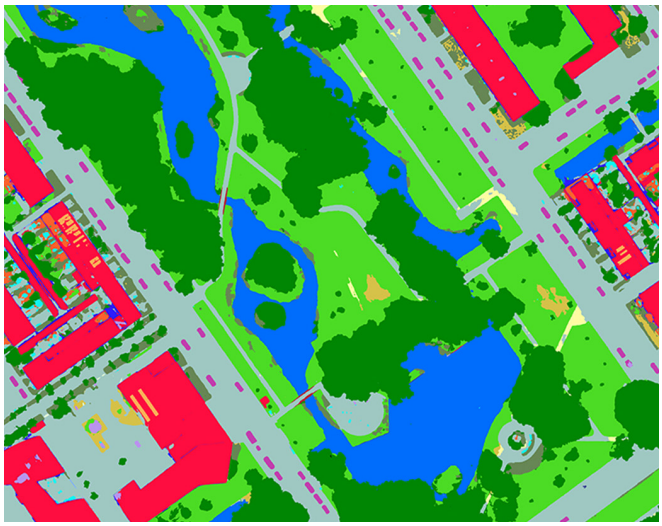
Tree model

Trees are vital for supporting a healthy and sustainable community. Leverage tree models to understand the spatial composition of your environment for green space planning, urban tree inventory and cover change, shadow analysis and solar potential assessment. The data set includes tree positions, height, crown diameter and crown volume.

Resolution: Based upon nominal resolution of input data
Deliverable format: GPKG (vector), OBJ (volumetric)



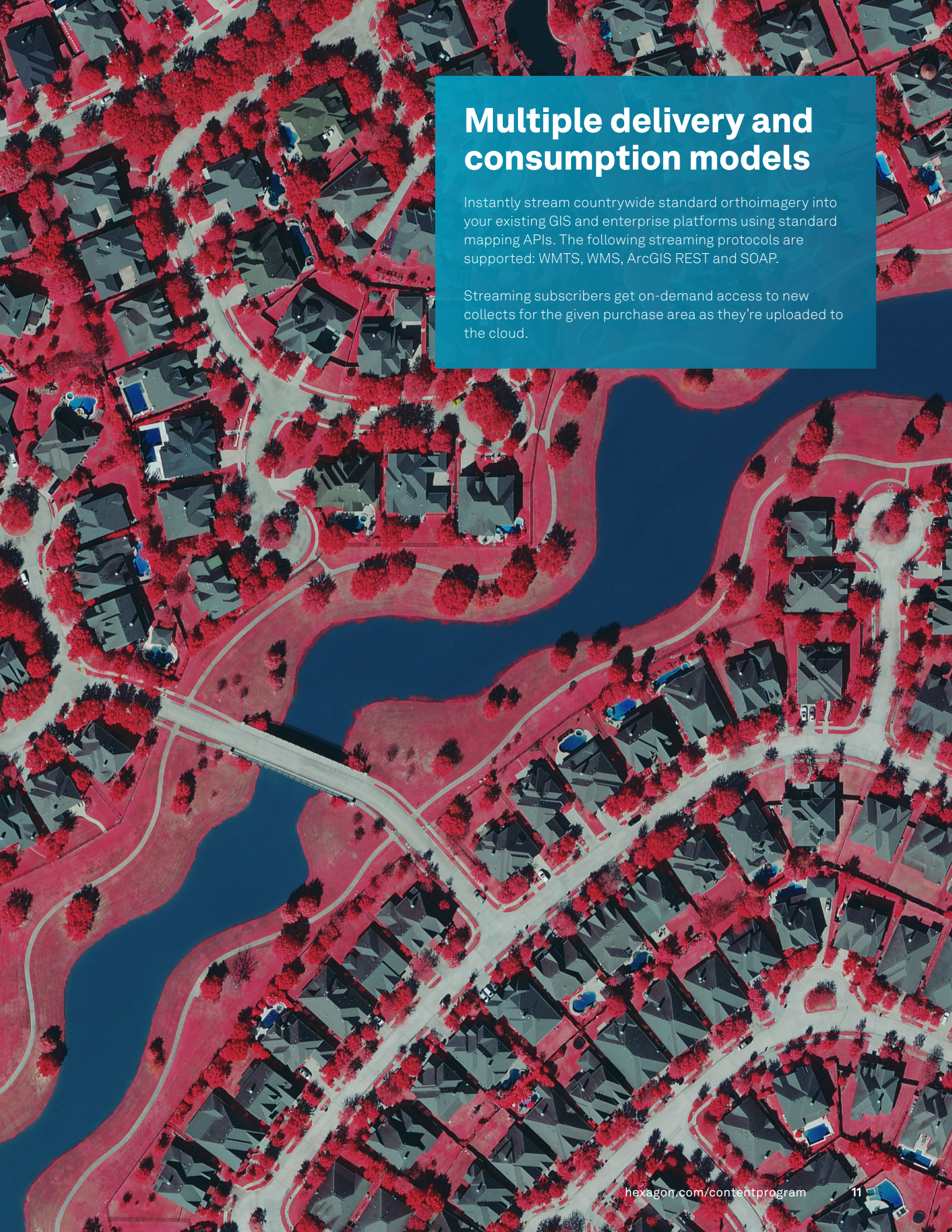
Analytics



Land cover map

The land cover maps display various types of land surface coverage in urban areas, allowing you to gather spatial information and monitor landscape changes over time. Over 20 thematic classes are offered, including roofs, vehicles, vegetation, grassland and impervious surfaces. The data set is excellent for urban planning, ecological modelling and analysis, heat mapping and radio-frequency engineering.

Resolution: 5 cm (2 in)
Deliverable format: GeoTIFF



Multiple delivery and consumption models

Instantly stream countrywide standard orthoimagery into your existing GIS and enterprise platforms using standard mapping APIs. The following streaming protocols are supported: WMTS, WMS, ArcGIS REST and SOAP.

Streaming subscribers get on-demand access to new collects for the given purchase area as they're uploaded to the cloud.

HEXAGON

Connect with our team

For more information about the HxGN Content Program, contact us at info.content@hexagon.com, or visit our website at hexagon.com/contentprogram.

About Hexagon

Hexagon is the global leader in digital reality solutions, combining sensor, software and autonomous technologies. We are putting data to work to boost efficiency, productivity, quality and safety across industrial, manufacturing, infrastructure, public sector, and mobility applications. Our technologies are shaping production and people related ecosystems to become increasingly connected and autonomous – ensuring a scalable, sustainable future.

Hexagon's Geosystems division provides a comprehensive portfolio of digital solutions that capture, measure, and visualise the physical world and enable data-driven transformation across industry ecosystems.

Hexagon (Nasdaq Stockholm: HEXA B) has approximately 24,000 employees in 50 countries and net sales of approximately 5.2bn EUR.

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