

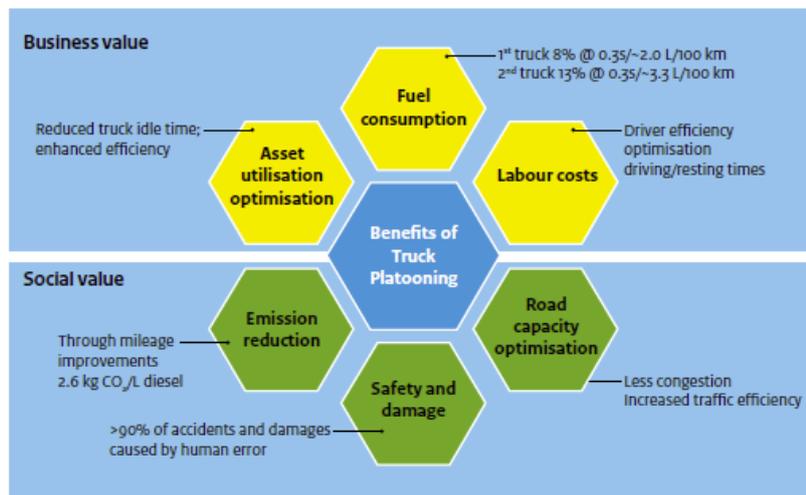


*Association Européenne des Concessionnaires
d'Autoroutes et d'Ouvrages à Péage*

**POSITION PAPER
ON
TRUCK PLATOONING**

Platooning is considered a major advancement towards automation in Europe. It consists in linking two or more trucks in a convoy, one following closely the other. These vehicles are equipped with automated driving support systems and connectivity technologies which allow them to accelerate or brake simultaneously.

Platooning is deemed to be cost-saving as the trucks drive close together at a constant speed. This means lower fuel consumption and less CO₂ emissions. Additionally, trucks braking immediately, with zero reaction time, platooning can improve traffic safety. And, lastly, platooning efficiently boosts traffic flows thereby reducing tail-backs. Meanwhile the short distance between vehicles means less space taken up on the road. At the same time the impact of truck platooning goes far beyond the transport sector. Automated driving and smart mobility also offer realistic chances to optimize the labour market, logistics and industry.



Benefits of platooning

Source: TNO WhitePaper: Janssen R. e.a., Truck Platooning Driving The Future of Transportation, February 2015, www.tno.nl.

The vision of Platooning is described below:

| Vision 2025 | | | |
|---|--|---|--|
| Aspect | 2016 | 2020 | 2025 |
| SAE Level: Platooning capability | Level 1 | Level 3 | Level 4 |
| Platoon brand composition | Mono-brand | Multi-brand | |
| Platoon length | Max. 2 or 3 vehicles, more vehicles on dedicated Infrastructure | 3+ vehicles per platoon | |
| Gap distance | Min. 0.5s | Min. 0.3s | |
| Business case for transport companies (direct benefits) | Fuel savings from improved aerodynamics, CO ₂ emission abatements | Fuel savings from improved aerodynamics, CO ₂ emission abatements | Fuel savings from improved aerodynamics, CO ₂ emission abatements, improved asset utilization, wage cost reductions |
| Legal | Exemption to drive on specific NL roads | Platooning is commonly permitted as business-as-usual. Exemptions for Level 4/5 testing | Driving and resting times legislation amended |
| Human factors | All drivers in the loop situationally aware | All drivers in the loop situationally aware | Lead driver in the loop, following drivers situationally unaware |
| Road network infrastructure | NL public main roads, high-capacity vehicles network, ITS corridors | Cross-border TEN-T ITS network | All EU motorways, cross-border access |



The vision of Truck Platooning becomes more and more reality. E.g. on 06/04/2016 a Truck platooning show case, took place under the Dutch Presidency of the European Union. Platoons of six vehicle manufacturers met in Rotterdam at the meeting of EU transport ministers.

Road Infrastructure concerns

Road infrastructure represent a key component for the deployment of innovative intelligent transport solutions in Europe. Toll Road Operators are following closely the European initiatives and projects on the deployment of truck platooning. ASECAP members actively support innovation along their road network in order to provide the highest standards of safety and efficiency to their customers. Toll road operators are committed to share their expertise and know-how in order to deliver the best and safest conditions for truck platooning in Europe.

However, truck platooning have to fulfil some key pre-conditions and ASECAP members have raised the following concerns over the fast deployment of truck platooning in Europe:

Road interchanges / road junctions / traffic flows' intersections: Platooning must be dissolved at motorway junctions/intersections allowing other vehicles to move freely and safely along the network by using the concerned interchanges and junctions without being blocked by Platoons. The same issue could also take place on traffic flows' intersections (i.e. acceleration and deceleration lanes), where platooning's dimensions may lead the other drivers to perform risky manoeuvres. It therefore needs to be analysed which road categories are suitable for Platooning trucks.

