

'Flying Cars' Aren't Cars. (And They Might Not Fly.)

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Since the premiere of "The Jetsons" in 1962, we've all wondered when we can expect to see futuristic flying cars – pod-shaped vehicles that can float above traffic and safely deliver us to work and school – in real life. Momentum for the idea of flying cars has been building lately, leading industry watchers to speculate whether the future is now. Uber announced a new partnership with Dallas and Dubai to test a fleet of flying cars by 2020. Lillium is developing an electric aircraft capable of vertical takeoff and landing for on-demand air taxi and ridesharing. And Kitty Hawk, a startup backed by Google founder Larry Page, unveiled its prototype for an ultralight aircraft capable of vertical takeoff.

While these concepts are innovative, the term "flying car" is a misnomer for many of these vehicles. As currently envisioned, many of these flying cars probably won't actually be designed to travel on roads like cars do. Companies are considering using aircraft with vertical takeoff-and-landing systems, which would be more akin to a helicopter than a car. Those interested in a vehicle with the capability to both drive and fly might look instead to a concept like the Airbus Pop.Up vehicle, which is a "modular passenger capsule to switch between four-wheeled ground transport and quadcopter flight." But for now, this is just a concept.

Significant Obstacles

Whatever you call them, flying cars still face numerous obstacles before being put into everyday use.

- First, the Federal Aviation Administration (FAA) will have strong concerns about the safety of any airborne vehicle designed to

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carry humans, particularly vehicles that operate autonomously (without a pilot onboard). The FAA is going to be concerned about the safety of the passengers, as well as those people on the ground in case of a falling aircraft. While the FAA has loosened its restrictions on Unmanned Aircraft System (UAS, UAV, or drone) flights, the agency is proceeding cautiously. Indeed, the FAA currently does not permit commercial drones to fly over people – let alone carry people. The safety case for carrying humans will have to be airtight to get the FAA's signoff.

- Second, the FAA will have to consider airspace traffic management issues. If everyone has a flying car, the traffic in the air could quickly become as congested as the traffic on our roads. The FAA is currently looking at this issue with respect to drones and trying to create an integrated traffic management system that will bring some order to the airspace.
- Third, these vehicles will likely be quite costly. If a “flying car” is akin to a helicopter, it is easy to imagine that the cost of flight might be similar to the cost of chartering a helicopter – or at least somewhere between flying and driving. The price of owning your own flying car could also be exorbitant. That's not going to be an everyday mode of transportation for the average family.
- Finally, as with drones, members of the public may have privacy concerns about use of flying cars. In the drone context, the FAA and the industry are still grappling with the altitude at which a property owner's property ends and the public airspace begins. This tension will only be exacerbated when the aircraft at issue is a large vehicle carrying multiple people rather than a small drone.

Hurdles Overcome

Nevertheless, we are probably closer to having personal, flying transportation now than we ever have been in the past. That's because the biggest hurdles to “flying cars” have always been both technological and operational – and these hurdles are being addressed, out of necessity, as commercial UAS development continues. We thus may get “flying cars” purely as a byproduct of other developments in the UAV space.

For example, flying cars were never going to catch on as long as they required a pilot's license to operate. That's an expensive investment most Americans are unwilling to make. But a new generation of fully autonomous aircraft could make the pilot obsolete. And while the complexity of developing a functioning Unmanned Traffic Management (UTM) system remains daunting, those problems are going to have to be solved in order to deploy UAS, whether or not those aircraft are carrying passengers or cargo.

Finally, earlier flying car concepts like the Terrafugia were forced to be literally cars that could also fly because they had to be able to drive on the road in order to get to a runway and take off. That brings with it enormous compromises. All of the things that make a car safe to drive on the road add weight and complexity that make an airplane harder to fly. The development of the quadcopter UAV, however, has changed this paradigm completely. Further development of high-power, lightweight motors, batteries, and other associated technologies will be needed in order to make commercial UAV cargo delivery a reality – and this promises to deliver vehicles that can take off and land nearly anywhere, with useful payload and range capacities. A personal, autonomous, vertical takeoff aircraft does not need to drive on the roads, and thus can dispense with the redundant equipment needed to drive around safely.

The idea of an on-demand flying car has an enduring appeal. We may still be some time away from seeing flying cars become a viable means of transportation, but that day may finally be on the horizon.