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## Flying cars: Is it allowed to dream?

*By Maxence Lahaye, Alcimed*



Zee, Aero, Kitty Hawk, Ehang, Terrafugia, and now Airbus: many players are rushing to the “flying cars” market. The concept is receiving an increasing support from the institutional, industrial and financial worlds. It is gaining in maturity, and some start-ups promise to take it to the market next year. However, it remains certain that this market will not take off before a long time.

### **A very constrained market for now**

On the short term, only particular user segments (sport, military, bushflying...) will be able to sell more than a few units. The primary limitation will be the regulation: we learned from the difficult start of the drones’ market that it should never be underestimated, and most of the manufacturers are targeting the less constrained LSA category (Light Sport Aircraft), involving drastic weight reductions. The famous inventor Deszo Molnar even recommends limiting the models to three wheels only, in order to benefit from a lighter road regulation.

Secondly, these “flying cars” will also be compelled to drive to a suitable surface for take-off, which limits their interest in urbanized areas where aerosurfaces are generally scarce. Taking off from the motorway is more a dream than a reality, and it will take years before an appropriate network is built. And finally, the prices will be prohibitive: several hundreds of thousands euros per unit, without taking into account the inevitable training cost. As often, the military and the sport community will be the early adopters: Vaylon with Pégase and Maverick from Beyond Roads are quite guaranteed to be successful within the military population and in difficult areas like Africa, proposing buggies with tubular structure attached to paragliding wings.

### **You will have it someday, you will**

On the longer term, the horizon will brighten, starting with the regulation: if the traffic regulation will remains difficult to dodge, the aeronautic regulation showed its ability to listen and adapt to the operational context of newcomers, just as it recently did with the drones. As a proof of this open-mindedness, the FFA authorized Terrafugia last June to launch a certification process in the LSA category, despite the fact that the car exceeded the maximum authorized. Therefore, we can expect in five to ten years that a more friendly regulation will allow the manufacturers to bring more advanced cars to the market: more comfort, more power, more passengers. Many

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operational capabilities, like the automation and the insertion into the urban space, will have matured thanks to the development of the drones' industry.

Then come the eternal questions: wings or rotor? Horizontal or vertical take-off? In reality, there will certainly be room for all of these concepts, since they will be used in very different environments, just like some would take a two-wheeler to get through a city's streets or a car on the highway. In a dense urbanized area, a vertical take-off is necessary, with the likely use of helipads. In contrast, a car with foldable wings will be more efficient to travel through bigger and less dense areas: this allows flying faster, more efficiently, and it will be possible to find strips of a few hundred meters for take-off or for land. The hybrid (or convertible) concepts which take-off vertically and use wings during cruise will have an advantage. But they still might become a bit complex with the integration of the car function. Without being roadable, these convertibles will mainly compete with helicopters, but they can threaten the "flying cars" market through certain business models.

The final question is: who will buy? Even by "dronizing" these aircraft and therefore taking off the pilot training cost, the price will still be very high. The mass commercialization is not realistic and the scenes of the "Fifth Element" movie will remain a fantasy. So besides the high-end clients, only the private transport companies will afford it. And these companies could even prefer a relay service between cars and convertible light aircrafts, all that being totally automated or remotely piloted so as to increase the useful payload.

Only a few of the concepts that currently abound will actually see the day, and not before two to three years. There is potential beyond the dream since the concept draws the attention of the biggest industrials (Airbus, Toyota, Larry Page...), or institutions: there is added value, there interest from clever people, which means it should succeed. The form it will take will depend on the business model chosen by the companies that will operate the fleets. This could blur the boundaries between the operators and the manufacturers and could open new business opportunities.

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## **ABOUT ALCIMED**

Alcimed ([www.alcimed.com](http://www.alcimed.com)) is a consultancy company in innovation and development of new markets, specialised in life sciences (healthcare, biotech, food processing), chemistry, materials and energy, as well as aeronautics, aerospace, defence and Public Policy. Alcimed counts on a team of 180 employees, sub-divided by sector and able to handle extremely varied missions from marketing & sales subjects (market surveys, targeting new needs, positioning a new product, etc.) to strategic issues (development strategy, research & assessment of acquisition targets, organisation of an activity, design/assessment/deployment of public policies, etc.). The company's head office is in Paris and it also has offices in Lyon and Toulouse, as well as in Germany, Belgium, Switzerland, England and the United States.

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