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ASPECTE PRIVIND UTILIZAREA UAV PENTRU ORAȘE INTELIGENTE

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UAV USE ISSUES IN SMART CITIES

The paper deals with issues on expanding the use of unmanned aircraft and growth the mobility towards smart cities from 2020 to 2030.

Keywords: UAV, mobility, smart cities

Cuvinte cheie: UAV, mobilitate, orașe inteligente

1. Introduction

Increasing mobility towards smart cities involves extending the use of unmanned aircraft - UAV - Unmanned Aerial Vehicle as a further development of the use of vehicles with electric motors and systems through auto guidance based systems, radio control and programmable using computers without intervention on board any driver or passenger. Surely this new technology will be linked with appropriate aviation regulations or road. A first group of beneficiaries consists of persons of elderly and disabled people who tend not be shorter than 40 % of the population.

For example, electrically operated aerial vehicles combined with more autonomous operation and data-driven business models could herald the biggest change in aviation in decades. “Our Group’s strength is that we have interconnected projects that together are helping to drive the upcoming revolution,”

states Müller. “The contribution of Skyways, CityAirbus and Vahana in terms of regulations and public and market acceptance will bring to life the future of smart cities’ multimodal transport networks.” A network of flying taxis might sound like science fiction, but experts at Airbus believe that the vision is already taking shape. It’s not crazy to imagine that one day our big cities will have flying cars making their way along roads in the sky and in a not too distant future, we’ll use our smartphones to book a fully automated flying taxi that will land outside our front door – without any pilot.



Fig.1 New vision of future aerotaxi

2. Airbus is reportedly planning to reveal a futuristic concept car that can be picked up by a drone



Fig. 2 Airbus taxi. A rendering of the Project Vahana aircraft.
Airbus/Project Vahana

Airbus is gearing up to reveal a concept car that can be airlifted by a drone in heavy traffic, Automotive News first reported. The aircraft manufacturer will reveal that car with Italdesign, a design and engineering company, at the Geneva Auto Show that kicks off March 9, according to the Automotive News report. Airbus and Italdesign declined to comment on the report to Business Insider.

Sources told Automotive News that the concept car could be lifted by a drone measuring 5 meters (roughly 16 feet) in length. Airbus is currently pursuing "flying cars" — more accurately defined as Vertical Take-Off and Landing (VTOL) aircrafts that, like the name suggests do not need a runway to operate because they can take off vertically. Airbus' Silicon Valley arm, named A³, is working on an electric, single-passenger aircraft for urban transit as part of its Project Vahana. Separate from Vahana, Airbus is also building a flying taxi named CityAirbus.

3. Airbus is building flying taxis so that it can become the Uber of the skies

Tech giants are starting to turn their attention to "flying cars." Uber released a 98-page white paper last week outlining its plans to bring "flying cars" to commuters by 2026. Google co-founder Larry Page is also funding a "flying car" project through a start-up named Zee.

Aero, and its prototype was reportedly seen in action at Hollister Municipal Airport in October.

But Airbus, which offers a legacy of building civil aircrafts and working with the Federal Aviation Administration, is also developing its own "flying car" as part of its Project Vahana — and its aviation experience could give it an edge.

Project Vahana is being run under Airbus' Silicon Valley arm, named A³. To get this out of the way early, all of these companies aren't *really* interested in developing flying cars, hence the quotation marks. That would indicate they were trying to take the same route as Terrafugia, which is building a hybrid car that can drive on the road and also fly.

But A³, along with Uber and what we know of Zee. Aero, isn't focused on the car portion of a flying car.

All three are working on VTOL aircrafts, which is short for Vertical Take-Off and Landing. That means the aircrafts don't need a runway to ascend, similar to a helicopter.



Fig. 3 An interior rendering of the Project Vahana aircraft.
Project Vahana

Zach Lovering, who oversees Project Vahana, said it plans to have the production version of its VTOL aircraft ready in four years. The Project Vahana aircraft will be an electric, single-passenger VTOL plane with eight rotors. Lovering told Business Insider it will have a range "on the order of a city size, the diameter of a city," but declined to provide a specific number. It will have a speed "twice as fast as cars" and will achieve an altitude of around 1,000 feet. The aircraft will be fully self-piloted. The aircraft will be equipped with lidar, radar, and cameras — the same technology used on many self-driving cars — so it can safely deviate from its flight path if an obstacle gets in its way.



Fig. 4 Uber's VTOL rendering. Uber

4. But why pursue a VTOL aircraft?

Lovering said he wants to create a ride-hailing experience that's "something like Uber has." Here's how he sees it playing out: the vehicles will have home bases on the top of buildings, such as large parking structures. Users will put where they are and where they want to go into a Project Vahana app, which will then direct them to the nearest depot with the aircrafts. "You either take an Uber there or walk there, depending on how far away it is," Lovering said. Once a user gets in the VTOL aircraft, pre-flight checks would commence. Uber is also looking to use the VTOL aircraft for commuter purposes as part of its project dubbed Uber Elevate.

Uber is planning to have its first vehicles ready by 2021, just one year after Project Vahana plans to finish its aircrafts. Uber has said its official roll-out date will occur in 2026. Lovering added that Project Vahana's aircrafts could also be used to transport cargo from facilities to distribution centres.

They could also be used to deploy emergency medical stations in disaster areas. But Project Vahana's vision for its VTOL aircrafts hinge on the FAA granting regulatory approval, and that's a big hurdle considering the FAA has yet to even approve commercial drone use.

"The regulatory aspects are definitely something difficult to overcome," Lovering said. "Although in our conversations with the FAA, we met with them earlier this year, they were very receptive to us." Lovering said the FAA is moving toward a standard certification process that would expedite the process for approving new kinds of vehicles.

He added that there are organizations working with the FAA to help set these standards, like ASTM International, a volunteer organization that helps develop international standards.

5. Conclusions

- Aviation safety experts say that a UAV for passengers transport in a smart city of the future must meet stringent technical requirements, to ensure optimal conditions.

- The current legislation needs to be changed substantially to keep up with this type of transport in intelligent city of the future.

- Cybersecurity and communications routing, ground and air traffic control, urban weather conditions, pollution, number of passengers, etc. must be key factors in the future project design.

- Opens a new horizon for scientific world that combines all technical areas and not only for the development of such projects in the future smart cities, but in the newest metropolis.

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