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Self-driving Cars

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Self-driving cars (autonomous cars) - are vehicles capable of sensing its environment and navigating without human input. There are two definitions which describe this type of vehicles: “autonomous” (which is more widespread) and “automated” (which is more accurate). "Automated" connotes control or operation by a machine, while "autonomous" connotes acting alone or independently. Most of the vehicle concepts (that we are currently aware of) have a person in the driver's seat, utilize a communication connection to the cloud or other vehicles, and do not independently select either destinations or routes for reaching them. Thus, the term "automated" would more accurately describe these vehicle concepts. There are 2 most widespread classifications of autonomous cars. The NHTSA (National Highway Traffic Safety Administration) classification which varies from regular vehicles to fully-automated. Another classification was created as alternative for the first one, but have the same scale. The main difference between them is strict division between automated and non-automated vehicles.

There are certain countries and states which allow public road testing of automated vehicles or conjugate technologies such as: UK, Switzerland (Swisscom, Volkswagen Passat, Zurich), France (2000 km).

There are no fundamental innovations in the internal structure of autonomous cars. All devices are highly developed versions of their predecessors.

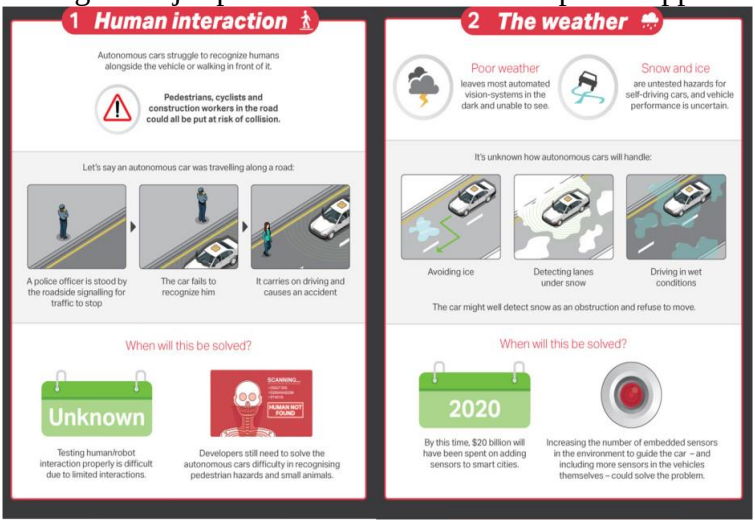
Lidar gives the vehicle 360 degree understanding of its environment so the car can sense objects in front of, beside, and behind itself at the same time, all the time. The laser also helps the vehicle to determine its location in the world.

Information from the sensors is cross-checked and processed by the software so that different objects around the vehicle can be sensed and differentiated accurately, and safe driving decisions can then be made based on all the information received.

Position sensor, located in the wheel hub, detects the rotations made by the wheels of the car to help the vehicle understand its position in the world.

Radar detects vehicles far ahead and measures their speed so that the car can safely slow down or speed up with other vehicles on the road.

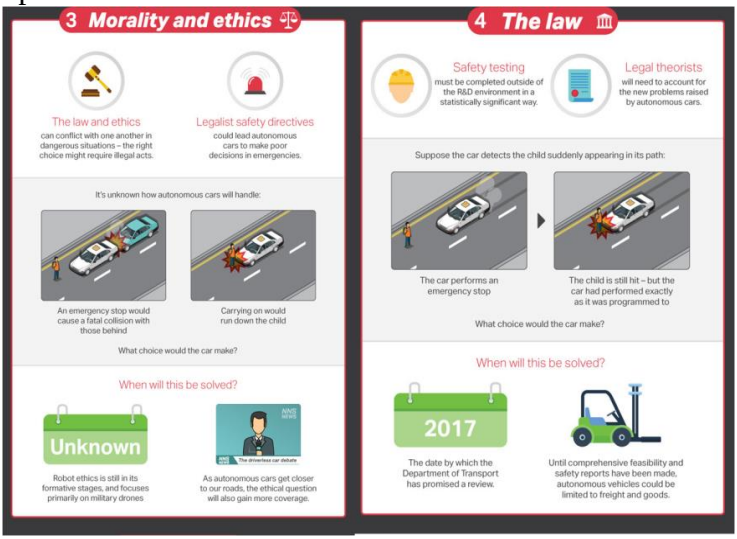
Still, with the development of self-driving car technologies major problems of further development appeared.



First two problems are connected with future development of autonomous vehicle technologies. One way of solving these issues is creating "smart cities" systems. These

systems include sensors installed on the streets of cities, which would be sent in the vehicle and processed, so that the car can assess the situation around it more precisely and make right decision.

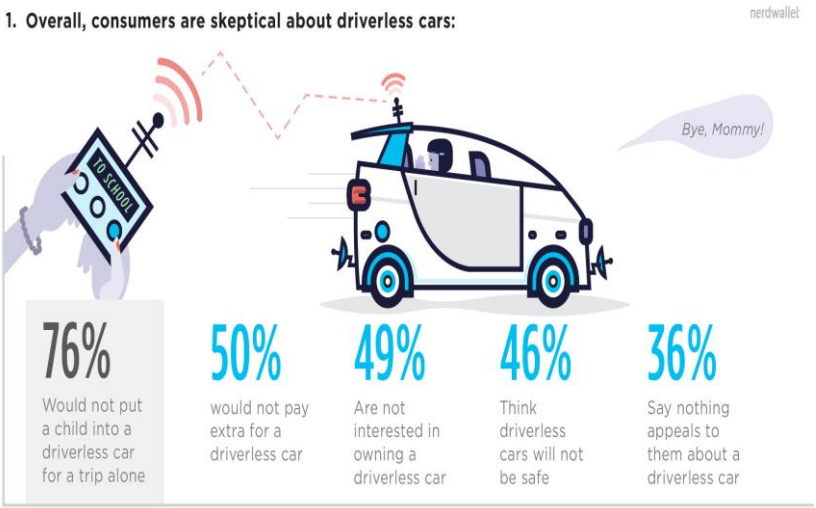
These two issues are based on problem of choice. Sometimes violation of the law is a necessity if you want to save human live. Currently the way of cars behavior in this kinds of situation is unpredictable and there are no way how to solve this problem.



With new technologies being implemented new safety issues appear. Large variety of sensors can break down and cause an accident. This equipment is also extremely expensive, due to its hi-tech nature. These takes us to issue number 6. Of course the price tag will drop in future, but nowadays it is what it is.

Despite the development and improvement of existing technologies public trust ratings are still very low. As you can see almost half of the respondents are not interested in owning a driverless car, which shows that consumers are not ready for

pervasion of automated cars in everyday life of society.



The fact that forecasts and predictions are extremely optimistic may surprise ordinary viewer, but there are certain factors which cause this bright prospects. Firstly, development of driverless technologies and their practical implementation is a great chance for to take the lead in the market. This causes major corporations to invest large amount of resources in evolving industry. For example 2020 is the year by which BMW, Nissan, GM, Mercedes and Cadillac plan to offer mostly self-driving cars. BMW predicts that fully-autonomous commercial vehicle will become available in 2025. Mercedes announced concept of automated truck which is planned to be released in 2025

Implementing of these technologies can be compared to invention of an assembly lane. Autonomous car is very promising project and can turn automobile industry upside down. Future development can lead us to complete remaining car concept.