Using the "Swinglet CAM System" in Surveying

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ABSTRACT

Since technology advances on a fast pace, surveying tools and techniques are constantly being developed based on this technological advancement. Being up-to-date with technology helps surveyors achieve more accuracy with less time. In this presentation, a review of the "Swinglet CAM System" will be explained, the advantages of using this technology will be demonstrated, and finally a real case study of a surveying project will be presented.

During the last few decades, surveying engineering has made five important strides: (a) the electronic distance meter, (b) total station, (c) GPS, (d) robotic total station and finally, (e) laser scanner technology. Unmanned aircraft vehicles (UAVs) such as the Swinglet CAM system will be the next important stride in surveying technology, due to the invention of lightweight lithium batteries, low-cost drone technology, brushless motors with large variable speed range, GPS and altimeters, lightweight airframes, airplane radio controller, and lightweight digital cameras.

The Swinglet CAM system collects aerial imagery up to 6 km^2 in a single flight. It has a flight time of up to 30 minutes and with its 16MP camera it can shoot aerial imagery at down to 3cm/pixel resolution. The images can then be used to create maps and elevation models with a precision of 5cm. The Swinglet CAM is small, highly productive, easy to use, and hard to break. The light weight of the Swinglet CAM makes it very easy to transport to remote areas, and its interface is very "user friendly". So briefly, this cartographic tool opens new doors for geospatial technology and Geomatics.

The acquired drone photographs will be processed using a photogrammetry software which can produce 3D accuracy compared to conventional aerial photography. Standard AutoCAD and GIS software can be used to stitch the drone aerial photos. Accurate 2D results can also be obtained using an iPhone and GIS software. We will also discuss problems associated with safety, privacy and security.

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