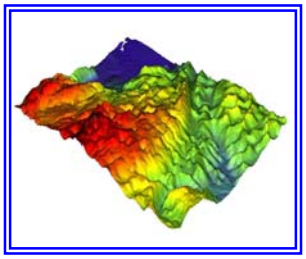
Lasermap*USA*, LLC is an American company headquartered in Birmingham, Alabama. The company was formed in 2005 to bring established Lasermap services to the United States. Lasermap*USA* joins Lasermap Asia as a part of the worldwide Lasermap Group managed by Lasermap, Inc. of Canada. The original Lasermap commenced business in 1997 when it acquired one of Optech's first LiDAR systems. At that time, Lasermap was one of only 11 commercial LiDAR service providers worldwide. In 2003 they upgraded to the Optech 2050 system and in 2007 upgraded again to Optech's latest Gemini 167 system. Over the years, Lasermap has completed thousands of square miles of aerial and LiDAR mapping projects around the world for clients as diverse as utilities, government agencies (both local and federal), land developers, oil and gas exploration companies, environmental concerns, engineering firms, and aerial photography providers. Along with image data collection and processing, Lasermap is a leader in remote sensing and mapping services, planimetric compilation, environmental classification, change detection, and GIS applications. Lasermap*USA* now brings those years of professional experience and capabilities to the US market.

LiDAR (an acronym for **Li**ght **D**etection **A**nd **R**anging) is an active sensor system using a laser to measure distances to features and the ground. LiDAR is a fast and reliable airborne method of obtaining 3-dimensional data for the creation of a Digital Terrain Model. Using positioning from the on board GPS (Global Positioning System) and the attitude (tilts and tips) recorded by the Inertial Measurement Unit (IMU), a precise coordinate position and elevation can be computed for each return.

Optech's Gemini 167 system, used by Lasermap, is the most reliable and accurate LiDAR system available, capable of producing a Digital Terrain Model (DTM) to an accuracy of 5 to 10 cm (2 to 4 in.) with point-to-point accuracies even better. Since this system can fly up to 4000 m, the system is extremely useful for large area applications where a high degree of accuracy and speed are necessary, or where accessibility is difficult. The ability to fly at a higher altitude requires fewer flight lines thus reducing project time and cost. LiDAR can produce a detailed DTM in a much shorter time frame than a similar product using any other technology. With Lasermap's careful attention to quality control and proper calibration, sufficient data can be collected to produce topographic maps and/or 3-D models with 0.30 m (1 ft) contours with an accuracy of better than 6 in.

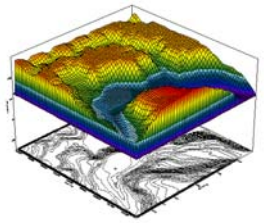
Using LiDAR



Utilization of LiDAR technology enables the acquisition and fusion of baseline cartographic data and digital photos in a much shorter timeframe than that provided by conventional methods. This can speed up the initiation of projects and, with advanced visualization software, is an essential ingredient for any major development project that needs high-resolution and high-precision cartographic information. Typical projects include road or railway construction or improvement, telecommunication transmission lines, power lines, digital topography (Digital Terrain Models) for slope analysis in landslide risk mapping or for flood risk mapping, forestry, environmental studies, mining surveys, interactive fly-through simulations for land developers, and many others.

Lasermap has developed proprietary software and methodologies to detect small undulations in flat flood plains and eliminate much of the "noise" in the LiDAR data which occurs where there is low vegetation. Their proprietary software is able to complete the interpretation of these data and, in tests, have proven to be more than 90% effective in determining true ground elevations in difficult vegetation covered areas.

PRODUCING FAST, ACCURATE, RELIABLE DIGITAL TERRAIN MODELS



LiDAR can produce a detailed DTM in a much shorter time frame than a similar product using any other technology. The LiDAR system emits energy pulses at frequencies of up to 167,000 Hz – that is 167,000 times per second. These pulses are reflected off the ground, vegetation or man-made structures at different time intervals, allowing the distances between emission and reception to be calculated. Using these distances, along

with the attitude of the laser (from the inertial measurement system) and its position (from the GPS), the position and elevation of each spot can be calculated. With the high pulse emission rates, the laser can obtain as many as 10,020,000 3-D points per minute. Depending on the flying height, the aircraft speed, and the frequency and width of the laser scan, the ground point density can be as close as 0.30 m (1 ft).

DIGITAL AERIAL PHOTOGRAPHY

Lasermap*USA* can supply optional digital imagery, collected separately or at the same time as the LiDAR collection, which can be digitally rectified using the LiDAR data to produce black and white or color digital orthophotos with corresponding accuracies.

For aerial photography, Lasermap utilizes two large format digital camera systems operating on standard color or infrared wavelengths. The first is a frame imaging Vexcel UltraCam-D camera and the second is a "push broom" Wehrli 3-DAS-1 airborne scanner. We also have a medium format Rollei camera.

Lasermap uses the Vexcel system and the 3-DAS-1 on larger aerial photography projects. These cameras provide the largest image format available (up to 86 megapixels: 11,500 pixels across track; 7,500 pixels along track) which means fewer flight lines. Vexcel's camera provides the best stereo base of all digital aerial cameras. Their new lens system delivers superior sharpness and stunning color and color-infrared (CIR) image quality.

The Rollei camera is a small image format system. This camera can be used along with or without the LiDAR system. The Rollei camera is most suitable for smaller projects or corridor projects where the swath width is not large. Used along with LiDAR, the Rollei system provides additional visual ground data that is recorded and serves to supplement the LiDAR data. For example, using color imagery (R, G, B, NIR), an aerial record can be made showing condition of structures, vegetation types and growth, and changes within a project area. Using infrared wavelengths, "hot spots" can be determined. The positioning systems for the LiDAR ensure that these images have photo center coordinate values so that areas of interest can be quickly located and measured. LIDAR with digital imagery is an ideal technology for generating rapid and accurate airborne surveys for many different project applications.

IN CONCLUSION

Airborne LiDAR technology is now a proven method for acquiring accurate digital terrain model data and associated imagery under a wide range of conditions. As an active sensor, it can be used when other remote sensing tools will not work.

LiDAR technology is still new and few companies around the world own the necessary equipment and even fewer offer data acquisition and processing services that actually meet the needs of their clients. For over 11 years, the highly trained professionals at Lasermap have led the growth in this industry and developed a unique expertise in handling projects of all types and sizes including large projects with complex logistics. For more information, please contact Lasermap*USA* (see below).

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