

GEO-TAGGING

Geo-tagging Photos Allows Certainty and Can Streamline a Report

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Location, Location, Location. We all know how critical location is to the value of a property. But how important or useful could it be to know the precise location of that photo you just took? My appraisal practice includes a mix of rural and urban properties. In the same week I can look at a downtown commercial building and a remote, 1000 hectare eco-gift. It's the remote or the large property appraisal assignment that required me to rethink some of my data collection methods. Problems arose when, after sometimes taking dozens of photos over hours or days, it became difficult to keep track of which photos were what. A second problem became apparent too. How do you describe the locations of 20 photos on a large property? Here's an actual example from a report from 2007, "View East from Midway North/South Along Western Boundary". Some descriptions have been longer and clumsier. By geo-tagging your photos, you can resolve both of these issues, and more.

So what is geo-tagging?

Wikipedia defines geo-tagging as "the process of adding geographical identification metadata to various media such as a Geotagged photograph or video, websites, SMS messages, or RSS feeds and is a form of geospatial metadata." Roughly translated, a geo-tagged item is given a latitude/longitude and can be displayed on a map. With a little practice and the right setup, you can geo-tag all your photos from an inspection in minutes.

There are three steps to geo-tagging a photo. First, make sure the time on your camera is accurate. Next, spatially record your inspection track on a suitable GPS device. Finally, back at the office, you must use specialty software to match the photo to the location information in your GPS track. The key to all of this is having your GPS tracking device and your camera set to the same time. It is the time stamp of the photo matched to the time stamp of the track point that allows the software to locate your photo position.

Synchronize Your Devices - Make sure your computer is set to the actual current time (Internet time) by clicking on the time display on your desktop and following the instructions for updating it – this is a Windows feature. Now you can set your camera to your computer time. Do this manually on the camera or, if you're lucky, your camera can be plugged in and synchronized with the computer through a settings menu in your camera's software. Canon DSLR's do this nicely. Now the camera and the time signal received by the GPS device are exactly the same – Internet time and satellite time (and cell phone time) are the same.

Track and Photograph – Make sure your handheld GPS device is on and tracking. My older Garmin 60CSx can track 10,000 individual points – that's enough for a few long days in the field between downloads. (This unit is discontinued, if you are thinking of getting a GPS unit, I recommend the new Garmin 62 Series. Read up on the customizable map feature, it will allow you to upload subdivision plans, aerial photos, easement or right of way plans and any other custom map.) There are also dedicated, single purpose GPS trackers made just for photo geo-tagging and several models can be attached directly to the hot shoe of a Digital SLR.



Garmin 62s

DSLR hot shoe



Another option is to turn on your smartphone tracking application. Did you know that most newer GPS enabled smartphones actually use GPS satellite signals? I thought the term GPS was being misused in this context and that smartphones determined position by cell tower triangulation. In fact they do, but primarily to help the GPS receiver self locate more rapidly. Because they are true GPS receivers, you can use your GPS enabled smartphone in areas not covered by cell services - but you'll need a special application.

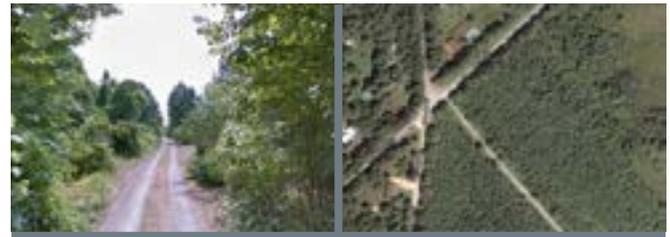
Most smartphone GPS applications want to display your location graphically, in real time. This requires a map for display on your device that is almost always downloaded and refreshed through your mobile data connection. No cell service - seemingly no location display or tracking. However, a couple of iPhone applications I've found record your track without needing simultaneous mapping data so you can track offline. These applications are simple, non graphic geo-recorders (check out TrackLogger or GPS Logbook). I haven't tried either but have corresponded with the developers. One told me that he was able to record 14,000 track points in a single day, or one every few metres. This "resolution" allows for precise marking of each photo (within the confines of inherent GPS location error). The other cautioned that offline GPS fixing can take up to 30 minutes if the last known cell-GPS location is significantly different from your current location. I'm not sure if a smartphone can be a reliable and rugged solution, but for a dollar or two, you can experiment with these applications before you spend \$100 and up on a GPS device.

If you are sure that you will always have cell coverage at the site you are appraising, there are many more options for geo-tagging applications to experiment with.

Geo-Tag – Once you've finished your field work, copy your photos to your computer and download your GPS track data. You now have the raw materials ready for processing, all you need is some software.

There are many geo-tagging software solutions out there. By far the best I've used is called GeoSetter. It is powerful and has many features, but it can also be used very simply.

Surprisingly, it's free (though a donation will likely help the developer to keep improving it). With a few simple clicks, you load your photos and your GPS track, then hit the synchronize button. Magically, it displays all your photo locations on its own map. With another click it exports them to Google Earth. In Google Earth, you can turn off any photo location icons you aren't going to need, zoom in to the extent of your images and save the aerial photo for your report. That Google Earth image becomes a photo location key to assist the reader in referencing your photos. Those awkward photo descriptions can be replaced with something like this, "View North (02)", and "View Southwest (19)".



View North (02)

Partial Photo Key Map

There are a few other advantages to geo-tagging for appraisals. If you already use a GPS and find it cumbersome to set and label important waypoints in the field, that survey pin, power line or viewpoint, just take a picture of the feature you're standing beside and your picture becomes a waypoint worth a thousand words. If you want to send an interactive map to a client, Geosetter can be configured to display expanding thumbnails of each photo, at each location – your client can take a virtual tour. You also have the option of displaying the GPS track and referring to this in your scope. It creates a very clear picture of where you were and where you weren't. And, if you use some kind of voice recorder in the field, you can very likely geo-tag your audio notes. The Griffon iTalk recorder that I use time stamps to the second. It shouldn't be too hard to geo-tag those recordings.

In a world where location is so important, a few simple tools and methods can greatly enhance your capabilities. If you are looking to add precision to your inspections, to digitize more of your data collection and to use advanced tools to describe your subject, its neighbourhood and comparables, geo-tagging is the solution.