WASHINGTON, D.C. — To someone stuck in a traffic jam, soaring over the other cars might seem like a fantasy. Inventors and entrepreneurs have long tried and failed to make the dream of flying over a traffic jam a reality. But, that may be changing.

Nearly a dozen companies around the globe, including European aircraft maker Airbus, are competing to be the first to develop a new kind of aircraft that will enable drivers to glide above crowded roadways.

A few of the aircraft under development are cars with wings that unfold for flight, but most aren’t cars at all. Instead, they take off and land vertically like helicopters. Rather than a single, large main rotor, they have multiple small rotors. Each rotor is operated by a battery-powered electric motor instead of a conventional aircraft piston engine.

It’s no sure bet that flying cars will become a reality. There are many obstacles, which include figuring out how to handle thousands of new low-flying aircraft over cities without collisions and developing batteries that will keep them flying long enough.
Still, companies are moving forward. They see a big potential market for "air taxis" and personally owned small aircraft to transport people as cities grow more congested and people spend more time stuck in traffic. They envision tens of thousands of one or two-person flying taxis delivering passengers to the rooftops of office buildings during rush hours.

**Flying Cars Are Future Of On-Demand Transportation**

"In as little as 10 years, products could be on the market that revolutionize urban travel for millions of people," said Zach Lovering, the leader of Airbus' project to develop a self-flying taxi.

Uber released a 98-page report in October making the business case for air taxis, which the company sees as the future of on-demand transportation. Uber doesn't have any plans to develop a flying car itself, but the online transportation network is advising several companies that have aircraft in the works.

"The role we want to play is as a catalyst for the entire industry," said Nikhil Goel, an Uber project manager for advanced programs.

Some of the aircraft are drones that will be preprogrammed for each flight. They will be monitored or operated from the ground or a command center. Others are designed for human pilots.

It's unclear still how much the aircraft will cost, although prices are likely to vary significantly. Some of the aircraft are designed to be individually owned, while others are envisioned more for commercial use. Designers hope that if demand is high, prices can be kept affordable.

**Scaling-Up Drones To Carry People**

Several recent developments in computing power make the aircraft easy to control. Drones have also benefited from advances in battery and electric motor technology. Some companies, like Chinese drone maker EHang, are scaling-up drones so that they can carry people.

Another aircraft under development is the Joby Aviation's S2. It looks more like a conventional plane except that there are 12 rotors spread along the wings and tail. Others have a cockpit mounted on a sled with propellers in the front and back. They don't really look like any aircraft in the skies today.

"In terms of what you can make fly in a reliable manner, the solution speed gateway that (computer) chips have gone through recently have literally opened the door to a whole new world of flying machine possibilities," said Charles Eastlake, an Embry-Riddle Aeronautical University professor emeritus of aerospace engineering.
But he also cautioned: "My best engineering guess is that people actually using (self-flying) air taxis in the next 10 or 15 years is possible, but definitely not certain. The challenges are big."

The key will be the development of longer-lasting, lightweight batteries. Currently available batteries could probably keep an air taxi in the air for about 15 to 30 minutes before it would have to land, experts said. Depending on how fast the aircraft flies, that probably isn't quite enough to transport passengers between nearby cities or across metropolitan areas, experts said.

Another hurdle will be getting Federal Aviation Administration (FAA) certification for any big new kind of aircraft. Even small changes in aviation technology can take years to approve.

**New Air Traffic Control System**

The FAA said in a statement that it is taking a "flexible, open-minded and risk-based approach" to flying cars. FAA officials have discussed with several manufacturers the certification of aircraft that will be flown with a pilot in the beginning, and later converted to a self-operating passenger aircraft.

While further research is needed to ensure that self-flying aircraft are safe, the FAA says the ideas being developed now could eventually have a positive effect.

Reducing noise is another challenge because air taxis will be taking off and landing in densely populated areas. So is creating enough landing pads to handle many aircraft at the same time. A new air traffic control system would also likely be needed, said John Hansman, a Massachusetts Institute of Technology professor who leads the FAA’s research and engineering advisory committee.

NASA is developing an air traffic control system for small drones that perhaps could be expanded to include flying cars.

"There’s no question we can build the vehicle," Hansman said. "The big challenge is whether we can build a vehicle that would be allowed to operate in the places where people want to use it."
Quiz

1. Read the sentence from the introduction [paragraphs 1-5].

   Inventors and entrepreneurs have long tried and failed to make the dream of flying over a traffic jam a reality.

   All of the following words from the sentence help explain what "entrepreneurs" are EXCEPT:
   (A) Inventors
   (B) tried and failed
   (C) make the dream
   (D) flying over

2. Read the sentence from the introduction [paragraphs 1-5].

   They see a big potential market for "air taxis" and personally owned small aircraft to transport people as cities grow more congested and people spend more time stuck in traffic.

   What is the meaning of the word "congested" as used in the above sentence?
   (A) sick with the flu
   (B) densely populated
   (C) tall buildings
   (D) polluted and dirty

3. What is the MOST LIKELY reason for including information about the FAA?
   (A) to explain how the government is manufacturing aircraft
   (B) to explain the process for certifying new flying cars
   (C) to explain how the government is preparing for flying cars
   (D) to explain why self-operating aircraft are necessary

4. How do the first and final paragraphs of the article relate to one another?
   (A) They both highlight the motivation behind flying car development.
   (B) They both imply that building a flying car is feasible.
   (C) They both highlight the challenges of flying cars.
   (D) They both imply that flying cars will be profitable.
From what you know about Bernoulli’s principle, and how differences in air pressure cause lift, draw a prototype wing design that would meet the requirements for a flying vehicle. Keep in mind that the wing would have to fold up so that it would not affect other vehicles while on the road.
Answer Key

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