MJ Harden
A GeoEye Company

A New Generation of LiDAR Technology

MJ Harden's high performance data capture and processing systems outperform conventional LiDAR technologies.

Light Detection and Ranging (LiDAR) technology has become a valuable tool for measuring and recording elevation data for use in topographic mapping and three dimensional terrain/surface modeling. LiDAR offers advantages in both data acquisition and processing as compared to traditional elevation data gathering methods (GPS, aerotriangulation, etc.). These advantages include:

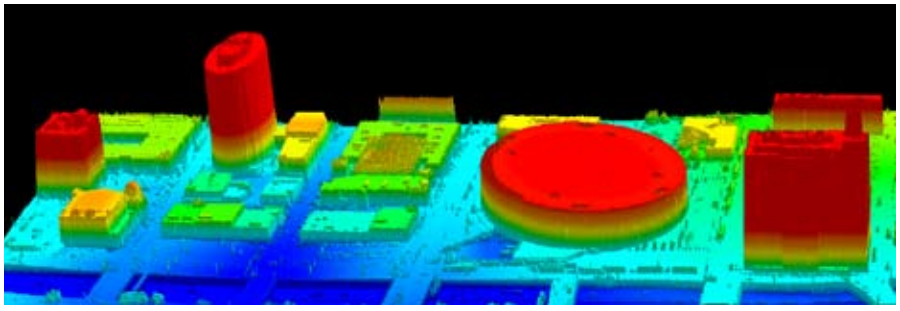
- Airborne platform is easy to deploy and efficient to operate
- Active sensor is capable of day or night operation
- A fully digital workflow requires no intermediate conversion to generate digital X-Y-Z coordinates, allowing rapid turnaround of project data
- 'Dense' elevation data, captured from fixed wing aircraft, produces higher spatial accuracy (+/-15cm or better) for modeling and mapping applications
- Non-intrusive airborne data collection can be performed even in remote areas

Satisfying Our Clients' Needs for Better, Faster Elevation Data

To support the demand for high quality elevation data, MJ Harden has invested in the most advanced LiDAR technology commercially available, the *ALTM (Airborne Laser Terrain Mapper) Gemini* from Optech Incorporated. This high performance system improves on conventional LiDAR by incorporating dramatically superior data capture capabilities.

The ALTM Gemini system from Optech is a fully integrated LiDAR data capture system featuring state-of-the-art mission planning, flight management and data handling capabilities.

- Blazing fast 167kHz laser pulse repetition frequency
- Up to 4 measurable returns possible from a single outgoing pulse
- Acquires aerial range data with accuracies equivalent to those of ground based GPS technologies, but thousands of times faster
- Provides dramatically increased data coverage and effective collection rate over other commercial LiDAR systems, yielding both quality and efficiency
- Delivers superior performance at all working altitudes (min/max range 80m to 4400m)



LiDAR data of Sprint Center in downtown Kansas City, Missouri

The *ALTM Gemini* system also includes the *ALTMnav* integrated flight management system for optimum mission planning, collection execution and in-flight coverage monitoring.

Multipulse Technology Sets A New, Higher Standard for LiDAR Ranging Performance

The limits of LiDAR data collection speed and accuracy have always been defined by the performance of the sensor. The multipulse capability of the *ALTM Gemini* allows the sensor to measure two or more laser pulses in-flight at the same time. This means the send/receive cycle for each pulse does not need to be complete before firing another pulse. As the altitude of the aircraft increases, the send/receive cycle time also increases, defining the limit of altitude and/or airspeed of conventional LiDAR systems performance. The rapid fire of the *ALTM Gemini* yields shorter pulse spacing, which translates to denser 'point clouds' for more accurate data modeling.

Powerful and Flexible Post-Processing

To complement the ground-breaking data capture technology of the *ALTM Gemini*, MJ Harden utilizes the most advanced processing solutions available.

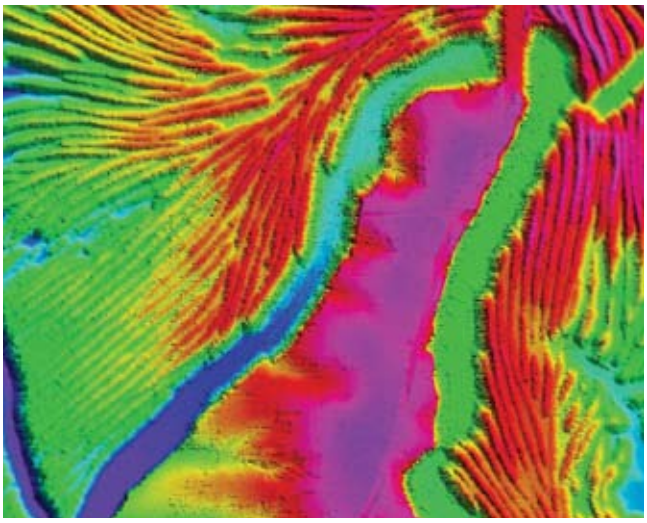
Optech's *DASHMap* application is the next generation in LiDAR data processing software, with vastly accelerated data acquisition-to-processing ratio. *DASHMap's* advanced processing logic enables the system to take full advantage of the power of the multipulse laser to dramatically improve LiDAR data capture and post-processing performance.

MJ Harden uses the *Terrasolid* suite of applications for geometric correction, editing, and classification of LiDAR data. This software suite provides an integrated working environment for processing laser data, including the *TerraMatch, TerraScan,* and *TerraModeler* tools.

For streamlined data management, production efficiency and quality data delivery MJ Harden utilizes the *GeoCue* geospatial process management system. *GeoCue* provides a powerful and versatile environment that can be tailored to manage the full range of LiDAR production scenarios.

Applications for LiDAR

LiDAR data can be used to support a wide variety of geospatial applications, including: design and engineering of infrastructure (roadways, railways, airports, etc.), corridor management (pipelines, power lines), urban and land planning (3D modeling, flood plain mapping, homeland security), volume inventories (material stockpiles, surface mining analysis), hazards and disaster mapping (floods, landslides, avalanches), change detection, erosion monitoring, and much more.



LiDAR data processed to bare earth for a strip mine site

Put This Technology To Work for You

MJ Harden is proud to offer this advanced LiDAR technology to our customers. As it has since 1956, our commitment to quality and reliability continues to drive the evolution of our business. Investments in leading edge technology such as this illustrate our philosophy of offering our customers the advantages of the latest in geospatial data resources.

For more information on MJ Harden's full range of geospatial products and services, contact us at **913.981.9600** or email **mjharden@geoeye.com**.

About MJ Harden

Located in Mission, Kansas, M.J. Harden Associates, Inc. (MJH) is a wholly owned subsidiary of GeoEye. MJH offers a wide range of high quality photogrammetry and geospatial data management services, and is ISO 9001:2000 certified. Services include: image acquisition, photogrammetric mapping, GIS consulting and implementation, and mobile data solutions. With a 50 year legacy of geospatial experience and expertise, MJH provides outstanding value to its customers – from planning to deployment, maintenance and support.

About GeoEye

Headquartered in Dulles, Virginia, GeoEye (NASDAQ: GEOY) is a leading producer of satellite, aerial and geospatial information. Clients include the national security community, strategic partners, resellers and commercial customers to help them better map, measure and monitor the world. GeoEye operates Earth imaging satellites and possesses an international network of ground stations, a robust image archive, and advanced geospatial imagery processing capabilities. For more information, visit www.geoeye.com.

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