



An Aerial Surveys pilot and his camera

Sky-High Map Guys

Google Earth brought satellite photography to the masses. As competitors try to catch up, the old business of aerial mapping is taking off in the Internet age.

BY BRAD STONE

IF YOU WERE IN LOS ANGELES recently and noticed a twin-engine Cessna Turbo 310 crisscrossing the sky in meticulously parallel lines, several times a day for more than a week, you were probably watching one of Ken Potter's airplanes. With his wife, Mary, Potter runs the Philadelphia-based Keystone Aerial Surveys, which snaps overhead photos of cities and rural terrain for local governments and engineering firms. But lately, Keystone's client list has started to look a bit different. The flights over L.A., for example, were conducted for a major Internet firm like Google, Yahoo! or Microsoft (Potter declines to specify), which are all spending millions rolling out mapping services based on satellite and aerial photographs. The sudden interest in his pictures from the online giants has turbocharged Potter's business. "We're now looking to buy more planes and hire more pilots. It just seems like there's a huge capacity and demand on



Recognize this building? The Pentagon, as photographed by Keystone Aerial Surveys.

the Internet for our kind of image collection," he says.

Keystone isn't the only imaging company flying high these days. Bird's-eye photographs of major cities and famous landmarks now sit at the center of some of the

most-talked-about Web applications of the year. The best-known is probably Google Earth, which offers a searchable photo-realistic mosaic of the entire globe. The Internet firms believe these overhead photos will become the building blocks for a new wave of virtual services that will let users navigate 3-D simulations of cities and shop in exact replicas of stores. As a result, scores of decades-old mom-and-pop aerial-mapping firms are suddenly thriving, along with the nation's two major commercial satellite imagery companies. "The geospatial-imaging industry seems to be at the epicenter of a war between Google, Microsoft and Yahoo," says Edward Jurkevics of Chesapeake Analytics Group. "It's a good place to be."

Google gets the most credit for the boost. In late 2004, cofounder Sergey Brin noticed the work of San Francisco firm Keyhole, which was buying images from the Colorado Springs-based satellite firm Digital Globe. After Google bought Keyhole and renamed it Google Earth, the service's pop-



The lens is mounted under the wing

ularity soared; it was downloaded 100 million times between June '05 and March of this year (and no doubt many times since). Not to be outdone, Microsoft introduced MSN Virtual Earth last year, relying largely on lower-altitude, higher-resolution aerial pictures. Earlier this year Microsoft also spent an undisclosed sum for Vexcel, which makes the top-of-the-line, 500-pound digital cameras used by aerial mappers.

Google, Microsoft and newer players like Yahoo, AOL's Mapquest and real-estate research site Zillow.com have brought attention to the relatively obscure geospatial-imaging field. Aerial-photography firms are typically small, local operations, led by pilots trying to keep their careers in the sky. The industry generates about \$800 million a year in revenues, according to Chesapeake's Jurkevics, and clients are largely regional governments and engineering firms that are mapping cities and boundaries for further development and public works.

The \$400 million-a-year commercial satellite industry is also joined at the hip to Uncle Sam. The federal government insists that the two U.S. commercial satellite firms, Digital Globe and GeoEye, wait 24 hours before selling any new satellite photos to the public, and it limits how detailed the pictures can be (so as not to reveal military secrets). Though the companies sell images to oil and agriculture companies, they are so dependent on the government

that when a third satellite firm lost out on two government contracts awarded in 2004, it had no choice but to put itself on the auction block (the merged company became GeoEye).

The new interest in using overhead photographs on the Internet is giving all these imaging firms a significant new source of business. "It's a new anchor tenant for the industry," says Jurkevics, who estimates online services are now approaching 20 percent of the satellite firms' revenues. Execs at companies like aerial imager Sanborn say that because of new demand, they are looking at adding new planes and upgrading to high-powered digital cameras, so as to allow a more seamless transmission of photos to the Web. The imaging companies also say that the Internet has created a widespread awareness among companies like architecture and real-estate firms about the kinds of overhead photographs that are available, and their value.

But the new opportunity has also brought some challenges—like meeting surging demand for new, high-resolution aerial photos. "We're pushing the envelope with these guys, challenging them to collect the data we need," says John Curlander, the former head of digital-camera maker Vexcel, who now works for Microsoft. (Curlander thinks consolidation in the aerial-imaging field is inevitable.) Both the satellite and the aerial imagers

Imagine looking up a driving route online and seeing landmarks in 3-D.

—JIM GREINER

Submit

the story of your small business for our new Enterprise My Turn column at xtra.Newsweek.com

also have to deal with the likelihood that potential customers who would otherwise pay for images are now getting their pictures free of charge online. Digital Globe CEO Jill Smith argues that the increased awareness of her company's photographs, generated by the Internet firms, outweighs any potential cannibalizing effect on its product line. She adds that "there are certain features we can only offer direct customers," like an infrared band which the Internet sites can't show.

In the future, the value of these satellite and aerial photos to the Internet players will only grow in importance. Today's online mapping services offer mostly top-down, 2-D pictures, but high-tech execs like Bill Gates talk regularly about combining photos from various angles to create a 3-D, "Matrix"-like representation of the real world. Already services like Zillow.com and MSN offer 45-degree-angle views of homes in some major cities (instead of the flat, bird's-eye view), and Google Earth shows topographic details like mountains. That's only the beginning. By the end of the decade, all kinds of imagery—from the sky and the street front—will be crunched into 3-D photorealistic simulations of the actual world. Users will be able to navigate down simulations of familiar streets and walk into virtual stores. "Imagine looking up a driving route online and seeing in 3-D the actual landmarks you will pass along the way," says Jim Greiner, general manager of AOL's Mapquest, which is preparing to unveil its own aerial-imaging service later this fall.

For aerial photographers like Cady Daniels, whose images are central to achieving that vision, that's good news. While the 36-year-old pilot bounced between failing airlines in the 1990s, his wife desperately wanted him to find a desk job outside of aviation. This year he was hired as the chief pilot for aerial-imaging firm Sanborn. The best part: his wife, a real-estate agent, uses Google Earth herself. They no longer talk about finding that desk job. ■