

DigitalGlobe Introduces Less Costly Modeling Software

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Companies that need to model and simulate terrain and city environments with satellite imagery have traditionally paid commercial firms to do the work or had to purchase high-end modeling software and satellite imagery separately.

Looking to expand the market for its satellite imagery, DigitalGlobe of Longmont, Colo., introduced new software in January called ImageScape aimed at eliminating the need for some customers to hire expensive outside design help or buy pricey dedicated modeling software.

DigitalGlobe sells imagery from its Quickbird and WorldView-1 satellites for around \$16 per square kilometer in a digital format called Geotiff that is compatible with modeling programs like BAE Systems' Socet GXP software and Erdas's Imagine software. Those kinds of programs can drape satellite imagery over terrain elevation data to create high-resolution 3-D models, as well as perform complex simulations with data extracted from Geotiff files.

In seeking to develop its first commercial simulation product, DigitalGlobe teamed

with AEGIS Technologies of Huntsville, Ala., a company with a heritage in the modeling and simulation world, having developed helicopter flight simulators for the Defense Department.

"Prior to ImageScape, DigitalGlobe started by doing customized cityscapes with buildings," said Craig Brower, DigitalGlobe's senior manager for national security programs. "Developing this software with AEGIS solved a couple of problems for us as a company."

The team's first priority was eliminating the need to buy third-party software to do modeling with satellite imagery, Brower said. Secondly, they wanted to reduce the file size of the imagery that would be used so it could be more quickly sent from AEGIS' processing facilities in Huntsville to anywhere in the world. Smaller file sizes and less complex software would also enable the ImageScape product to be used easily on standard desktop computers.

DigitalGlobe and AEGIS did this by converting the satellite imagery from the standard Geotiff format to a less-capable imagery format called .ibe, which reduces the file size of a standard 300 square-kilometer

swath of Quickbird imagery from about four gigabytes down to roughly 400 megabytes, Brower said. The less-capable format retains the resolution of the Geotiff format — for satellite imagery, as high as half-meter ground resolution — but loses some of the advanced extraction features. The .ibe format also reduces the cost of imagery to the consumer down to around \$6 per square kilometer, Brower said.

While the software is not robust enough for some users, the companies see a significant potential customer base that includes the oil and gas industries.

ImageScape uses digital elevation data standards developed by the National Geospatial-Intelligence Agency. Depending on the region of the world the imagery depicts, ImageScape uses either medium-resolution elevation data with waypoints spaced 100 meters apart, or high-resolution elevation data with waypoints spaced every 30 meters. Using this data, DigitalGlobe says its models have a geolocation accuracy of 1 meter or less, relative to the elevation data being used; some commercial users will choose to incorporate their own, more precise elevation data, which can further in-

crease the accuracy of a model, Brower said.

The launch of DigitalGlobe's third imaging satellite, called WorldView-2, is scheduled for this fall, and the company expects the satellite to improve further the ImageScape software.

"From a resolution standpoint, we're kind of where we're going to be at for a while in the half-meter range," company spokesman Chuck Herring said. "The biggest thing is coverage. Our combined satellites today collect about a million kilometers a day. WorldView-2 will double what we can collect. We'll have multiple revisits of any spot on the Earth each day and we'll be collecting up to 2 million square kilometers a day."

DigitalGlobe's competitor in the commercial satellite imagery market, GeoEye of Dulles, Va., does not offer a comparable product to ImageScape, but it does have a product called GeoStereo that creates a 3-D environment of any given area by imaging it from multiple angles for around \$35 to \$40 per square kilometer, GeoEye spokesman Mark Brender said. Harris Corp. of Melbourne, Fla., offers a product similar to ImageScape that uses imagery from GeoEye's Ikonos satellite, Brender said.

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