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Uber, a path for profitability or a market misperception? – Advanced Technologies Group and Other  
Technology Programs

Maria Laura Nunes Carvalho

33931

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Francisco Martins

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## Abstract

This report is a development of one of the concerns on Uber development and future, which is autonomous investment and revenues. In this sense, Uber is highly investing in self-driving vehicles, from cars to aircraft, and return on this investment is highly uncertain.

However, autonomous market is growing and this development is a trend in vehicle industry, meaning that Uber can benefit from this growth.

To conclude, this investment can influence valuation of Uber and if this investment comes with an high return, Uber will benefit a lot, due to the fact that costs will be decreased and societies will be transformed into a self-driving business.

## Keywords

Autonomous, Cars, Aircraft, Future

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## **Uber, a path for profitability or a market misperception**

INDIVIDUAL REPORT: ADVANCED TECHNOLOGIES GROUP AND OTHER TECHNOLOGY PROGRAMS

MARIA LAURA NUNES CARVALHO 33931

## **Individual Report: Advanced Technologies Group and Other Technology Programs**

Uber's Other revenue is composed of Uber Freight, New Mobility segment, and finally, ATG and other technology programs. The final one aggregates two types of business. Firstly, autonomous and self-driving cars and secondly, autonomous aircraft network (Uber Air and Uber Elevate), both inserted in the ridesharing market.

To be able to achieve advances for both segments, Uber is currently investing in an embryonic that started in April 2019. This investment was the foundation of the Advanced Technologies Group (ATG) entity with a Class A preferred Unit Purchase Agreement (UPA) with Toyota, Softbank, and DENSO with an initial investment of \$1bn, corresponding to a stake of c. 86% on a fully-diluted basis. Besides UPA, Uber also entered in a joint-collaboration agreement with Toyota and DENSO (SEC report). However, due to law restrictions and decision-time for regulators, this agreement only was expected to be finished in July 2019<sup>1</sup>. The first production car able to drive autonomously was developed with Volvo XC90 in the 2<sup>nd</sup> quarter of 2019, being only commercialized and available in the 3<sup>rd</sup> quarter of 2019<sup>1</sup>.

The foundation of the autonomous segment was quick and development of cars and its commercialization rapid, too, since Uber tried a pilot project by itself in 2018 and suspended it when a fatal car-accident happened<sup>2</sup>. In this sense, the society of automotive engineers developed levels of autonomy of cars, described in the following table, and Uber ones are inserted in level 4, which are part of the most vulnerable group.

<sup>1</sup> Uber. 2019. "Investors relation - Financials." Accessed January 1, 2020. <https://investor.uber.com/financials/default.aspx>

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<sup>4</sup>Waymo, 2019. "Waymo - Journey." Accessed on January 1, 2020. <https://waymo.com/journey/>

<sup>5</sup>Tesla, 2019. "Tesla – Auto Pilot." Accessed on January 1, 2020. <https://www.tesla.com/autopilot>

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<sup>10</sup>Wikipedia, 2019. "Wikipedia – VTOL system." Accessed on January 1, 2020. (<https://en.wikipedia.org/wiki/VTOL>)

Autonomy levels		
Level	Description	Dangerous level
0	- No autonomy. - Driver is responsible for all tasks.	Medium
1	- Car is able to do only 1 task autonomously (not 1 or more combined). - Driver needs to be fully engaged. - Autonomous tools oriented to become trips more safe.	Medium
2	- Combination of 2 or more self-driving tools. - Driver engaged with control at any time needed. - Examples are Tesla Autopilot, Cadillac Super Cruise, Mercedes-Benz Drive Pilot and Volvo Pilot Assist.	High
3	- Conditional autonomy. - System not reliable which implies human intervention if needed. - Examples are Audi A8 and some recent Tesla lines.	High
4	- Fully autonomous with constraints like geography, speed and operations in adverse weather conditions. - Driver controls available.	High
5	- Operation autonomous in every condition, geography and speed.	Low

Table 2 – Autonomy car levels

According to the Forbes article, levels 2, 3, and 4 are the most dangerous vehicles because elements of control are uncertain, meaning that vehicles have some control, and humans have some too. Although related to marketing campaigns of vehicle producers, humans may believe that vehicles have more

control than they have, implying that people have risky behaviors such as sleep, apply makeup, eat or play games on phones while driving a car<sup>3</sup>. However, Uber was acquitted to any charge on March 2018 fatal accident because the driver's fault was assumed, due to a drug taken and streaming tv shows<sup>2</sup>. It can have a positive effect on ATG segment development since Uber is working with very known brands and a negative effect since Uber is already putting cars available to costumers buy, and human error can influence Uber’s reputation in the wrong way.

