How autonomous trucks will impact the logistics industry

The development of autonomous technologies will bring disruptive changes, here is how it could affect third party logistics providers.

As autonomous vehicles offer significant potential to improve safety, fuel efficiency and sustainability, users can spend less time maneuvering road traffic and focus on other activities in the vehicle while improving productivity levels. For fleet owners of trucks performing long haul transports in a fiercely competitive, low margin market, it becomes especially valuable. Highly automated trucks also have the potential to bring disruptive changes, and therefore the key question is how the industry of third party logistics providers (3PLs) might be affected. To maintain a competitive advantage, business models and competitive strategies will have to evolve and companies will likely have to re-position themselves within the value chain. Working closely with large truck manufacturers, thus being early movers, and adapting to the autonomous technologies, will be key strategies in order to survive in this new market. More specifically, fleet owners who will utilize the full potential of platooning services (PSP), while optimizing freight flows to the autonomous technology and infrastructure, will have the best chances of being successful.

THE EVOLUTION OF

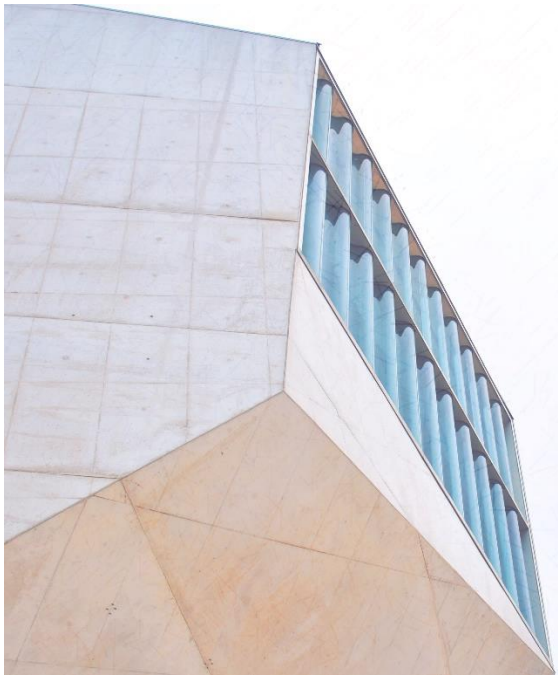
autonomous driving

Ever since the beginning of the 20th century, the idea of autonomous vehicles has absorbed the imagination of several generations. Often illustrated in the world of science fiction, a widespread adoption has been deemed as a distant vision or something only to be expected in futuristic movies. The truth however, is that trials have been ongoing ever since the 1920s, and with help from the digital revolution, companies are already introducing the first prototypes of fully autonomous vehicles.

With trials underway, several leading companies are currently discussing the advent of the next automotive revolution. Thus, the race to bring the new technology to the market has already begun. The question however, is how long it will take and what impact this technology will have on the economy. Despite being open for debate, some scholars argue that a remarkable change could happen already within the next few years.

With regards to logistics, analysts and scholars also emphasize how highway trucks are likely to be the first vehicles to feature the full technology on public roads. Among several arguments, cost savings and less pressing judicial issues compared to private vehicles, have been put forth as main reasons. Analysts thus soon expect the technology to expand from limited warehousing activities, where autonomous vehicles are already present, and on to public roads, especially through the mode of line-haul transportation.

Hence, with a pending revolution, logistics companies are now trying to make predictions as to how the changes might impact their markets, business models and ultimately, their survival.



The change for 3PLs will impact how they operate their business.

Harvard Business Review, How Smart Connected Products Are Transforming Competition, Nov 2014

