

Q&A: The future of automated flight may be closer than you think

June 23 2023, by Will McCarthy



Credit: CC0 Public Domain

In Robert Rose's vision for the future, we are currently on the cusp of a dramatic transformation of human mobility. A veteran of Tesla and Space-X, Rose's new company, Reliable Robotics, is now working to

fully automate flight.

A May demonstration at Travis Air Force base in Fairfield, California, where an automated plane took off and landed without human assistance, is proof that that future may not be so distant.

We spoke with Rose about Reliable Robotics' work, and what comes next.

Q: Can you tell us a little about your background?

A: I'm a software engineer by training. I worked at a bunch of different places in my career—most notably, I ran the flight software team at SpaceX. I also ran the autopilot program at Tesla Motors back in the early days. I shipped the first version of autopilot on the Model S.

I started Reliable Robotics back in 2017 with a former colleague from SpaceX. His background is hardware and [electrical systems](#) engineering. We're trying to bring more advanced levels of automation and safety enhancing technologies to [aircraft](#).

Q: Can you break that down? What's your vision for this technology?

A: I flew a fair bit when I was younger. My mom was a pilot—not a commercial pilot, but she flew for fun.

So, I had a fair bit of exposure to aircraft when I was a kid. And when I started taking flying lessons again about six years ago, I was really shocked how aircraft had not really evolved.

Autopilots are slightly more sophisticated, and navigation systems are

slightly more sophisticated. But fundamentally, the state of technology over the last 30 or 40 years has not changed a whole lot.

I thought it was a shame that accidents still do occur in aviation. Oftentimes, the root cause of those accidents are either human error or people misinterpreting something that's happening in the aircraft or not responding quickly enough.

We possess the capability to put more advanced levels of automation and safety enhancing technology into aircrafts. Why aren't we doing it? So it was in the exploration of that question that I decided to start this company.

Q: My understanding is that aviation generally is pretty safe. Is this the idea here to get to the point that there are no accidents at all?

A: We repeat ad nauseam in the aviation industry that it's the safest mode of transportation. That's not strictly true.

It is true that when you go to SFO and you get on a large commercial jet, you're safer on that jet than you are driving to SFO. But if you get on any kind of smaller aircraft, it's not true. Smaller airplanes are actually nine to 15 times more dangerous than driving.

People don't like to talk about that. The number one and number two causes of fatal accidents in aviation is what's referred to as controlled flight into terrain, which means a controlled, unintentional intersection with the ground—basically putting the plane into the side of a mountain.

That is just a frustratingly simple thing to prevent. The US Geological Survey has incredible terrain data on every mountain and every obstacle and every building. We shouldn't let you program an autopilot that would

fly into the side of a mountain.

The second most common cause of fatal accidents is [loss of control](#) in flight. And so this means you're flying along, and suddenly you're in a cloud and you get disoriented, and you flip the plane upside down. Or just you're flying the plane too slow, and you end up banking a little bit too much and stalling the plane. Unfortunately, we've had a number of those in the Bay Area over the last decade.

These are all things that are just easily preventable with automation.

Q: To what extent are pilots using automatic systems in airplanes already?

A: There's a misperception in the public that aircraft are already highly automated.

The reality is quite a bit more nuanced than that. The auto pilots that we have in aircraft today don't have the levels of redundancy necessary to truly manage the aircraft through all phases of flight.

That's basically what our company is doing, is building these navigation and automation technologies that enable you to truly have a fully automated aircraft that does not require full-time pilots sitting in the plane monitoring it.

Q: What's the benefit of removing pilots from the equation?

A: The reason for doing this, number one, is safety. But number two, once you have an aircraft that can do this, it opens up aviation to many more people and enables new types of aircraft as well.

Flights will be much more flexible, they'll be easier to obtain, and we'll have flights to more airports as well. It's also going to enable new types of aircraft, and smaller aircraft will be more economically practical.

That means, instead of needing to go to San Jose or Oakland or San Francisco to get a commercial flight, you might be able to pick it up at Reid Hillview or Hayward Field or Palo Alto or San Carlos, or any number of the dozens of smaller airports we have in the Bay Area. And I think that's really exciting.

Q: That final step sounds almost like the Jetsons—near universal access to flight, essentially from your doorstep. Is that where you see this going?

A: Yeah, I think that's feasible by the end of next decade. I think the way you'll buy an airplane ticket in the future will be like calling up an Uber or Lyft on your phone.

You'll say "I'm here, and I want to go to this other place." And the system will match you up with aircraft that are heading that direction.

There are other key technologies that need to be developed to get there. We need to make aircraft quite a bit more efficient.

I think the combination of the hybrid electric aircraft and remote piloting is what's going to be like this big, transformative revolution over the next decade or so. And that's when human mobility is going to really, really change.

But it's not going to look exactly like the Jetsons. It's going to be normal-looking planes with wings.

Q: How close you feel like we are to achieving that vision. When might we start implementing this technology on a large scale?

A: I think we're closer than most people realize, but we're farther away than I would like us to be. This is going to happen this decade. But there's a lot of steps that need to occur before we get there.

MediaNews Group, Inc.

Distributed by Tribune Content Agency, LLC.

Citation: Q&A: The future of automated flight may be closer than you think (2023, June 23)
retrieved 27 April 2024 from
<https://techxplore.com/news/2023-06-qa-future-automated-flight-closer.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.