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How technology
contribute to
efficient driving



1 Why skilled drivers are an asset for any business

Truck driving is a skill, and the level of a driver's skills will have a big impact on any business. A highly skilled driver will:

- Consume less fuel through more efficient driving techniques
- Be less likely to have an accident due to driving with better anticipation and awareness.
- Cause less wear and tear on a truck's components, and by extension improve uptime and reduce the cost of repairs and maintenance.

Driver coaching helps many businesses and drivers improve their skills and deliver the above benefits. The challenge is knowing each driver's strengths and areas that can be improved, and to be able to provide tailored coaching. Even highly experienced drivers could have areas of improvement that they are not aware of.

However, through new technologies – namely connectivity and data analytics – it is now possible to collect data and use it to fine-tune driving techniques. This is resulting in a growing number of connected services that can provide real-time coaching tips, as well as generate reports and insights that can help traditional offboard driver coaching to be more targeted towards areas that offer potential for further improvements.

Looking ahead, advances in machine learning and artificial intelligence (AI) are making it possible to analyse and process greater amounts of data, which in turn can help refine driver coaching further.





2 Safety: Why skilled drivers are safer drivers

Today's trucks feature a variety of advanced active safety systems, which are designed to help mitigate accidents. The same technologies can also help identify and prevent future accidents by highlighting unsafe situations, near misses and areas of improvement. Today, connectivity and connected services can help identify the following:

- **High incidences of harsh braking or harsh acceleration by the driver:** This can indicate high exposure to potentially hazardous situations. It could be because the driver is often stressed and under pressure, or frequently forced into difficult traffic conditions, but either way it increases the likelihood of an accident or collision.
- **Activation of emergency brakes:** Such systems are effective in mitigating collisions but if they're activated frequently, this suggests the driver is often precariously close to having an accident.
- **Frequent use of warning systems:** This includes for example driver alert system and forward collision warnings where frequent activation indicates the driver might be inattentive when driving.
- **Frequent use of ESC:** If the Electronic Stability Control (ESC) is activated regularly, this suggests that the driver is often at risk of losing steering control, due possibly to slippery surfaces or uneven loading.

Identifying any of these actions opens the opportunity to rectify them through coaching and training, to keep drivers safe.

3 Fuel and the environment: How good driving technique reduces consumption and CO₂ emissions

Whether the ambition is to save fuel or minimise CO₂ emissions, driving technique has a large influence, with highly skilled drivers able to offer significant reductions compared to their colleagues.

Not so long ago, the fuel gage was the only metric for measuring fuel consumption. However, connected services make it possible for fleet managers to pinpoint who, when, where, and how fuel is being consumed. They can also help individual drivers to identify areas of improvement, with even the most experienced driver capable of potentially saving a few percentage points with the right insights and tips.

Through data and connected services, potential for fuel and CO₂ savings can be identified in the following areas:

- **Anticipation and braking:** Frequent harsh braking and acceleration not only increases the risk of an accident, but it is also less efficient when it comes to fuel. The ideal technique is to anticipate upcoming situations, utilise the vehicle's momentum and use the brake as sparingly as possible to avoid wasting energy.
- **Engine and gear utilisation:** Driving in the optimal gear, with the optimal speed and torque, in any given situation will help reduce fuel consumption.

- **Speed adaptation:** The optimal technique is to maintain a consistent speed with as little fluctuation as possible, while not exceeding the speed limits.

- **Standstill:** Long periods of unnecessary idling are a huge waste of fuel and should be minimised as much as possible.

This information can then be reported back to drivers, both in real-time as well as after the trip in the form of driver coaching. The information can also be consolidated into reports for whole fleets, enabling businesses to invest in courses and training programme that target the areas most in need of attention.



“ Connected services make it possible for fleet managers to pinpoint who, when, where and how fuel is being consumed ”



4 Making it work: How to apply digital driver coaching in practice

No matter how advanced or sophisticated a driver coaching solution is, it is worthless if it is not compatible with drivers' daily reality. For this reason, developers work extensively with interaction design and behavioural science to ensure their solutions are user-friendly and intuitive, and that they meet specific needs of both individual drivers and customers.

Compatible with daily work

Driver coaching needs to be non-intrusive and not interfere or disturb the driver unnecessarily. It's important that they do not receive too many notifications or are overwhelmed with too much information at once. The information should be accessible and easy to understand and integrated with their daily workflows.

Good timing is essential

Coaching tips must be relevant and applicable to the driver's situation. This way they can make sense of the information and use it directly. Untimely instructions, or information that does not meet the driver's needs at that given point, will just be perceived as a nuisance.

Right recommendations, right driver

A connected driver coaching solution needs to be tailored to each individual and their assignment. There is no point providing tips for driving on highways to a driver of a refuse truck. If



a less experienced driver has multiple areas of improvement, rather than bombard them with information about everything they could be doing better, a smart solution will prioritise a handful of actions that they can start with. For example, start by helping the driver to reduce harsh braking before moving onto more advanced techniques.

Coach, don't criticise

Driver coaching should be delivered in a language and tone that is encouraging. The intention should always be to help the driver improve their driving technique – not make them feel inferior or deficient. For the same reason, a good solution should also acknowledge improvements and progress.



“ It will be possible to develop algorithms that can deliver coaching tips and advice that relate to a specific driver in their specific situation”



5 The future of driver development: What AI and machine learning can contribute

As trucks become capable of generating larger amounts of data, and developers get better at using this data, it will be possible to develop driver coaching services that are faster, more responsive, and more precise for specific situations. In short, even more intelligent.

Artificial intelligence and machine learning are making it possible to cluster larger volumes of data and analyse it for common patterns relating to specific combinations of factors. For example, it could take into different topographies, vehicle configurations, loads, weather conditions, just to name a few.

More targeted coaching

Currently, connected solutions are based on generic KPIs and do not take into account any external factors that can affect the way someone drives. For example, they can measure vehicle braking but have no way of knowing if and when braking is needed. However, as systems become better at identifying how specific factors affect driver behaviour, it will be possible to develop algorithms that can take these factors into consideration. Coaching tips and advice would then be adapted according to the individual driver and their specific situation.

More proactive driver coaching

Current connected services for driver coaching tend to be reactive in that they respond to behaviours and events that have already happened. The next step is to develop services that are more predictive and can anticipate what is likely to happen next. For example, by using map-based data, a vehicle can forecast the road ahead and then a connected driver coaching service could potentially offer tips on speed, settings and what features the driver can utilise for even more efficient driving.

6 Want to know more?

Whether you're a beginner or an experienced driver, the right type of coaching can help any driver to perfect their technique. Already today, a range of connected services are available, which can help drivers identify improvements they didn't even know they needed.

If you think connected services can help your business, start by exploring the options that are available and find the solutions that best match your needs. For more information on Volvo Trucks' services, **read more here** or contact your local dealer.



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