

Drone Data-Mining: Coming to a Home Near You

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The U.S. military made headlines in January 2020 for killing Iranian General Qassem Soleimani with a missile launched from an unmanned aircraft, or “drone.” But General Soleimani was hardly the only prominent figure killed via drone strike during the war on terror. Valued for their ability to conduct military operations remotely and autonomously—greatly reducing the risk to American servicemembers—drones have been one of the most notable developments in military technology over the past two decades.

At the same time, their potential civilian and commercial uses have not gone unnoticed. The same unmanned aircraft that can deliver a surface-to-air missile over the mountains of Afghanistan is equally capable of delivering packages in the residential neighborhoods of Scarsdale or Boise. Unsurprisingly, therefore, companies have eagerly explored potential civilian applications for drones, prompting concerns about having such powerful technology under purely private control. Even so, over the past decade, the U.S. government seems to have diminished regulation and expanded access.

What Is a Drone?

A drone is any pilotless aircraft. More formally known as “unmanned aerial vehicles” or “unmanned aircraft systems,”

drones have existed in varying forms since Venice’s war for independence from the Hapsburg Empire in 1849, when Austrian soldiers used balloons to drop bombs on their adversaries. The term “drone”—a reference to a male worker bee—dates to the 1930s and the U.S. military’s development of the “Queen Bee” biplane, which could be flown under radio control for artillery target practice. Modern drones differ from their predecessors not merely through advances in aviation technology—many of today’s drones are helicopters—but also through the adoption of robotics and artificial intelligence, which allow them to operate autonomously rather than under direct remote control by a human user.

Drones have recently come to be used in a wide range of civilian roles. When coupled with internet-of-things connectivity, drones’ ability to collect and convey aerial observation data in real time has made them invaluable for airborne surveillance and photography, traffic and weather monitoring, forest management, and agriculture.

The next wave appears to be delivery services. Multiple companies, including Zipline, UPS, and Google-affiliated Wing, have moved beyond the testing stage and begun actual product deliveries using drones. Although capabilities are currently limited to relatively small packages and short distances—Amazon Prime Air, for example, proposes to cap package size at five pounds

and limit delivery to a 10-mile radius of an order fulfillment center—the development of a pilotless delivery mechanism has proven particularly fortuitous during the COVID-19 pandemic, as it has allowed the delivery of test kits, personal protective equipment, and even vaccines while greatly limiting the potential for person-to-person transmission.

What Are the Laws and Regulations Governing Drones?

Before 2016, Federal Aviation Administration (FAA) regulations prohibited the use of drones for commercial purposes without a special waiver from the agency, which could be time-consuming and costly to acquire (mere hobbyist or recreational flights, however, required no such waiver). Such restrictions began to loosen in 2016, when the FAA issued its initial rules authorizing commercial drone flights. Those rules still contained some fairly strict operational limitations, including that drones be smaller than 55 pounds, remain within the visual line of sight of the operator at all times, and not be flown over people or during nighttime hours.

The FAA Reauthorization Act of 2018 directed the FAA to update its commercial drone rules to pave the way for consumer deliveries. The ensuing regulatory changes have relaxed some of the initial restrictions. In late 2020, for example, the FAA issued new rules allowing commercial drone flights at night and over populated areas. Still in place, however, is the requirement that drones always remain within view of a human operator, which significantly limits their range of travel and—more importantly—inhibits the use of fully autonomous operations and thus keeps drones from capturing the full range of their capabilities. While industry advocates have pushed for lifting this restriction as well, the FAA has suggested that new rules allowing out-of-sight operation are still several years away—hardly the first time regulation has failed to keep pace with technological innovation.

Meanwhile, states and municipalities have their own laws, which vary considerably and can either encourage or discourage drone use. In Arizona, for example, state law makes operating a drone in “dangerous proximity” to a person or property a criminal misdemeanor but prohibits cities and towns from imposing any stiffer penalty for irresponsible drone use. Idaho and Texas specifically prohibit the use of drones for, among other things, stalking wild game. Among the least restrictive states is South Carolina, which has not enacted any statewide law or regulation governing drone use, relying instead on the federal regulatory scheme.

What Are the Potential Concerns about Drones?

As commercial drone use continues to expand and neighborhood drone deliveries come closer to becoming an everyday event, individual citizens’ encounters with drones are certain to grow exponentially. Drone crashes and their resulting property damage—and even potential loss of life—may become regular events. Critics, however, have focused less on drones’ physical risk to persons and property than on their implications for personal privacy. Given that modern drone

technology involves sensors and GPS navigation, the same drone that can deliver a package to a residential neighborhood is equally capable of scanning the houses in the neighborhood for physical clues about the potential appeal of products or services—e.g., roof repair or the installation of aluminum siding—which may in turn enable targeted marketing much the same way as one’s internet browsing history.

In some respects, the potential for data mining of drone-derived information is not categorically different from what is already occurring. Google Maps, for example, offers photographic images of essentially any building or residence it has mapped. But the potential invasiveness of drones appears to raise the stakes for privacy advocates. When the City of Baltimore ran a broad-brush aerial surveillance program to track potential criminal behavior, obtaining overhead video imagery of more than 90 percent of the city, the U.S. Court of Appeals for the Fourth Circuit ruled that its data collection amounted to a warrantless search in violation of the Fourth Amendment. While Baltimore’s program relied on manned rather than unmanned aircraft, drones are no less capable of conducting the same surveillance and likely could do it at far lower cost with fewer human staffing expenditures.

But more importantly, the Fourth Circuit’s holding was specific to the fact that the party collecting and accessing the imagery was a government actor. No such issue emerges where the data collection is conducted by a private company, such as one of the many retailers eager to get into the burgeoning field of drone commerce.

At present, federal regulations on drone operation do not contain specific prohibitions or restrictions on the gathering of aerial surveillance data, notwithstanding the fact that the FAA lifted its previous restriction on commercial overflights of populated areas. While some states and municipalities have proactively taken steps to prohibit the use of drones for certain data-collection purposes, nationwide regulation on this issue has yet to be implemented. ^{LN}

Modern drones differ from their predecessors through the adoption of robotics and AI, which allow them to operate without a human user.

RESOURCES

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