

Oblique Imagery

Bringing a Revolutionary New Per

A growing number of markets are embracing the wealth of functionality Pictometry oblique imagery can deliver. There is growing recognition of the potential for Pictometry technology to support property management, contingency planning, tourism, transportation and many other uses.



By Eddie Bulpitt



An intriguing modern office building in the centre London called the Gherkin.

With an emergent customer base spanning several business and commercial markets, Ordnance Survey, Great Britain's national mapping agency, has responded to this customer demand by adding the Pictometry application to its already extensive range of geographic information products. Ordnance Survey can now offer its business and government customers across Great Britain the chance to go 'beyond the image' with a revolutionary integrated system for viewing and measuring the built and natural landscape.

About Pictometry

Pictometry is the world's largest digital, oblique imagery company, which has patented a unique system for capturing and viewing images from different viewpoints. This is a high-resolution, high-quality resource of oblique aerial imagery that allows users to make accurate measurements of features from

the photography. The imagery allows assessment of the size, shape, design, construction and surrounding environment of a location from upwards of twelve different oblique and vertical vantage points.

For Great Britain, Ordnance Survey is working in partnership with BLOM Aerofilms Limited, which undertakes the oblique image capturing and processing. Currently, BLOM Aerofilms is on course to deliver complete coverage of Pictometry oblique view imagery for all towns and cities with populations greater than 50 000 by the end of 2007, with over 80% of data captured to date.

The resolution of each individual image is, on average, 15cm, allowing every feature on the ground to be viewed and interrogated. The photography is taken at various flying heights with different focal length cameras, to retain the average resolution, thus allowing the capture to progress rapidly and not be affected

in areas of heavy commercial air traffic such as London.

In addition, Pictometry technology combines the aerial images with free viewing software and a GIS plug-in application designed to enable accurate measurements. It offers an excellent way to embed contextual geographic information into operational systems.

Pictometry and Ordnance Survey

Although Pictometry is relatively new, oblique aerial imagery has been used for several decades, assisting in the interpretation of the built environment. Vertical aerial photography, again, has been used for a long time, but has most recently become mainstream by being viewed in GIS packages. The difference here is that Pictometry oblique imagery is georeferenced so the imagery can be combined with other data layers. The benefits are a quantum leap forward in aerial imaging.

This type of oblique imaging technology proves a perfect complement to Ordnance Survey's most detailed data, seamlessly combining to deliver a unique and accurate view of the built and natural environ-

spective to Great Britain



A Partinavia P-68C (yellow) and a Cessna C206 used for oblique image capturing. Copyright SFS.

ment. It is fully complementary to the entire OS MasterMap data portfolio of Topography, Imagery, Address and Transport Layers and is another example extolling the OS MasterMap ethos of interoperability.

The OS MasterMap Imagery Layer offers high-quality, orthorectified vertical aerial photography. However, with Pictometry the vertical view is provided together with images taken at an angle from the four cardinal points of the compass – north, east, south and west – to provide a complete view of all features. This allows the user a greater appreciation and interpretation of the features in the built environment.

For example:

- How many floors within the building?
- Where are the entrances and exits of the building?
- What is the height of a structure?
- Where are the points of access and egress to buildings?
- What features are in the local environment?

This ability means they can effectively go

beyond the image. Pictometry is one of the first products in the world to be based on the concept of geospatial fusion. This means that it combines aerial images with a unique viewing and manipulation application, ensuring accurate measurements of features in their geographic context. Users can actually click on an image and pull up the underlying Ordnance Survey geographic data.

Ordnance Survey is also the first organisation to be able to offer oblique imagery for the whole of London, offering a revolutionary new perspective of the capital. Over 3 000 km² of data covering all London boroughs is now available.

How Pictometry is Used

Most professional users are aware of or have made use of vertical photography. Georeferenced oblique imagery extends the benefits of traditional straight-down imagery providing a unique view of a locality, allowing users to see the sides of a building, structure or feature, exposing blind spots, exits and entrances previously impossible to locate on straight-down photography.

Pictometry users can also view GIS data in 3-D by overlaying it on their oblique imagery, extending the traditional and more familiar 2-D view afforded by most GIS applications.

To give an example, town planners would be

able to model a proposed new building and the visual impact from different viewpoints. The distance and height measurement tools could provide valuable information, potentially ruling out the need for preliminary site inspections, saving time and money.

Emergency Services

Pictometry oblique imagery has obvious and exciting applications for all the emergency services. For assessing risk, strategic planning, operational response, and post incident analysis, oblique imagery can be a powerful tool. Pictometry gives the emergency services the chance to view incident locations in their entirety from the desktop or whilst en route. It allows for the fast access to information like the number of floors in a building, the locations of windows, surrounding roads, schools, rivers, railways and so on.

For the police, as an example, having access to such detailed imagery can negate the need to utilise the Air Support Unit, meaning the use of resources can be more targeted and efficient.

Command-and-control staff can access the intelligent map base to store and quickly access key information about locations and resources to avoid duplication of effort. Visual clues on the landscape can enable the remote monitoring of foot chases, while sketchy



The imagery was captured using the Pictometry capture system. This single image was captured as part of several hundred thousand images that are now available for the whole of Great Britain. Shown is the Barbican, a multi-arts and conference venue in London. Copyright 2007, BLOM Aerofilms Norway

details about the location of an emergency can be substantiated using easily identified real-world objects in the data.

