

FORGET FLYING CARS: PASSENGER DRONES MAY HOVER SOON AT A LOCATION NEAR YOU

The dream of the flying car could come down to earth before it gets off the ground. Rising in its place: a network of self-flying drones big enough to ferry individual commuters around town. That's the future envisioned by several start-ups that are developing so-called "passenger drones," which could shrink commute times from hours to minutes.

At first blush, human-carrying drones sound no more realistic than flying cars. Until recently inventors had never been able to marry automobiles and aircraft in a practical way. Yet a few companies have kept at it: Woburn, Massachusetts-based Terrafugia, for example, has since 2006 been developing Transition, a "roadable aircraft" that resembles a small airplane that can fold its wings and drive on roads. A personal flying car in every garage has proved to be a tough sell, however, and there are serious safety concerns about asking the average commuter to train for a pilot's license and take to the skies.

Passenger drones, by contrast, would operate autonomously and leave the "roadable" part behind in favor of larger versions of aircraft that already exist. Chinese startup EHang last month announced it would debut its passenger drone service in Dubai in July. The EHang184 autonomous aerial vehicle resembles an overgrown quadcopter with a passenger cab perched on top. Last October ride-hailing service Uber publicized its Elevate program for urban air transportation and announced support for companies building vehicles similar to the 184. Uber recently bolstered its plans by hiring Mark Moore, an aircraft engineer at NASA Langley Research Center and pioneer in vertical takeoff and landing (VTOL) aircraft designs. Several other companies are racing to develop electric-powered VTOL aircraft that could help make Elevate a reality. Terrafugia likewise plans to eventually offer a VTOL flying vehicle—the TF-X—in addition to the Transition.

Passenger drone designs favor "distributed electric propulsion," meaning instead of one large rotor powered by a large engine they have multiple propellers each powered by its own, smaller motor. This sacrifices lifting power and flight performance in exchange for mechanical simplicity and lighter weight—factors that could make them cheaper to operate. Quieter electric power would make the noise tolerable to city residents, although it remains to be seen how much weight such a vehicle could lift, and for how long.

With any of these vehicles, safety is the biggest concern and extends to both the aircraft and the automated systems flying them. Artificial intelligence (AI) is needed to fly large numbers of autonomous aircraft without crashing them into one another or, say, the local news channel's traffic helicopter. Carrying people from points A to B seems simple enough, but even the best AI struggles with surprises: What, for example, would a drone do if a landing area suddenly became unavailable?

Instead of leaping to fully automated passenger drones, he suggests first testing the necessary AI in unmanned cargo runs. Early passenger services might include pilots assisted by AI co-pilots—a “mixed mode” approach that Singh helped develop for the U.S. military’s “Transformer” project to build a drone that could carry cargo or wounded soldiers.

Nevertheless, some experts are cautiously optimistic. The technological challenges can be overcome, says Marilyn Smith, associate director of the Vertical Lift Research Center of Excellence at Georgia Institute of Technology. “I think the big roadblock is the regulatory infrastructure that has to be put into place” to ensure safety, Smith says.

Regulators from the Federal Aviation Administration (FAA) have not issued guidance on passenger drones yet. The FAA is, however, working with NASA and private industry on ways to manage swarms of smaller delivery and emergency responder drones—rules that might also apply to larger self-flying aircraft. NASA’s approach relies on drone operators sending flight information to a centralized system—like an automated air-traffic control—that tracks the location of autonomous aircraft, says Parimal Kopardekar, principal investigator for NASA’s Unmanned Aircraft Systems Traffic Management project. The system under development would provide a “common picture of what is going on in the airspace so that drones can steer clear of other aircraft,” Kopardekar says.

Technical challenges aside, EHang, Uber and others promoting the technology will have to find a way to convince the public to give their drones a whirl, something that requires a much bigger leap of faith than getting into the backseat of a self-driving car. Passenger drone makers are “obviously still in the incubation stages of technology development and improving the basics,” says Mike Hirschberg, CEO of the American Helicopter Society International.

Passenger drone progress, however, may follow a sloping takeoff rather than vertical leap, depending on whom you ask. “This is not your father’s flying car,” Hirschberg says. “This is really serious work— and it’s going to happen.” Still, Carnegie Mellon’s Singh sees a long road ahead filled with lots of testing, analysis, regulation and efforts to win the public’s trust before the technology becomes a viable transportation option. “There is the danger of someone moving too fast and then having a problem that sets the industry back for some time,” he says.

