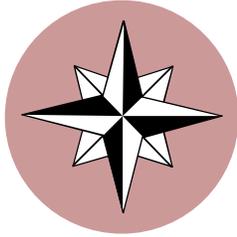


# CATALIS News

## Welcome



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Special points of interest:

- ArcExplorer, ArcView, ArcInfo; What's up with all these "Arcs"?
- Building the foundation of the GIS database: The Secrets of Orthophotography revealed.
- What is a Ground Control Network and why do we need one?

**W**elcome to the second edition of the CATALIS Newsletter!

With this edition we will be continuing our discussion on Orthophotography, and how important it is in the building of the foundation for the GIS database; we will also discuss how a Ground Control Network of permanent and semi-permanent monuments will allow for the creation of the very accurate photography.

Before we get to far ahead of the game, I want to briefly discuss some of the programs that we will be using to work with the GIS data (including photography!).

First of all, a little about ESRI. ESRI (Environmental Systems Research Institute) is the company that created the ESRI brand of products. To name just a few, they are: ArcExplorer, ArcView GIS, and ArcInfo. There are more, but lets keep this discussion to 3 programs for now. By way of explanation, ArcExplorer is a freebie. It was designed to let anyone view, query, and print GIS data. ArcView GIS is the next program up on the ESRI evolutionary scale; it is about \$1,000.00 per license, and is one of the first true desktop GIS programs. It is relatively easy to use, is very expand-

able due to ESRI's unique ArcView GIS Extensions and programming language, and has terrific cartographic tools for the printing of maps and map data. ArcInfo is next, and is at the top of the food chain with ESRI's products. Previous to the latest version (v 8.0) it was almost completely command line driven, making it somewhat difficult to work with. With the advent of version 8, that has changed; it has now become 100% Windows compliant and compatible. For a demonstration of any of these products, please call Joe Merritt at 382-2078.



### Orthophotography Explained

**A**s explained in our previous article, orthophotography is derived, or *made from*, aerial photography. Our consultants will fly precise flight lines over the county, taking photographs of the terrain beneath; it's the *work* done on the aerial photos that turns them into orthophotos.

The actual definition of an orthophoto is "An image acquired by satellite, digital or conventional means and adjusted (differentially rectified) for displacements caused by the atmosphere,

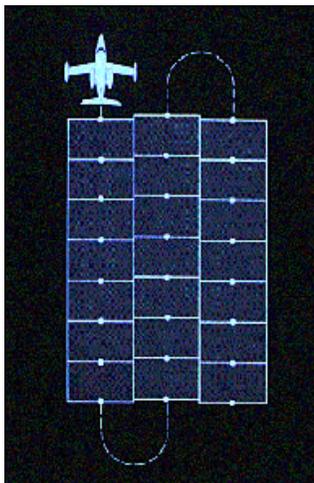
lens distortions, or terrain height changes." It is information derived from the Ground Control Network that allows for a lot of the clean-up of the photos to take place.

Let's for a moment take a look at all of the components of orthophotography. They are: image acquisition, a Ground Control Network (*see page 2!*), the relationship between multiple images (aerial triangulation) and image rectification.

Image acquisition simply

refers to how we will be obtaining the initial set of photographs.

There are now two options available: through traditional aerial photography, or through satellite imagery. Our next article will include the pros and cons of each, along with an explanation of the remaining components.



Clinton County GIS Department

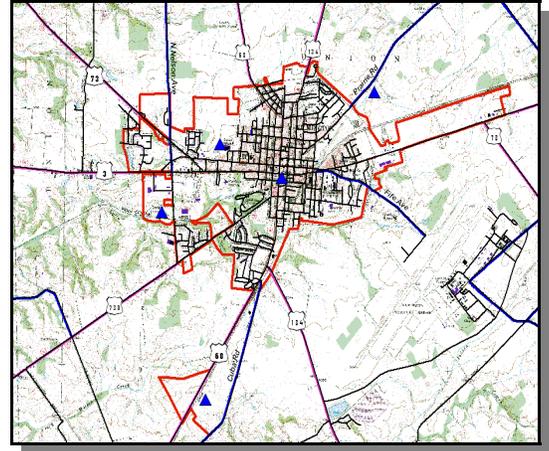
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**The future is  
now!**

**Feel free to  
contact us  
anytime!**

## News About Town

In conjunction with the County GIS effort having permanent monuments placed around the county, the City of Wilmington has agreed to have 5 monument pair placed within the city limits. This will be of a tremendous help in the creation of the orthophotography as well as serve as points which surveyors can use when working on property anywhere within city limits. This is just the beginning of an "Enterprise-Wide" GIS effort. Stay tuned for more info on how the City and County will continue to work together!



The photo to the left is an example of a 200-scale digital orthophoto of the county courthouse. We currently have a set of digital photos at this scale for a small area of and around the City of Wilmington.

## GCN—Ground Control Network

Building a solid foundation is crucial to the development of a GIS system. Part of that foundation is a GCN; a Ground Control Network. All of the work done during this stage of our project is in support of the creation of digital orthophotography.

Our consultants, Woolpert LLP, has established, targeted, and GPS observed 35 first-order horizontal (blue booked) and third order vertical pairs for a total of 70 points. These permanent monuments are three foot of concrete with bronze caps flush (or slightly indented) with the grounds surface. The monument pairs are in the Ohio State Plane Coordinate System, South Zone; the Horizontal Datum is the North American Datum 83 (NAD83) adjusted to the Ohio HARN system. Vertical Datum is

the North American Vertical Datum 88 (NAVD88).

Some of the principles and concepts behind the different datum's and years they were established is difficult to understand and even more so to explain; we can recommend a book or two if anyone is interested. We include some of this terminology within this newsletter mostly for the benefit of any surveyors or engineers that may be interested in using this data.

Woolpert will also establish, target, and GPS observe 37 second-order horizontal and third-order vertical ground control points to support airborne GPS and aerial triangulation. These ground control points were X's, made of cloth, and were placed around to county in locations that will directly support the compilation of

the photography.

The aerial photographs (the main ingredient to Digital Orthophotography) will be done in black and white film, completely covering the 408 square miles of Clinton County including a 500-foot buffer outside of the county. At the writing of this article, the surveying of the monuments and points has been finished and the photography has been flown and analyzed.

The final product and deliverable will be Digital Orthophotography of the entire county. Since this is a lengthy process, the final delivery for the last of the photos cannot be expected till late fall of this year.

Next time we will discuss a few applications that we can use to take advantage of these new photographs.