

CG²'s LIDAR Database-Generation SBIR for Synthetic Environment Visualization Enters Phase II

Defense, Homeland Security and Industry Synthetic-Environment Users Now Able to Automate the LIDAR Data-Interpretation Process and Enhance Database Fidelity

SAN JOSE, CA—October 20, 2008—[CG², Inc.](#), a wholly owned subsidiary of [Quantum3D](#), announced today that Phase II of its [Light Detection and Ranging \(LIDAR\)](#) Database Generation Process is nearly complete. The initiative converts LIDAR scans into visual database terrain and models, an activity that includes placement of natural and manmade features, with little or no human interaction. The effort is part of a Small Business Innovation Research (SBIR) project Phase II awarded in February 2007 and sponsored by [Naval Air Systems Command \(NAVAIR\)](#).

A key objective of this initiative is to minimize the manual labor required to build simulation environments by processing high-resolution LIDAR data. Using sophisticated automation and process acceleration that leverages the latest GPU technologies, the CG² LIDAR Database Generation Process has been successful in identifying trees, buildings, roads and the terrain profile within the LIDAR point cloud, and then converting these features into visual database components.



CG² artist rendering of path of unprocessed LIDAR data points (left side) to visual database product (right side).

Preliminary tests have focused on collecting and aligning multiple, overlapping data scans from an airborne vehicle's passes over an area. The results suggest that this process delivers a more complete area with greater fidelity that has the combined LIDAR source points in their correct geospatial positions. In order to discern building details, such as windowsills and doorknobs, the system is designed to handle LIDAR data that has been collected at oblique angles with a source-data density of up to 6-cm (2.4-inch) precision.

The capability to use high volumes of merged, geospatially accurate LIDAR data will be especially valuable in the construction of visual databases for the battlefield, including military operations in urban terrain and battle-damage assessments. Translation to a visual scene may enable Special Forces operatives to visualize and identify actionable intelligence and quickly rehearse a mission within the virtual representation of the environment.

Doug Hyttinen, NAVAIR technical point of contact and visual engineer, stated, "The intent of this Phase II effort is to combine multiple point clouds of LIDAR data into one correlated point cloud, and then derive polygonal geometry models representing the point cloud."

—more—

Labor Reduction from Weeks to Hours

Current database-generation techniques may require days or weeks of manual editing and the original source data may be years out of date. One of the key capabilities being developed in Phase II of this project has been the ability to view the unprocessed LIDAR data in 3D, align the data and correct any geospatial error within seconds. Correct alignment is necessary so that the features within the LIDAR point cloud can be identified and extracted by the automatic process. Cutting labor requirements for a synthetic-environment developer will be a significant advantage compared to existing manual methods.

“The LIDAR Point Cloud Viewer is a critical part of the data conversion process,” explained Sandra Vaquerizo, director of Federal Business for CG², Inc., and program manager for this effort. “The viewer can accommodate up to seven million LIDAR points at interactive speeds. We have tested this with 47 overlapping LIDAR scans, and the system is able to geospatially correct, stitch and merge the LIDAR scans into a cohesive, higher-fidelity result and convert them into a visual database.”

CG² is pleased to have [Radiance Technologies](#) as a team member. Radiance Technologies brings its expertise in the collection of oblique LIDAR data and other corporate competencies to this project.

About CG²

CG², Inc. is a wholly owned subsidiary of Quantum3D, Inc. and is a leading supplier of value-added software, media and integrated real-time visual computing products for military, civilian, and government R&D customers. CG²'s products and capabilities include real-time, multi-spectral 3D model and database development and conversion; integrated visual computing solutions for institutional, appended and embedded training applications; software tools and solutions for avionics, vetronics, C2, and C4ISR applications; and development, operations, and support of “hardware-in-the-loop” sensor simulation applications. For more information about CG² and Quantum3D, please visit www.quantum3d.com or contact salesinfo@cg2.com.

###

Quantum3D, the Quantum3D logo, CG², CG² logo and LIDAR Database Generation Process are registered trademarks of Quantum 3D. All other trademarks are the property of their respective owners.