Robots

Apple Is Bringing Drones to a Map Fight

- **The company quietly won FAA approval for flying data collectors**
- **"There's a huge data-quality issue there"**

More than four years after the disastrous launch of Apple Maps, the company is still trying to erase the stigma that followed the app's early wave of glaring errors, including a grocery store marked as a hospital and an incorrect airport address. As recently as August, Craig Federighi, **Apple**'s senior vice president for software engineering, was rehashing the issue. "I don't think we initially appreciated all the kinds of technology we would need," he told *Fast Company* magazine, assessing the trouble his team had updating the ▶ mapping software. "There's a huge data-quality issue there."

Since its initial flop, Apple has made its Maps more reliable and faster to respond to street changes. Like **Google**, the company has added features for navigating public transit and incorporated outside services such as Uber. Now, according to people familiar with the matter, it's trying to leapfrog Google Maps in the accuracy department, using new indoor-navigation features and an army of drones.

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> —*Ben Bajarin, Creative Strategies*

The idea is that flying robots can capture and update map data faster than fleets of camera-rigged minivans. In Seattle, Apple is assembling a team of robotics and data-collection experts, with at least one hire from quadcopter-crazy Amazon.com, to figure out how to zoom drones around street signs, track construction zones, and monitor other changes to roadways, says a person familiar with its efforts. The team is also working on adding views from inside airports, museums, and other buildings to its mapping software next year, as well as a feature that would advise drivers on lane changes, a second person says. Apple declined to comment.

In September 2015 the company filed for an exemption for commercial drone flights from the Federal Aviation Administration, documents obtained by Bloomberg show. In March the FAA approved Apple's use of "an unmanned aircraft system to conduct data collection, photography, and videography," according to one of the documents. They also show the company has committed to FAA prohibitions, which the agency is hoping to eventually loosen, on flights over people and buildings and a requirement that drones remain in sight of the operator.

Apple acquired startup Indoor.io last year to help develop its interior mapping project, says a person familiar with the matter. Apple confirmed buying Indoor.io but declined to say why. In 2013 the company bought WiFiSlam, another startup with expertise in indoor navigation.

For Apple and Google, digital maps are important sources of data. Google was the early mover—its Maps app was available for iPhones five years before Apple's—and Google Maps' higher overall user base has helped it remain the better product, says Ben Bajarin, a principal at researcher Creative Strategies. "There are simply more details of the driving experience in Google Maps," he says, "and their neat feature to predict traffic in the future."

Drones and indoor mapping may offer Apple an inroad to augmented-reality technology, Bajarin says. Firsthand video of a condo, hotel, or foreign city has obvious appeal. But ultimately, he adds, the most important input will come from users. "The more people Apple has using Maps, the better every element of the experience can be."

—*Mark Gurman and Alan Levin*

The bottom line Apple, using drones and data from indoor sources, is working on a plan to take on Google Maps.

FROM LEFT: ILLUSTRATION BY STEPH DAVIDSON; ILLUSTRATIONS BY 731