WHY FLYING TAXIS DON’T FLY YET?

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Ever wondered how greatly the development of new flying routes would affect the city and make your life easier? Getting to work by air, enjoying spectacular views, avoiding traffic jams –just like in your favorite sci-fi movies. Masterfully presented imaginary flying cars projects in “Blade Runner”, “Fifth Element” and “Back to the Future” became an inspiration for some of the current flying machine developers. A roadless reality, “Back to the Future” character Doc was talking about, seems to be much closer than we think. To go even further – how about those machines being driverless and fully-automatic?

Driverless automation systems are already widely used in train and metro operations in more than 20 countries all over the world, but aviation seems to be the last transport industry to start operating pilotless aircraft on a regular basis. Though actively utilized in related fields – serving purposes like aerial surveillance or data collection, unmanned aerial vehicles are not bringing passengers from A to B yet.

A human pilot in an aircraft is traditionally considered to be the key figure by many passengers, even despite common knowledge that in most cases, pilots manually operate aircraft for ten minutes maximum, while the rest of the time it is flown in auto regime. However, famous cases of heroic pilot decisions, like the Miracle of the Hudson or John Coward’s actions during British Airways Flight 38 in 2008, make majority believe that civil aviation is the area where human decision-making might be crucial in saving people’s lives.

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There are good reasons for this belief. Aviation has the lowest accident rateof all transportation industry, while the number of ways anything could go wrong in a complicated aircraft outnumbers any other means of transport. Autopilot is not always able to estimate every scenario and it is too risky to leave the commercial aircraft fully automated when lives of hundreds of passengers can be jeopardized. Herewith, not many passengers themselves feel ready to trust an automated system as of now.

It is much easier, both socially and technically, to talk about “pilotless-ness” regarding a different kind of flying machines: machines meant for carrying 1-2 people within one city. Known as the new emerging flying urban transportation mode, they currently involve projects from flying taxis to hoverbikes.

Future is here: ongoing projects

The rise of new urban transportation has been predicted by many market experts. According to the forecastmade by Roland Berger Strategy Consulting company, after the flagship projects see the light in 2020, the first active involvement of passenger drones into the urban landscape is expected by 2025 or 2030. The analysts of Morgan Stanley bank predict that by 2040, the market size for automated passenger and cargo flying vehicles will reach around $615 billion, and even $2.9 trillion, in a more optimistic projection.

Numerous unmanned aircraft elaborations are already ongoing in different parts of the planet. Most of them are based on eVTOL –electric and hybrid-electric powered vertical takeoff and landing system, the leading technology when it comes to making passenger drones technically possible. Uber, one of the main developers in the field, expects flying cars to come into operation by 2023 - a truly ambitious deadline.

Involved in Uber Air project as a partner, Boeing revealed on January 22, 2019, the successful flight tests performance of its new urban air mobility vehicle. The experimental air taxi, presented by Boeing department NeXt and Aurora Flight Sciences, is fully electric and could fly distances of up to 80 km.

Boeing’s European rival Airbus has its own urban aerial transportation project. Vahana, Airbus flying taxi project, completed its maiden flight back in January 2018. The all-electric, VTOL system-based vehicle is especially interesting due to initial self-piloting design. Independent flying taxi groundworks are as well done by Intel corporation in partnership with Chinese unmanned aerial vehicle developers EHang. Since 2015 EHangsmall electric aircraft performed over 40 successful journeys, and is already considered a true game-changer in the industry.

One might come up with a question –what is the fundamental difference between the newly emerging aircraft and helicopters, also meant for carrying a small number of people and using similar propeller mechanisms? Most significantly, automated self-piloted drones are fully electric and are not using traditional gas-motors. Besides, they are way smaller, which makes them a whole different type of flying machines.

Automated passenger drones not only promise to make distances shorter as they are five times faster than a car, but have a potential to offer lower prices as well. The Munich-based air-taxi startup Lilium claims the fare for the aerial journey of the kind could be up to 50% cheaper than a taxi price.

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What's holding things up?

A whole set of factors is detaining the technology from entering the market. There are issues with limited battery life, which only allows flying short distances for the time being. Then come noise elimination and extremely high manufacturing price management.

Another essential thing to consider before launching unmanned aerial vehicles is organizing work with big data. Having precise geographical map of the region is at a conservative estimate one of the most significant requirements to let the system operate safely and efficiently. Beyond that, maps should always stay updated. Here, the possibilities of big data stand as one of the key factors.

Sure enough, there are also legal issues –permissions needed from governments, development of air mobility routes, and questions of air traffic control integration to ensure highest level of safety.

Some countries appear to be faster than others in making these regulation decisions. Japan's government, for example, promised to take up the question of urban air traffic regulation. On August 24, 2018, Japan announced it is gathering 21 companies, including Boeing, Uber and Airbus to support faster development of urban flying traffic. The country is also working on a legal framework for aerial urban vehicles, which is expected to be completed within ten years.

It might sound surprising, but first self-piloting drones for personal use have already legally entered the market. In October 2018, California-based company Hoversurf delivered their drone-like hoverbikes to Dubai's police force, who has exclusive rights to operate them. The flying bikes are already available for sale in United States, but the law enforcement approval is still awaited and may take several years.

A whole different field of aviation is just around the corner. To make new flying urban transport possible, it is not enough to invent, manufacture and test the vehicle. It also requires government permissions, additional safety checks, plus new regulations set, routes development - a whole new set of measures on municipal, governmental, structural levels. At this stage, that is yet to be masterminded by multiple agents.

This issue as well as many other aviation tech trends will be discussed during a special AIR Tech panel within AIR Convention Asia - conference, exhibition and awards, taking place in Bangkok, Thailand in May, 2019.

About AIR Convention: *Launched in September 2018, the first AIR Convention event was held in Vilnius, the capital of Lithuania. A unique event for the region welcomed almost a thousand of attendees, leading airlines representatives, including Emirates, United, Lufthansa, and Etihad Airways, companies like Boeing, Airbus, Bombardier, decision-makers and high-class aviation experts from all over the world to start the ball rolling on the front burner industry issues. For more information please see: www.airconvention.com*

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