# Autonomous Commercial Vehicle Industry Report, 2019-2020

Mar.2020

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## STUDY GOAL AND OBJECTIVES

This report provides the industry executives with strategically significant competitor information, analysis, insight and projection on the competitive pattern and key companies in the industry, crucial to the development and implementation of effective business, marketing and R&D programs.

## REPORT OBJECTIVES

- To establish a comprehensive, factual, annually updated and cost-effective information base on market size, competition patterns, market segments, goals and strategies of the leading players in the market, reviews and forecasts.
- To assist potential market entrants in evaluating prospective acquisition and joint venture candidates.
- To complement the organizations' internal competitor information gathering efforts with strategic analysis, data interpretation and insight.
- To suggest for concerned investors in line with the current development of this industry as well as the development tendency.
- To help company to succeed in a competitive market, and

## METHODOLOGY

Both primary and secondary research methodologies were used in preparing this study. Initially, a comprehensive and exhaustive search of the literature on this industry was conducted. These sources included related books and journals, trade literature, marketing literature, other product/promotional literature, annual reports, security analyst reports, and other publications. Subsequently, telephone interviews or email correspondence was conducted with marketing executives etc. Other sources included related magazines, academics, and consulting companies.

## INFORMATION SOURCES

The primary information sources include Company Reports, and National Bureau of Statistics of China etc.

# Abstract

Self-driving commercial vehicle study: billions of dollars swarm into the field where fifty players compete fiercely, according to our recent report the Autonomous Commercial Vehicle Industry Report, 2019-2020.

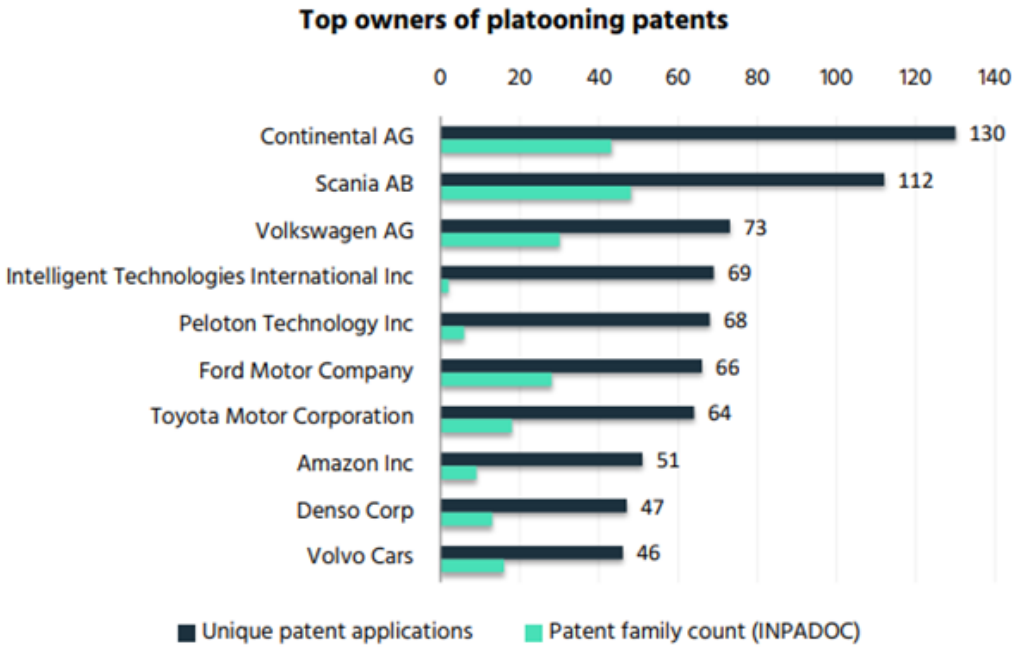
Automated commercial vehicle will be realized ahead of self-driving passenger car. The number of enterprises that forayed into commercial vehicle autonomy in 2019 doubled the prior-year figure. A case in point is TuSimple raised funds up to $215 million in 2019 and won 18 contract clients that devote themselves to transportation in the United States.

**Investment and Financing in Autonomous Commercial Vehicles, 2019**

| Time | Company | Event |
|---|---|---|
| Jan.2019 | Daimler AG | Lavished €500 million to develop highly automated truck |
| Feb.2019 | Ike | Completed the A-round series financing of $52 million from Bain Capital with the participation of other investors |
| Feb.2019 | TuSimple | The D-round series financing of $95 million from Sina Capital and other investors, with more than 400 employees |
| Sept.2019 | TuSimple | Received the D2-round financing of $120 million from the investors like UPS, Mando and CDH Investments |
| Sept.2019 | Embark | The C-round series financing of $70 million<br>It now has thirteen 18-wheeled trucks and 70 employees. |
| Sept.2019 | Changxing Intelligence | Obtained the Pre-A round financing up to tens of millions of yuan from Green Pine Capital Partners with the participation of Future Capital and Tsing-Yuan Venture Capital |
| Sept.2019 | Suzhou Zhitu | A self-driving heavy truck company jointly funded by FAW Jiefang, PlusAI, Jingwei HiRain, etc., with a registered capital of RMB200 million. |
| Nov.2019 | iSee | A-round series financing up to $15 million; focus on truck transportation |
| Feb.2020 | Einride | A-round series financing up to $53 million, headquartered in Colorado, the U.S. |
| Mar.2020 | Waymo | Obtained the funding of $2.25 billion partially used to develop self-driving freight business; to soon begin road test of automated trucks in two States of America, called Waymo Via |

