

EFS Geotechnologies, Inc. and the Trimble Digital Sensor System (DSS): A Case Study

In their busiest year ever, aerial mapping company relies on a turnkey imaging solution to deliver high quality mapping products

The challenges of operating a successful aerial survey firm are many – inclement weather, scheduling challenges, tight deadlines, and the occasional buzzard.

Buzzards?

Yes, buzzards. As EFS GeoTechnologies' chief pilot and sensor operator Fred Collier discovered after his Cessna 182 had an encounter with a large turkey vulture, the ensuing aircraft repair costs and resulting downtime highlighted just how important it is to have a polished workflow and highly productive hardware for aerial mapping – uptime is precious.

Originally established in 1983 as Kingwood Forestry Services – dedicated to providing high quality forestry services to private, institutional, and industrial landowners – Eagle Forestry Services, Inc. / EFS GeoTechnologies (EFS) is now a full service spatial data collection and management company with state of the art equipment, software, and experience. Their team of highly-skilled professionals is headquartered in Monticello, Arkansas. GIS solutions provided by EFS include feature extraction, land cover/land use studies, delineation of high consequence areas, viewshed studies, custom maps for design and planning, and Emergency Response where high-quality, high-resolution orthorectified imagery of disaster areas is needed quickly.

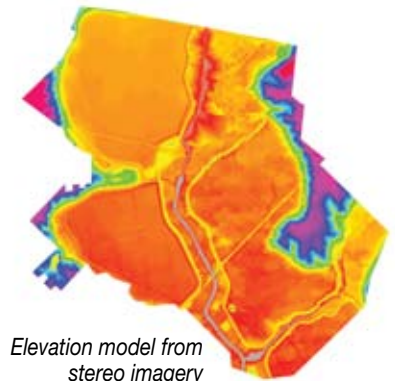
Along with their expertise in spatial data collection and processing, EFS relies upon the Trimble Digital Sensor System (DSS) – a USGS-certified, turnkey imaging system comprised of a medium format camera, flight management and Direct Georeferencing system, aircraft mount and software workflow to produce orthorectified imagery and DTMs. Built by Applanix, a Trimble company, the DSS is designed for companies like EFS GeoTechnologies who demand highly efficient flight planning and data collection to meet client needs quickly and affordably.

Their challenge: EFS GeoTechnologies has seen explosive growth in their aerial mapping business. They credit their success to quality goods and services delivered in a timely manner and based on the Trimble DSS platform. In fact, by June of 2010 they will have collected and delivered the equivalent amount of work completed by their firm in all of 2009. To meet this demand, EFS operates as many as 3 different aircraft – each with its own Digital Sensor System – at one time.

Their business has seen growth not only in the number and type of clients, but in the size of projects as well – they regularly deliver over 1.2 million acres of color infrared (CIR) imagery each winter season, for a start, and are now completing a major Mississippi River project of 13,000 square miles. County GIS mapping work – which often involves annual revisits and resolutions of 1 foot GSD – is being conducted at a record pace for both new and existing clients. Indeed, many new counties are seeing the value of their neighbors' products from EFS and are ordering their own surveys. There has also been an uptick in business from municipalities seeking ½ foot resolution stereo pairs (for mapping elevations). Forestry mapping work, while slow in 2009, has seen a significant pickup as well.



▲ Wing damage from buzzard strike



Elevation model from stereo imagery

“We’re booked solid right through the winter,” says EFS president Glen Dabney, “and couldn’t be happier about it. Our clients keep coming back for the quality of our service, but they do love the image quality and affordable goods and services.”

To complete the abundance and variety of work they have secured, EFS GeoTechnologies requires their aerial mapping system to be reliable, highly accurate, easy to use, and highly productive. Buzzards notwithstanding, down time is not an option.

Their solution: EFS sought a solution which could deliver a number of key benefits: high quality horizontally accurate images, a quick turnaround of orthomosaic images, the ability to develop stereo images (for determining elevation), and competitive pricing. The solution came with the acquisition of the Trimble DSS system – one for each of their aircraft – which had an almost immediate impact on their business, due to its efficient all-digital approach to data acquisition and handling.