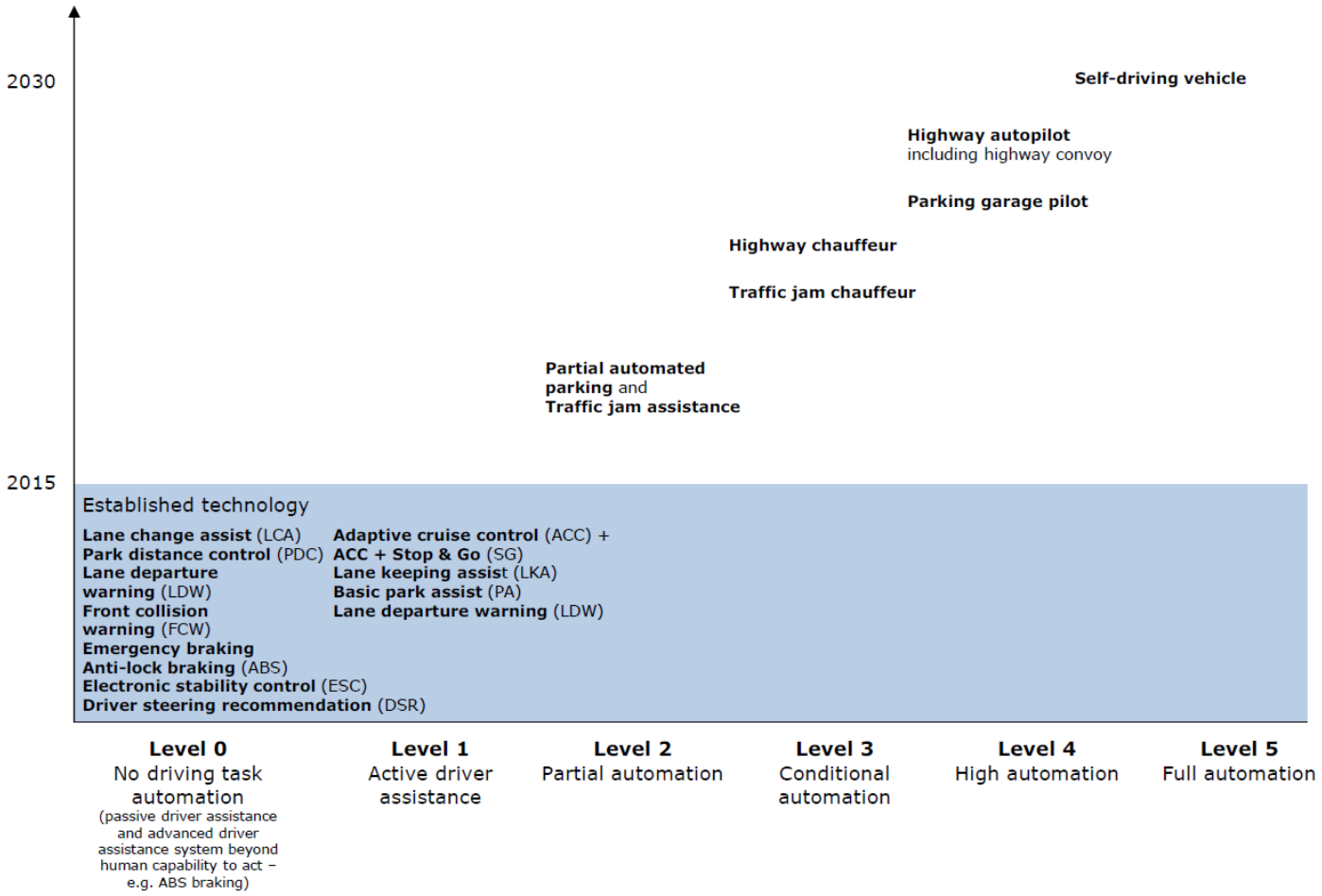
CLIMBING THE LADDER

towards autonomous trucks

The autonomous technology encompasses a wide range of technologies, infrastructures and capabilities. Thus, autonomous vehicles can be seen as a part of a much larger ongoing revolution with regards to automation and connectivity. From a technical point of view, the present technology for highly automated driving in controlled environments is believed to be quite mature. However, automated trucks that are permitted on public roads are not yet fully autonomous. According to literature, this development has partly to do with the fact that there is no clear consensus yet among scholars, or the industry, regarding the commercial maturity of the technology. Thus, some manufacturers have declared the arrival of highly automated, and fully autonomous trucks in the near future, while others have announced much later dates. Despite the different views of implementation, there is however a clear agreement for the first mover advantage of pioneers within this field.

Studying the different taxonomies of vehicle automation, the international society of automotive engineers' (SAE) captures the ongoing automation consensus most systematically. This description combined with OECD's projections is therefore used as a framework to describe the development.