Tunnels: Fires in tunnels have always posed a serious threat to drivers' safety. The current technical regulations and the technical implementations (e.g. ventilation systems) in tunnels are designed to deal with fire in a single truck only. Platooning increases the risk of fire to be extended to the other trucks part of the convoy resulting in a more serious threat to drivers and emergency services inside the tunnel. Moreover, tunnel safety requires dedicated approaches of the platoons that must be under the control of the tunnel operator.

Bridges: The small distance between the vehicles in a platoon means an increased load to be transferred to the bridge structure. According to the calculations and estimations done for Gigaliners it can be assumed, that Platooning would result in more investments in order to secure bridges infrastructure or as a consequence Platoons need to be dissolved on critical bridge infrastructures.

Lay-bys: Lay-bys, on critical sections e.g. tunnels, bridges of the road network are not designed to be used by Platoons or by multiple trucks.



Traffic operation: Traffic management is the key responsibility of road operators assuring the safe, efficient and environmentally friendly flow of traffic. This task is based on the constant analysis of data and information in order to promptly inform the users / drivers of vehicles. Platooning might carry the risk of not being able to quickly adapt/respond to traffic conditions. This is particularly the case when road works are under way, where there is a reduced number of lanes, or in mountainous areas with steep slopes. Therefore, trucks part of the platoon need to communicate also with the other vehicles and the traffic management centres in order to ensure the safest and smoothness traffic operations for all users. As a result, platooning must be activated only when authorised by the traffic operator.

Digital interface to the road infrastructure manager: A road operator has to be able to instantly access platoon data, such as length, weight, heights, exact location, destination etc. to manage the co-existence of analogue traffic and autonomous traffic. In emergency situations it may be also needed to have the possibility to reroute a platoon, dissolve it or bring it to standstill. Here the necessary standardised communication interfaces need to be created. It should be considered a specific procedure of transit authorization for Platoon, similar to that of “exceptional transport” (i.e. length > 16m, height > 4m, width > 2,55m, weight > 44tons), and a “technical convoy” with specific high-impact signs (one behind and/or one ahead) that supports/controls the Platoon during the highway’s route.

In the long run independent platoon service providers may appear. The interfaces in the whole value chain have to be harmonised, to allow the seamless operation of platoons across different road sections operated by different road operators, across regional and national borders.

Toll collection: The communication between the DSRC tolling station and the On-Board Unit inside the vehicle could be hampered by the short distance of the different vehicles forming a platoon. This could prevent the transaction and result in miss-payments at toll stations denying the user pays and polluter pays principle. Additionally, radio frequency conflicts between the ETC systems and the on-board devices that control the “connected” trucks should be avoided.

Road charging: A platoon causes a cost to the road infrastructure operator; hence a platoon levy has to be included into the infrastructure cost of the Eurovignette Directive.

Accident: In case of Platoon’s accident, since some trucks could be involved simultaneously, the operations of mechanical assistance could be longer and more complicated. As a consequence, it should be considered an improved procedure of roadside assistance.

Platoon’s overtaking: The overtaking is generally a critical manoeuvre for heavy trucks, and in particular for Platoons, due to the dimensions (especially the length) which imply a long operating time. As a consequence, it should be denied for Platoons in most of the highways, probably except the 4-lanes carriageways.



Conclusions

Platooning stands for the car and truck industry as an innovative development for the era of connected vehicles and autonomous driving. It also stands as new opportunities for the transport sector, to reduce costs and risks, and to improve operations efficiency and performance. For the road operators, platooning also raises promising opportunities to optimize the road capacity usage, to improve safety, to reduce congestion and to contribute to the sustainable mobility, by reducing fuel consumption and emissions.

However, since truck platooning comprises a number of trucks supported by smart technology that can dispense professional and dedicated drivers, there are a number of concerns that must be addressed in critical areas and in emergency scenarios. It includes congested road interchanges and junctions, tunnels and bridges, and complex traffic operations. In case of emergency the traffic manager should be able to order truck platooning dissolution, which must be accepted and implemented.

ASECAP

ASECAP is the European Association of Operators of Toll Road Infrastructures, whose members' networks today span more than 60,000 km of motorways, bridges and tunnels across 24 countries.

ASECAP's purpose is to defend and develop the system of motorways and road infrastructure in Europe applying tolls as a means to ensure the financing of their construction, maintenance and operation.





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