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INTEGRATED PROPERTY SOLUTIONS

A PICTURE TELLS A THOUSAND WORDS....

Introduction

Aerial photography is used widely and often in almost every facet of our lives. A picture tells a thousand words. If we can show the picture then everyone can see the facts clearly. The information is accessible but it must be accurate. Up to date imagery is useful. Old or out of date imagery is misleading. Be careful to only use current or recent imagery sets in your work with property data.
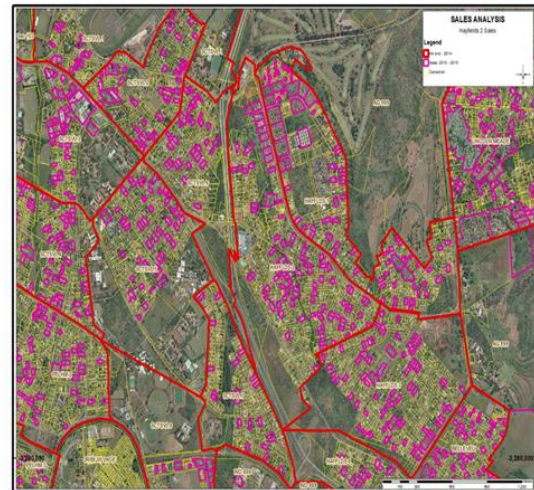

What is aerial photography?

By definition aerial photography is taking photographs of the ground from an elevated/direct-down position. Platforms for aerial photography include fixed-wing aircraft, helicopters, balloons, blimps and dirigibles (a dirigible is like a zeppelin), rockets, pigeons, kites, parachutes, stand-alone telescoping vehicle-mounted poles and satellites.

Satellites and aircrafts can't capture the entire world in one picture. They take multiple pictures which are then stitched together into a patchwork image called a mosaic.

The mosaic is then geometrically corrected ("orthorectified") so that the scale is uniform. The result is an orthophoto, orthophotograph or orthoimage. An orthophotograph can be used to measure true distances because it is an accurate representation of the earth's surface.

Orthophotographs are used with a number of spatial datasets to create a Geographic Information System (GIS). Software can display the orthophoto and allow qualified technicians to digitize or place linework, text annotations or geographic symbols. The result is what you and I use every day to locate addresses, to discover new places, find alternate routes around heavy traffic. We also use it to digitise property extents, measure how big a building is, identify zonings and see where our infrastructure is positioned.

GIS data has a high value to many different types of organizations. It is a specialist technical field. There are issues related to data latency, accuracy, and format interoperability and size. GIS provides a standards-based framework to manage data and mitigate these issues. With GIS we are able to integrate disparate data sources and manage large raster catalogues to provide enterprise accessibility. In plain English, this means you can see what you need to see on a map.

What is change detection and how is this supported by aerial photography?

Change detection in GIS is a method of understanding how a given area has changed between two or more time periods. Change detection is helpful for understanding the change in forest coverage, ice sheets, and land use. For us it is about being able to see how properties have changed, where townships have been established, what buildings have be altered, which owner has a new swimming pool, which vacant land now has improvements. The GIS allows us to do this without physically getting in our cars to go and view the property.

Change detection is an important tool and can be used to measure four different types of change:

1. Changes of a specific feature over time. For example the addition to a property, a new garage or extension to a factory.

2. Change of a feature's location over time. Change detection can be used to track the expansion of a township, the movement of neighbourhoods. GIS was used extensively to show the impact on residential valuation trends after the Gautrain lines were built.

3. Change detection can be used to understand shrinkage in specific area over time, eg. how a landfill is reducing over time.

4. Change in a feature's size over time. Change detection can also measure the extent of a feature. Does the urban area grow or shrink between two time points?

The easiest and most practical way is to digitise the features when the photography is obtained, and then to redo the process after an interval has lapsed, preferably on a yearly basis, and then to compare the digitised result to determine which features have changed. Digitised building extents are a useful example. This approach will reduce the cost of data collection and provide accurate property data for the municipality.

Buildings digitized on 2010 Photography

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Buildings digitized on 2013 Photography

Changes in buildings are easily identified. The use of this technology makes property data accurate and decision making quick and easy.

Closing comments

With the increasing application of GIS in our business we are able to design, organise and provide you with a new look understanding of your property data. This enables you to see your data in a clear and useful manner. MetGovis can design maps to meet our client's needs, it makes reporting much more effective. Integrating aerial photography with data can show trends, patterns and inform decision making towards more sustainable planning and development.

By Wynand van der Walt, GIS Specialist, MetGovis.

For any further queries please do not hesitate to contact us on Tel 033 3432868 or info@metgovis.co.za

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