

# The role of telematics in self-driving transportation

*It is amazing to think how far cars have come, and the technology keeps advancing. New concepts appear and the self-driving transportation technology becomes an emerging market at global level.*



Figure 1: Then and now (Source: Daimler/Cango)

If we think at the first car ever created probably, we have the image of Fred Flintstone driving his family and pets in a stone wheel open car. Then the movies with Charlie Chaplin appeared and some vehicles were present. Moving forward to the 80ies or 90ies, keyless entry systems, electric doors and windows, sunroofs, and CD players began to gain popularity and at the beginning they were seen like something related to high-end technology. And here we are, in the nowadays transportation industry with MP3 players, hard drives, USB ports, memory card slots, advanced safety systems, GPS, navigation screens, cruise control, braking assistance, and even the ability to parallel park themselves. Seems crazy, but it is true. In this age, cars come standard with features that were once a luxury (or did not even exist at all). It is amazing to think how far cars have come, and the technology keeps advancing. New concepts appear and the self-driving transportation technology becomes an emerging market at global level. The estimations, studies, or reports are showing a growing trend and numbers seem to get higher from year to year. Car market for partially autonomous-driving will be around \$36 billion by 2025.

But when it comes to automation there are six levels already defined and already known in the industry. Level 0 is considered a car which requires the full attention and action of the driver and level 5 is allocated for the fully automated vehicles. Since these levels do not mean much to people outside the industry, car makers often don't talk about their technology in these specific SAE terms.

As vehicles move towards level 3, where a driver can take his hand off the steering wheel, the dependency on telematics will increase. Vehicle speed, health, weather and road conditions, location, etc. will need to be constantly monitored to ensure safety and efficiency. Finally,

for fleets to move synchronously autonomous vehicles will have to transmit their whereabouts and sync with the leading vehicle, which will happen through telematics.

It is nice to talk about autonomous-driving but there are some questions that rise:

- ◆ Will autonomous vehicles make driving safer?
- ◆ Will autonomous vehicles make a better environment for us?
- ◆ Will autonomous vehicles make our lives easier and help to increase quality?
- ◆ Are we going to trust autonomous vehicles when it comes to take an immediate decision on the road?

The answer to all this question we have is telematics which enables the mobility services and is the instrument for a better, safer, self- and autonomous environment. Because without a solid telematics knowledge the autonomous transportation will not be as we envision it. ▶

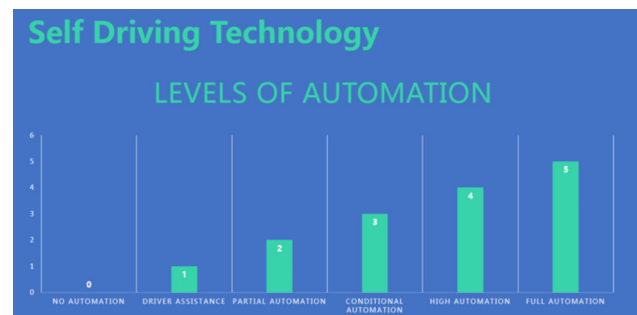


Figure 2: The estimations, studies, or reports are showing a growing trend and numbers seem to get higher from year to year; Car market for partially autonomous-driving will be around \$ 36 billion by 2025 (Source: Cango)

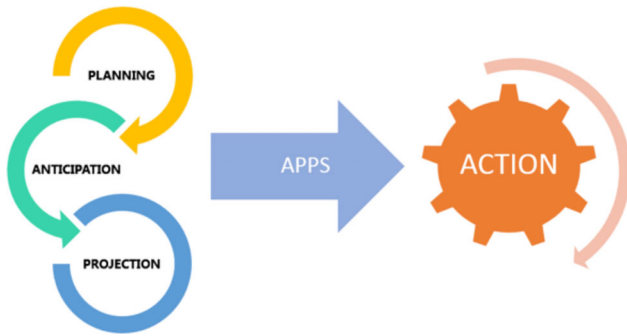


Figure 3: PAP concept (Source: Cango)

In self-driving transportation the focus was so far around four main pillars: car sensors outside and inside the vehicle, car positioning and GPS, connected vehicles, machine learning, and artificial intelligence. With so many information and inputs there were still accidents and some of them are well-known and implied important brands in the industry. Which brings us the idea that the autonomous transportation is not complete if it is not safe and efficient.

Safety and efficiency are two points that can be solved for sure with telematics. Telematics is not only about trace and tracking. It is about diagnose the vehicle, the engine, correlate the data with what comes from the sensors, see in real-time what is happening with the engine and verify the safety features used by the passengers.

Telematics gets back to CAN which is for the vehicle like the blood system for the humans. Through the CAN network all the information, data and details, circulate and give command to the vehicle to behave in a certain way on the road.

When the safety issues will be solved and the efficiency targets will be reached then the costs with autonomous-driving will decrease. If we are moving forward with the self-driving transportation we expect that the vehicle will act at least like the known vehicles today: Speed, safety, features and functionality, entertainment, efficiency, parking management, and more are the key elements which contribute to the reduction of the costs with mobility.

Cango has 10 years experience in the CAN network area and so far developed many application for open platform hardware telematics units which are used in different projects related to mobility. Soon we will talk about city as a service, car as a service, vehicle as a market place, and each of it will be customized with different apps that the final user will be able to add on the same platform. The key is to be an open-platform hardware. Once the car manufacturers will become open, everything will be easier, for each participant of the transportation industry or at the traffic.

The easiest example is related to car sharing industry or car rental projects. Cango apps are developed so they command the vehicle from distance, immobilize the engine, lock-unlock the doors, lock-unlock the trunk, close the windows, etc.

The concept the company is launching related to self-driving transportation is called PAP (planning, anticipation, projection). Planning is always important and based on it, there can be developed concepts or algorithms related to anticipation of the actions. Moving forward, combining anticipation with machines learning, sensors, artificial

intelligence we get to projections which help us build and imagine the future ecosystem for self-driving transportation and smart mobility environment. Then, based on projections the applications are build and there is just one more step until going into action.

Being prepared for the future is the key element in adopting new technologies when they will become mature. No matter how much the technology will advance, the CAN data are crucial for any project that involves autonomous-driving. CAN and telematics are the first layer for any solid base for autonomous-driving platform or vehicle. ◀



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