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Drones Poised for Commercial Takeoff

By Neal Leavitt



Unless you're completely cut off from civilization (in which case you wouldn't be reading this), drones are rapidly buzzzzzzzzing their way into our lives. And the global market and impact is enormous. The Consumer Electronics Association, for instance, estimates about 425,000 drones will be sold this year, amounting to about \$130 million in sales. By 2018, the annual market is expected to top \$1 billion.

There are obvious security issues to be surmounted – to wit, the example of the allegedly inebriated man who in late January lost control of a drone and sent it over the White House fence.

Last month, Kelsey D. Atherton wrote in *Popular Science* that AdNear, a Singapore-based ad-marketing company, flew drones with sensors that could detect cellphone signal strength and Wi-Fi over swaths of Los Angeles.

“The drones identified and located people by the devices in their pockets, so that businesses could send highly specific ads to their smartphones,” said Atherton.

Albeit somewhat creepy, it's not illegal, since location information isn't considered private/personal data. But it's yet one more example of how we're slowly losing all semblance of privacy in our lives in the name of convenience.

And tech issues abound. Nicholas Roy, a Massachusetts Institute of Technology robotics professor who headed up Google's drone-delivery project, said the industry remains in the prototype stage. “A sea change is going to be required in how these vehicles are designed and manufactured to support moving from a hobbyist flying on the weekend in a park to a 24/7 delivery service flying over your highways.”

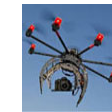
The Wall Street Journal added that “like makers of laptops, smartphones, and electric cars, drones are trying to pack more energy into smaller batteries. The issue is especially acute for drones: the bigger the package, the more power needed to fly.”

While some companies, including chip makers Intel and Qualcomm – say the technology is getting closer – delivery drones can't yet fly autonomously, since that requires software and sensors that can three-dimensionally map an environment.

Futurist Thomas Frey said recently that there's an acute need for standards for all types of drones – these include ones for classification, capability, and interoperability. He also believes the US Federal Aviation Administration shouldn't serve as the regulatory agency for drones.

“Just because drones and aircraft share the same skies doesn't mean the two industries are enough alike to share the same regulatory body. In fact, aviation expertise may actually be a detriment to allow this industry to properly unfold,” noted Frey.

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Frey itemized more than three dozen issues that need to be resolved before drone delivery will be commonplace.

Here are just a few:

- Override kill switch – Wireless signals are far from perfect; if a signal is lost, hijacked, or hacked, the drone must either return home or be removed from danger.
- Black boxes – When a drone crashes, some sort of signaling device will be needed to allow for follow-up investigation and cleanup.
- Security rules – Once a famous person's delivery address becomes known, they run the risk of receiving unwanted packages, solicitations, threats, even things like chemical attacks.
- Drone spam rules – Drones open up the possibility of receiving everything from annoying product samples to mean-spirited pranks. Rules for 'drone hate crimes' and 'drone bullying' will have to be implemented.
- Drone operating system – Computer buyers choose between Android, iOS, Linux, or Windows for their operating system. Drones will require an entirely different kind of operating system to function.
- Collision avoidance systems – Since drones can fly into power lines, trees, windmills, and more, a comprehensive collision-avoidance guidance system will be needed.
- Crowded skies navigation system – Frey said there eventually may be as many as 10,000 drones flying over a city on a given day. A system will be needed to avoid flying into buildings, trees, commercial aircraft – and each other.

Raffaello D'Andrea, a robotics expert, best summed up the challenges still to be surmounted. "People underestimate the technical difficulties. They watch YouTube videos and think this is great, why isn't somebody delivering my pizza? It takes time and effort to make something the public doesn't have to think twice about."



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