After over a year's halt, Waymo restarted self-driving truck tests in May 2019. Pony.ai, a competitor in RoboTaxi operations and with the investment of $400 million from Toyota and other investors, was also pressing ahead with self-driving truck tests in 2019.

Truck platooning still remains the focus of automated truck test and gets increasingly combined with 5G technology in 2019, into which the companies have set foot including Daimler, CiDi, Scania, Iveco, Volvo, DAF, Peloton, SAIC, Foton, Huawei, TuSimple and Hyundai.




Source: IPlytics

It can be seen from the top 10 holders of platooning patents that the competitive ones are Continental, Scania, Peloton, Ford, Toyota, among others. Chinese counterparts are rarely seen.

Commercial vehicle going smart coincides with road intelligence, about which the laws and regulations are getting perfect. Road infrastructure for automated driving is classified by ERTRAC (European Road Transport Research Advisory Council) into the five in the table below.

## Infrastructure Support levels for Automated Driving (ISAD)

*Elaborated in cooperation with INFRAMIX, see also ITS World Congress 2018 paper by AAE & ASFINAG*

| | Level | Name | Description | Digital information provided to AVs | | | |
|---|---|---|---|---|---|---|---|
| | | | | Digital map with static road signs | VMS, warnings, incidents, weather | Microscopic traffic situation | Guidance: speed, gap, lane advice |
| Digital infrastructure | A | Cooperative driving | Based on the real-time information on vehicle movements, the infrastructure is able to guide AVs (groups of vehicles or single vehicles) in order to optimize the overall traffic flow. | X | X | X | X |
| | B | Cooperative perception | Infrastructure is capable of perceiving microscopic traffic situations and providing this data to AVs in real-time | X | X | X | |
| | C | Dynamic digital information | All dynamic and static infrastructure information is available in digital form and can be provided to AVs. | X | X | | |
| Conventional infrastructure | D | Static digital information / Map support | Digital map data is available with static road signs. Map data could be complemented by physical reference points (landmarks signs). Traffic lights, short term road works and VMS need to be recognized by AVs. | X | | | |
| | E | Conventional infrastructure / no AV support | Conventional infrastructure without digital information. AVs need to recognise road geometry and road signs. | | | | |

Source: ERTRAC

China Highway & Transportation Society (CHTS) Automated Driving Working Committee and Automated Driving Standardization Working Committee issued the Intelligent Connected Road System Levels and Interpretations (Exposure Draft) in September 2019, according to which traffic infrastructure system is divided into I0 level (zero information/intelligence/autonomy), I1 (preliminarily digital/intelligent/automated), I2 (partially connected/intelligent/automated), I3 (conditional autonomy and high connectivity based on traffic infrastructure), I4 (highly automated and based on traffic infrastructure), and I5 (fully automated driving based on traffic infrastructure).

The importance of road intelligence was shown in the platooning test on the Beijing-Chongli Expressway (Yanchong Expressway Beijing Section) in December 2019 that has complex road conditions for more than 94% of the sections are tunnels and viaducts. In most cases, autonomous driving in the tunnel became difficult because the GNSS signal was bad. Moreover, it was the middle of winter and the outdoor temperature remained as low as -20°C, challenging a multitude of supporting equipment. Huawei has installed the 5G vehicle terminal T-Box with 5G+C-V2X technology on Foton Commercial Vehicles, and also provides roadside sensing terminal cameras, radars, road side unit, edge computing, C-V2X Server, etc. Through the C-V2X services for the entire road sections, the deficiencies in positioning, communication and perception in the tunnel can be compensated. Foton commercial vehicles completed a 14-km L4 platooning demonstration, including a 9.8-km continuous extra-long tunnel.

Billions of dollars flocked to the maturing self-driving commercial vehicle market in 2019. Vehicle intelligence is prioritized in foreign countries, while CVIS (Cooperative Vehicle Infrastructure System) prevails in China. There will be greater development space from 2020 on.

The report details technologies about automated driving of commercial vehicle, organizations, the status quo of the market as well as progress in platooning; nearly 50 suppliers' and automakers' investments, deployments, technical routes, products & solutions, business models, plans and goals, tests, collaborations, applied scenarios, etc.

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Comparison of Chinese Commercial Vehicle Companies (including revenue and growth rate, sales volume, profit, registered capital, autonomous driving investment, main products, ICV partners, autonomous driving tests, launch time, planning and goals, etc.)
Conclusions

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