THE PATH TOWARDS AUTONOMOUS TRUCKS



Graph: OECD, (2015). Automated and Autonomous Driving Regulation under uncertainty. Paris: International Transport Forum

THE IMPACT FROM THE WAVE OF CHANGE

is disruptive for 3PLs

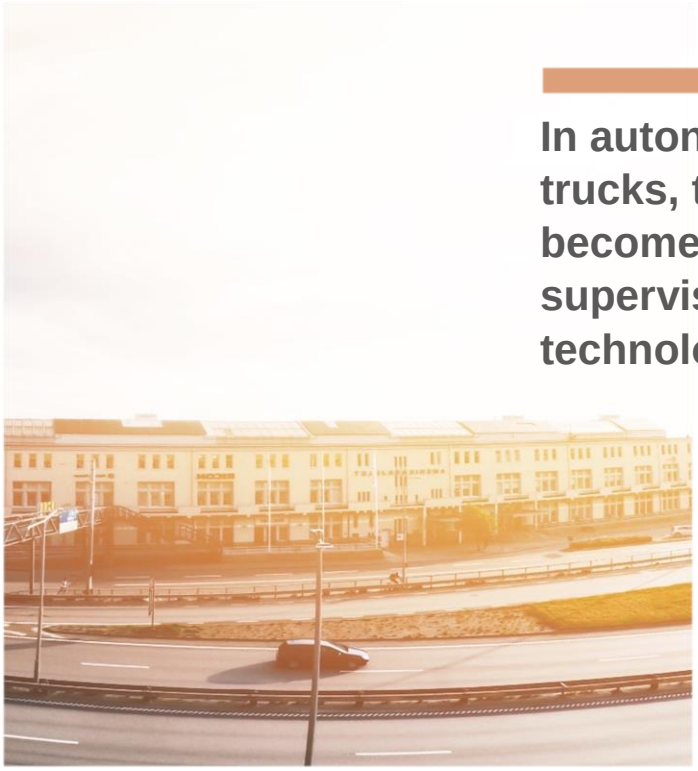
The development of autonomous trucks will impact the business models of 3PLs. Four major trends are arising and companies must react accordingly in order to stay competitive.

Increased automation will change daily operations

With the introduction of autonomous technology, traditional work tasks for truck drivers will change since driving will become redundant. In autonomous trucks the driver becomes the supervisor of the technology and extensive knowledge will be required for continuous maintenance. Enabling parallel tasks during transit, combined with reduced rest times, will result in increased productivity. Moreover, the introduction of platooning will also change the industry structure; dividing the market into PSPs & last mile providers. The 3PLs' operations will then either be concentrated on the line haul or the last mile.

A shift from human to physical and intellectual resources

As the truck driver becomes redundant, a movement from human to physical and intellectual resources will occur. In order for 3PLs to stay competitive, it is necessary to invest in new technology, IT-systems and supporting infrastructure. The remaining human resources will require knowledge about new technologies and systems, increasing the importance of education for employees to perform daily operations. Since there is also a challenge in finding qualified drivers, the transition from human to intellectual resources is thus not considered as a problem, but viewed as a solution.



In autonomous trucks, the driver becomes the supervisor of the technology.