“To stay competitive, we really needed to invest in a mapping system that was just the right size for us,” said Dabney. “The DSS allows us to operate small, efficient aircraft and yet capture extremely large volumes of RGB and CIR data in a short time.”

The Trimble DSS system is an economical, compact, all-in-one airborne digital imaging solution that delivers complete, accurate ortho products (accuracies required by EFS customers are consistently at or below the official National Map Accuracy Standards). Using Direct Georeferencing, it increases the productivity of aerial surveys by eliminating the need for time-consuming and expensive ground surveys. DSS comes with efficient flight management systems that allow operator-assisted or pilot-only operation. EFS also makes use of Applanix’ IN-Fusion™ technology for increased productivity, allowing pilots to fly turns without limiting bank angles, reducing “in-air” time and its associated costs. The same can be said for the system’s SmartBase™ software, which allows high accuracy mapping over longer base lines – the distance to nearest base station can exceed 30 km, saving considerable cost and time by eliminating the need for dedicated base stations.

With the ability to interchange the DSS supplied RGB/CIR lenses of both 40mm and 60mm, EFS can fly projects at different map scales, flying heights, and wavelength ranges in the same day, giving tremendous flexibility. And because the DSS also includes the Trimble Inpho suite for ortho-mosaicking, color balancing and DTM extraction, EFS’ in-house experts in orthomosaic and DTM processing have fast and efficient software that was easily incorporated into their product delivery workflow.

While Kingwood Forestry Services’ first purchase of the DSS came in 2005, EFS has upgraded hardware as new camera models and improvements became available. “The straightforward upgrade path keeps us competitive as the technology evolves,” says Dabney.

The result: With their aerial mapping business at an all time high, EFS needs to keep their aircraft in the air and as productive as possible. They also needed high quality products and reliable service – delivered quickly and cost-effectively.



▲ City of St. Louis



Trimble DSS 439

Of course there are hiccups along the way, and EFS has called upon Applanix technical support more than once. Says Dabney, “The most significant attribute of DSS and Applanix has been the customer support. There is always an experienced Applanix person we can contact for technical assistance, regardless of whether it is hardware or software related. If it requires an on-site visit, a spare part, or just an over-the-phone answer to a processing problem, the response is tremendous. We consider their technical support staff to be a part of *our* team.”

Trimble DSS is a key part of EFS GeoTechnologies’ operations, keeping them on the path to their best year yet.

Buzzard strikes aside, of course.

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To learn more about EFS Geotechnologies, visit www.efsgeotech.com

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The Trimble DSS is built upon Applanix’ innovative GNSS-aided inertial technology and systems integration expertise, and is a key part of Trimble’s aerial mapping product line.

The full range of Trimble’s mobile mapping systems, airborne systems, and photogrammetry & digital surface modeling solutions can be found in our GeoSpatial product

line. Our solutions streamline the capture and maintenance of high-accuracy as-built models for aerial and land mobile mapping, transportation, and utilities and energy transmission & distribution industries.

www.trimble.com/geospatial/aerial-mapping



Produce decision-ready images in hours, not days.

Trimble DSS™ (Digital Sensor System) RapidOrtho™ is a complete airborne digital imaging system field-proven in the front-lines of emergency response and the modern battlefield. It is **the** digital imaging answer for aerial survey and remote sensing applications requiring a rapid, mapping-grade, cost-effective solution.

Rugged and lightweight for use in the most adverse conditions, DSS RapidOrtho delivers:

- Ultra-fast images – map-ready ortho-products within hours of landing, individual orthos within seconds
- Mapping-grade results – meet rigorous USGS certification and NASA standards
- High resolution images from safe flying heights
- Rapid deployment – installation within one hour

DSS RapidOrtho in action:

- NOAA National Geodetic Survey uses the DSS for hurricane response, change detection, and relief coordination
- Military operations use the DSS in Iraq and Afghanistan
- DSS RapidOrtho gives commercial mapping companies a competitive edge in productivity

The Trimble DSS is built upon Applanix' GNSS-aided inertial technology, systems integration and innovative engineering expertise, and is a key part of Trimble's aerial mapping product line.

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