Aerial Mapping

The State-of-the-Art Solution
Low-Cost Aerial Mapping

The Most Cost-effective Aerial Mapping for High Accuracy






- Site Surveys
- 3D City Model
- Smart City
- Utilities Asset Management
- Precision Agriculture
- Environment

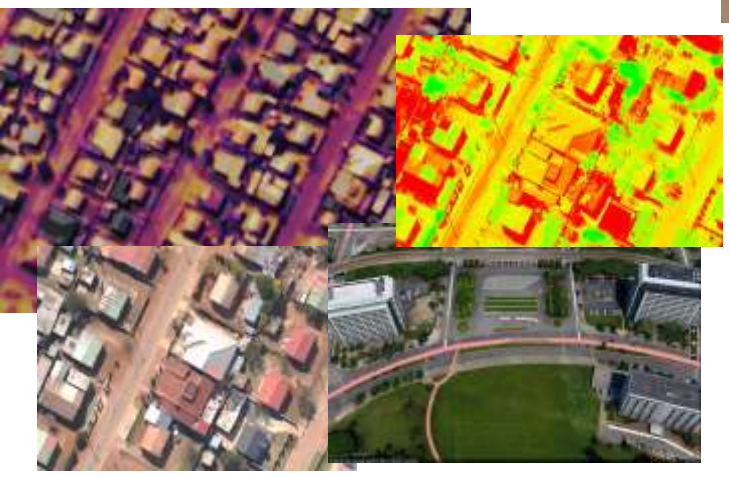
- Stock Pile
- Mining
- Oil and Gas
- Telecommunications
- Construction
- Public Works

CompassData

AERIAL MAPPING IMAGING SOLUTION

Compass Aerial Mapping is deployed through a small aerial survey camera system which is designed to be highly cost-effective for survey areas larger than about 10 acres (the sweet spot for drones) and smaller than 2000 square kilometers (the sweet spot for larger cameras fitted to the inside of a dedicated survey aircraft).

The Mapping is implemented through a unique and impressive mission plan called Sliding Circular Trajectory which makes the solution to reach a significant lead over all other survey methods in the generation of high-resolution urban 3D models.



QUALITY IMAGERY, ACCURATE DATA

The CompassData Aerial Mapping Solution allows the capture of high-quality imagery through a small, single-engine aircraft and based on the flight patterns the results ensure a viable solution to a broad spectrum of applications. The utilization of ground control points allows for the creation of highly accurate data, comparable to that from expensive frame systems.

TECHNOLOGIES USED

XCAM C RGB

- ✓ Dual Camera Sensor Array
- ✓ 11,900 pixels x 4,000 pixels (XT AT)
- ✓ 3.7µm Pixel Size
- ✓ 59.1 degrees FOV
- ✓ 40mm Calibrated Lenses

XCAM C RGB & NIR

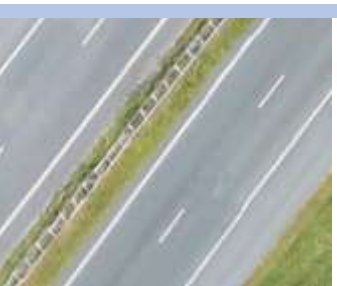
- ✓ Dual Camera Sensor Array
- ✓ RGB 5,184 pixels x 3,456 pixels (XT AT)
- ✓ NIR 5,184 pixels x 3,456 pixels (XT AT)
- ✓ 29.5 degrees FOV
- ✓ 4.3µm Pixel Size
- ✓ 40mm Calibrated Lenses

XCAM C RGB & NIR & TERMAL

- ✓ Triple Camera Sensor Array
- ✓ RGB 5,184 pixels x 3,456 pixels (XT AT)
- ✓ NIR 5,184 pixels x 3,456 pixels (XT AT)
- ✓ FLIR 640 pixels x 512 pixels (XT AT)
- ✓ 29.5 degrees FOV

XCAM ULTRA

- ✓ Dual Camera Sensor Array
- ✓ 17,100 pixels x 5,792 pixels (XT AT)
- ✓ 4.14µm pixel size
- ✓ 50mm or 85mm calibrated lens option
- ✓ 78.0 degrees FOV (50mm lens)
- ✓ 46.0 degrees FOV (85mm lens)



RGB

RGB & NIR

RGB & NIR & THERMAL

ULTRA

Benefits of the Circle Path

Most traditional aerial survey methods use a Track Pattern to systematically capture imagery. The camera points straight down and the aircraft flies in a straight line in one direction, turns around and flies back in the opposite direction, akin to mowing the lawn. When applicable, CompassData can also capture utilizing this traditional method.

Instead of flying back and forth, the survey aircraft typically flies an advancing circular path over the area of interest. Each circle overlaps the previous circle by about 65%, so the circles are actually more oval-shaped.

The image shows a plan for a single set of circles over a town. The white line is the path of the aircraft and the red box is the project area. This survey would take approximately 8 minutes.

What Data Does it Capture?

The aim for a circular survey is to capture high and low obliques of the area of interest using modern processing methods you can use this oblique-only dataset to produce 3D mesh models, point clouds and even true-orthophotos with almost no manual input.

What does the coverage look like?

The diagram shows the photo coverage achieved by a typical Circular Trajectory as seen from a point on the ground at the center of the diagram. This survey would have included three lines of circles tracking North to South.

The green dots show the position of the camera relative to the target and the concentric circles indicate the 'obliqueness' of the photo (the nearest ring is 15 degrees from vertical, the next ring is 30 degrees from vertical and the third ring is 60 degrees from vertical).

This pattern of photo positions is ideal for 3D city model construction because it means that the church has been viewed a very large number of times (over 100) from every possible direction and inclination.

This pattern is typical for the coverage of every point in the survey Area of Interest and makes the difference between a good 3D model and a stunning 3D model!

What is the Advantage of a Circular Trajectory?

A high-quality 3D City survey requires every point in the Area-of-Interest to be 'viewed' by the survey camera from a wide range of directions and a from a wide range of 'inclinations' (from almost directly overhead to almost horizontal to the ground). This wide range of views ensures that every point of the building is included in the resulting 3D Model and there are no 'occlusions' (for instance, parts of the building that are hidden for instance behind a tree or the buttress of a church wall). Conventional 3D modeling cameras are usually restricted to 5 sensors (4 oblique and 1 vertical) and therefore only 4 oblique views around a position. The survey is then flown using a North/South 'lawn-mowing' pattern which results in the majority of the views coming from North, South, East and West.

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