Oblique imagery can aid the identification of potential risks and constraints. The user can visualise where, for example, residential property is located above or adjacent to commercial or industrial premises. By having the answers to important adjacency questions such as ‘what is the adjoining property?’ fire services, for example, can decide the best way to tackle a blaze.

Remote Management

The interoperability of the data can drive land and air coordination in search and rescue efforts, while alternative routes to incidents can be assessed and remote guidance given on the location of obstacles such as trees or electrical wires, which might impair rescue equipment or helicopter access.

Furthermore, as Pictometry oblique view imagery is captured under clear daylight conditions, it benefits operations conducted during darkness or in bad visibility. This all-weather capability lets the user know what to expect and where to look for equipment that may otherwise be difficult to find.

Annotated Value

The imagery data can be annotated, for example, with address coordinates, house numbers and road names. Additionally, images can be supplemented with related information, such as overlaying plans to highlight exits and access points, and adding structural notes such as the location of hazardous materials or sprinkler systems.

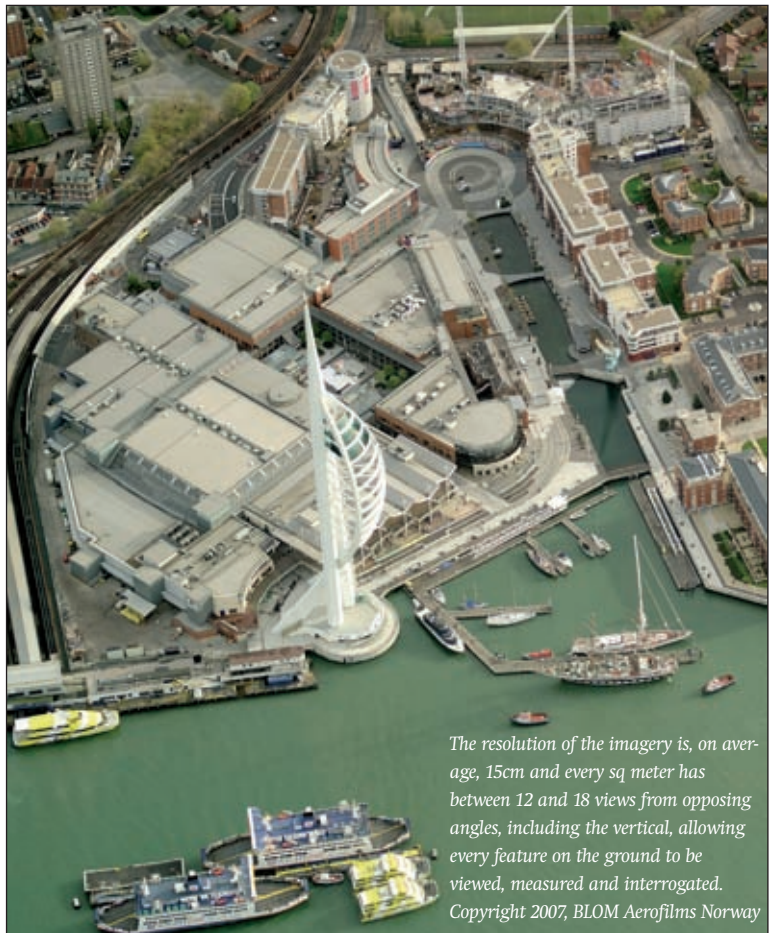
After an emergency, the technology can assume an analytical function, enabling the attachment of notes that manually detail the location of concealed entrances and create incident logs. Pictometry’s oblique imagery can also assist in the evaluation of building damage and the recovery effort on adjoining property.

Integrated Measurement Tools

Unique to geospatial imagery, Pictometry’s oblique aerial imaging software has a ‘height’ tool that gives users the ability to measure the stature of features. A ‘location’ tool gives the Ordnance Survey grid coordinates of any feature, providing an immediate and common reference point and potentially shaving seconds from a response. ‘Radius’ tools enable proximity searches based on a user-defined distance. For example, fire crews may wish to assess nearby street furniture, adjacent buildings or other features that could prove to be an obstacle during a response. Crews can arrive equipped to look beyond the immediate incident – factoring the proximity of an incident to schools and shopping centres, for example.

Conclusion

Pictometry’s high-resolution, oblique aerial imaging technology is a prime addition to Ordnance Survey’s extensive portfolio of geographic information. Georeferenced to the pixel level, it proves an ideal complement to the OS MasterMap family. Oblique view imagery has the functionality to give unprecedented visibility of a scene for contingency planning or incident management. The emergency services can especially benefit from this multi-angled imagery, whether to help make a judgement on deploying resources or by benefiting from a contextual view of an incident. The emergency services rely on accurate, timely information about the locations of incidents and their resources. Having access to a library of images before, during and after an emergency can power the management of risk and resources to fine tune efficiencies when every second counts.



The resolution of the imagery is, on average, 15cm and every sq meter has between 12 and 18 views from opposing angles, including the vertical, allowing every feature on the ground to be viewed, measured and interrogated. Copyright 2007, BLOM Aerofilms Norway



Wembley stadium.

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