THE INTRODUCTION OF PLATOONING TECHNOLOGY

will be disseminated by the OEMs

New businesses within platooning & last-mile providing emerges

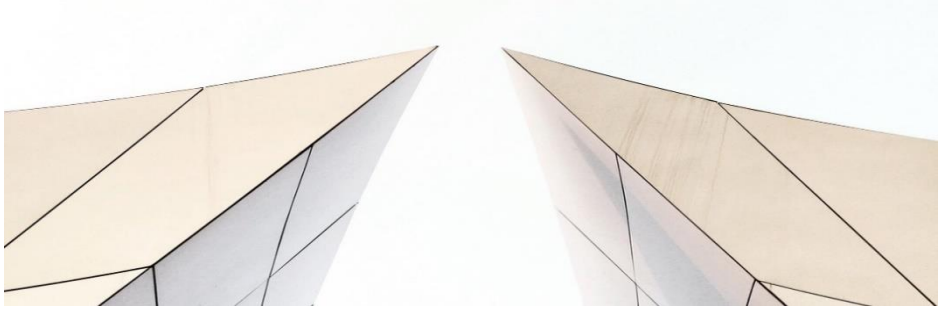
With the introduction of platooning, the changes will be different for larger 3PLs compared to the smaller haulers. For large and financially strong companies, new business opportunities will emerge through the introduction of platooning services. Since the likelihood of finding platooning partners is greater, often doing so within their own fleet, large companies will have a competitive advantage over smaller haulers. However, since platooning does not offer delivery to the final customer, the smaller companies will most likely act as last-mile providers. Hence, the role for these last-mile providers is to deliver the goods from the terminal where the platoon ends, to the final customer.

In order to test new technologies throughout the levels of automation and to determine its feasibility on the market, the truck manufacturers will offer the technologies to nominated 3PLs, often providing discount benefits. Partnerships such as these will be of high importance as they can aid some companies to become first movers in autonomous technology.

Investments in autonomous technology will reduce operational Costs

One of the main advantages of autonomous technology is cost savings. Currently, the biggest expenses for 3PLs are associated with driver and fuel costs, which can be significantly reduced by implementing autonomous technology. Mandatory resting times will disappear, leading to optimal utilization of trucks and thereby generating cost savings. Another benefit of autonomous trucks is the expected lower rates of accidents, consequentially reducing the maintenance costs of the trucks.

Despite the above-mentioned cost savings for 3PLs, new investments in technology must be made. Since the truck manufacturers are the ones that develop the technology, they are the ones that must invest the capital required. As a result, overall leasing rates for trucks will likely go up, causing increasing costs for 3PLs. For the larger, financially strong companies, it will be manageable to invest in the higher leasing costs. It will then be important that cost savings by using autonomous trucks outweigh the higher leasing costs. However, the smaller companies might have difficulties absorbing this transfer of costs from the manufacturers. Therefore, they face the risk of lagging behind technology-wise. Moreover, given the fact that smaller 3PLs are often used as a buffer to cover capacity constraints by the larger players, the question arises; if the small road haulers are pushed out of the market, who will then perform the transports?



THE LONG-TERM IMPLICATIONS

for the logistics industry

In the long term, autonomous technology will likely allow 3PLs to control the complete logistics chain from door-to-door. Hence, last mile operations are likely to be absorbed by larger 3PLs and cause further segmentation. This milestone will be the interconnection between external- and internal automated logistics. More specifically, the loading and unloading of long haul trucks at terminals can then be fully automated. Currently, loading and transshipment operations provides the largest constraints due to the lack of a standardized formats or unitization of consignments.

With the increasing influence of downstream actors, a shift towards centralization of logistics operations will likely also occur. As actors aim to control costs, all non-value added activities will be scrutinized even further, including all transports and logistics activities. However, transparency in transportation flows will likely cause 3PLs and retailers to refrain from owning or leasing vehicles on a long-term basis. Hence, if trucks are only going to be needed strictly on a case-to-case basis, the question is how the ownership structure will change.

The degree of readiness varies among industry players

3PLs are currently aware of the concept of autonomous driving and the technology behind it. Projects with autonomous trucks and platooning are planned to start during 2017 and be fully implemented in three to four years' time. The projects are initiated by truck manufacturers and done in collaboration with logistic companies and state actors. Small 3PLs are however not as prepared for the introduction of autonomous technology. A clear discrepancy can be seen between small and large companies when it comes to preparations made in order to implement the autonomous technology.

Conclusion – looking forward

It is clear that the development of autonomous technology will impact 3PLs. The entire market structure will change and will most likely be segmented into platooning services and last mile providers. Truck manufacturers will lead the development of, and investment in, the new technology. For individual companies the adaption of autonomous technology and development of business models will be key to maintaining competitive advantage. With the implementation of the new technology, both operating costs and the value-added activities will change. Even if the introduction of the technology is imminent, challenges still exist. Legislation, infrastructure development and public opinion makes forecasting of full automation difficult. Nevertheless, the key factor for future survival will be a successful adaptation of the new technology.

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