Adapted from @ScientificAmerican.com

NIVEL C2

PRUEBA DE CERTIFICACION

Apellidos: _____

Nombre: _____

PRUEBA DE DESTREZAS INTEGRADAS II

PART 1 (5 points)

You are going to read an article. You have twenty minutes to read it and take some notes, which you will later use to present the topic in front of the examiners. Your presentation should consist of a summary of the text and your own opinion on the topic. Be ready to answer any questions the examiners may pose. Once your intervention begins, you will have approximately **six minutes** for this part. Use the space below to write down your notes. Remember to hand in this sheet after the test

“GIG-ECONOMY” WORK SITS OUTSIDE NORMAL EMPLOYMENT CATEGORIES

DURING a recent ride with Uber, this passenger received a surprising word of thanks for talking softly. To complete the job, the driver needed to follow the route provided by Uber, read out turn-by-turn by his phone; noise from the back seat drowned out the critical instructions. The control Uber exercises over its drivers, whom it calls “independent contractors”, is increasingly a point of dispute. Two were recently judged to be entitled to some employment benefits—such as a minimum wage and holiday pay—by a tribunal in London sceptical of the degree of independence they actually enjoy. In fact, the drivers sit within a grey area in employment law; rules regarding firms’ obligations to their workers will need to adjust in response.

More than the profitability of Uber is at stake. According to a recent report by the McKinsey Global Institute, 162m people in America and Europe, or more than 20% of the working-age population, work outside normal employment. Nearly half rely on such work for their primary income. Sensible changes to work rules that take account of the rise in gig work could make life better for millions of workers; bad ones could mean fewer new jobs will be provided by gig-economy apps.

Over the past 150 years, regular employment has been the norm. Worker protections have evolved accordingly. Most rich countries accord particular privileges to those considered to be employees, including the right to earn a minimum wage, a minimum of paid holiday and sick leave, and (in some cases) the right to severance payments or pension and health benefits. Some economists grouse about such rules, which can interfere with the smooth functioning of competitive labour markets and impose some efficiency costs. Societies have nonetheless chosen to adopt such rules in order to reduce the risk borne by employees and make labour markets more equitable. Yet such benefits are not usually extended to the self-employed. The difficulty in monitoring the time and effort spent at a task and other factors that often make independent work an economically sensible arrangement also

make it hard to know when a self-employed worker should be able to collect unemployment benefits or how minimum-wage payments should be determined.

The threadbare safety net available to the self-employed can be a problem. Independent work is not always the result of a willing free agent taking greater control over production. It can instead reflect a dearth of attractive employment options for struggling workers. When good jobs are scarce and the search for new or better employment is costly, firms have the opportunity to cut costs by using more contract workers. Outsourcing tasks to independent workers frees firms from the expense of mandated benefits and shifts risk onto workers which might otherwise be shouldered by the firm. A shortfall in work, for example, falls directly on independent workers in the form of lost pay rather than on the firm, which might otherwise face the choice to pay the worker to stay idle or to accept the cost of severance pay.

Whether Uber drivers are empowered to be their own bosses or are the victims of a powerful corporation is debatable. Those who reckon drivers are employees point to the extensive control Uber exercises over its workers. It sets guidelines for behaviour and vehicle choice, and its app governs which passengers can be picked up, what the fare will be and what route the driver ought to take. On the other hand, drivers can choose to operate whenever they please, for as long or as short a period as they like. They are also able to select where they will operate, and can accept or decline potential fares as they see fit. Resolving whether the workers who provide services on platforms like Uber's are employees or contractors is difficult, because they are not obviously either.

Uber's self-employed contractors cost the company less and improve the function of the service. If it had to pay all drivers a minimum wage, more of them would stay on the road when demand is low; either revenue would have to fall or fares rise. At the same time, the elements of control Uber exercises—like management of ride matches and payment, and the routes it provides to drivers—make it easier for inexperienced drivers to start working. The ability to earn income driving for Uber increases workers' flexibility and, therefore, their ability to drive harder bargains with other employers.

Not without cost. Uber asks its drivers to accept all the financial cost when weak demand or a bout of illness keeps them from working: a hardship for those who depend on income from driving to make ends meet. Though Uber and its gig-economy peers are right that their workers are not traditional employees, regulators are justified in concluding that they owe workers more than wages alone. As work arrangements grow more flexible, work categories and benefits should too: paid leave could be allocated to workers in proportion to hours worked, for example. To get there, technology firms and workers must each show a willingness to bend in response to the concerns of the other.