However, opportunities for this segment are tremendous, because according to a Forbes article, cars achieving level 5 of autonomy are safer and more valuable. The opportunity arises because autonomous cars are designed for parking at available spots, and nowadays, cities don't have enough spots for cars to be parked, which implies that cities will also change, and cars would pick the person and then, other passengers, transforming mobility into an Uber world. As a consequence of it, the rental car industry is expected to collapse, fuel stations are expected to disappear, and

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regulations and laws are expected to change too. The impact of these changes for Uber is the increase in its revenues, but the current investment is huge without any substantial return<sup>3</sup>.

Another critical factor that influences expected revenues on the ATG business unit and its investment is the competitive landscape. The main competitors operating in this industry are Waymo, Tesla, Apple, Daimler AG, Volkswagen, and BMW. Waymo was founded in 2009 by Google Inc. and is developing level 5 autonomous car, but has already some Waymo cars operating on the roads of Phoenix. At the same time, for the year of 2017, Google also produced a minivan autonomously driving for Chrysler<sup>4</sup>. Regarding Tesla, the most advanced model achieved corresponds to a level 4 of autonomy, meaning that even having 360° sensors, humans can interact in driving the car, like adding speed or lock<sup>5</sup>. When it concerns Apple, project Titan is responsible for the development of a self-driving car. This project started in 2014, and some rumors are saying that Apple is working in a level 5 self-driving car since one of the most expertise engineers working on Tesla started its journey on Apple in 2018<sup>6</sup>.

Daimler AG already has a well-known system of level 3 autonomy, called AutoPilot. This Company is partnering for long-term achievements with BMW and Bosch and, until now, already has some Mercedes/Benz models with AutoPilot system, which is highly unsafe and autonomous trucks produced by this brand are also being tested on public roads.

According to the Uber SEC report, in this business segment, companies that release autonomous cars earlier are perceived to be Avant-Garde in the development of these vehicles, which implies

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that only Waymo and Tesla are direct competitors with Uber. However, like Uber, Tesla faced a fatal crash car accident that killed two people and corroborating with Forbes article, it was a semi-autonomous car<sup>7</sup>.

The technological transformation from traditional cars/ trucks or scooters to autonomously vehicles would be a massive step for companies like Uber because most of its costs come from drivers' work, and most of the regulation and law concerns arise from the fact that employees work in precarious working conditions.

In order to achieve autonomous car development, the Company needs to invest in research and development caption. This caption increased a lot between 2018 and 2019, representing a growth of 467.8%. The investment is made on an advanced technology group, in cooperation with Toyota, Denso, and Softbank, and beside cars, Uber also has a program named Uber elevate, which develops self-driving aircraft. During the year 2016, adding to the development of cars and aircraft, the Company decided to try the increase of efficiency on the freight segment with self-driving trucks evolution in the US. Although, this investment went wrong, and Uber decided to suspend it and focus on the autonomous car business unit.

Regarding Uber elevate, the most known development that Uber is implementing is Uber Air. Uber is partnering with Aurora, Bell, Embraer, Karem, Pipistrel, and Jaunt<sup>9</sup> and using the VTOL system, which permits that aircraft will land vertically<sup>10</sup>. This segment is developed due to investors' money and besides that, is investigated with Uber elevate conference, where Uber looks

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for new investors believing that self-driving aircraft is the future and Uber is the pioneer. In addition to the fact that Uber is a pioneer, like Waymo, on self-driving sector for car industry, the Company is also pioneer on believe that future is no car ownership, meaning that people that will buy cars in future will be lower than nowadays and the objective is that transforming society into a Uber way of life, people will not buy cars, implying that not only cars but also other transportation methods will be used based on third-party suppliers of this services, like Uber. To conclude, the main objective of this path is be avant-garde on developing futuristic trends and benefit from this position, selling tested and successful technology to other suppliers, meaning two ways to gain: revenues from ridesharing and cutting on costs with employees and revenues with selling technology to peers.

Investors perceive the development done by Uber, and usage and commercialization of vehicles will be expanded soon, accounting with Uber increasing its revenues and reducing its costs. In this sense, this segment is expected to increase revenues and improve gross and operating margins at market growth, because considering Uber as a market leader depends on characteristics importance for each driver. Also, costs associated with these investments, namely research and development, are expected to increase due to the constant need for improvements and development of these vehicles.

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