



Press information

Volvo Trucks takes the lead with tomorrow's wireless road trains

Using wireless technology to link a road train, in which a lead truck controls a convoy of vehicles driving behind it, is already technically feasible. The technology was demonstrated at the conclusion of the SARTRE project, which Volvo Trucks participated in. Although it may take some time for wireless road trains to be part of everyday reality, the technology brought about through the project could be put to use for other purposes in order make our traffic environment considerably safer in the near future.

The EU-financed SARTRE (Safe Road Trains for the Environment) project recently presented the results of three years of research and trials. Representatives from the EU Commission and experts in transport technology from Europe, the US and Japan got to see a fully functioning wireless road train in operation at Volvo's proving ground in Sweden. In the lead was a Volvo FH truck, closely followed by another Volvo truck and three cars.

Self-driving cars in road trains

The participants were able to see that the project's aims had been achieved: development of a technology for wireless road trains that can improve traffic safety, reduce the environmental impact of road traffic and improve traffic flow. The building of test vehicles, car-to-car communication and sensors for the control of nearby vehicles has been underway for three years. Now these technical achievements make it possible for multiple vehicles in a road train to integrate smoothly with other traffic on public motorways. The entire road train is interconnected through wireless technology, which ensures that the trailing cars follow exactly in the track of the lead vehicle – as though the train consisted of a single vehicle. The result is that the driver in a trailing car can relax, perhaps read a book or watch TV, while the car drives itself.

“The gaps between the vehicles are much smaller than in normal traffic, but it is as safe, or even safer to be part of the road train, since it is lightning-quick computers and not human beings who respond to even the slightest change in any of the cars in the train,” explains Andreas Ekfjorden, project manager for Volvo Trucks' portion of the SARTRE project.



One of Volvo Trucks' most important responsibility areas in the project was to determine exactly what information needs to be transmitted back down the road train so that the other cars can follow the lead truck.

“All the vehicles in the road train have a roof-mounted antenna so they can receive information from the lead vehicle's computer system. For instance, if the lead truck starts braking, all the other vehicles in the train brake at exactly the same time,” relates Andreas Ekfjorden.

The lead truck is also equipped with an alcolock and the full range of active and passive safety systems that Volvo has in production today.

Safer and more economical

The purpose of SARTRE – to increase safety and decrease fuel consumption – is the reason that Volvo Trucks chose to participate in the project. It is the cars' fuel consumption that drops the most as a result of the reduced air drag in the compact convoy of vehicles, but the lead truck's fuel consumption is also cut. This will make it profitable for haulage firms to provide lead trucks. Vehicles that join the convoy could pay a fee, thus benefiting the haulage firm.

What is more, the results of the SARTRE project show clearly that a truck with a trained driver and comprehensive equipment package contributes to heightened traffic safety that actually benefits other road users.

“It's fantastic that a truck driver can drive from A to B with at least one car trailing behind, while at the same time cutting both fuel consumption and carbon dioxide emissions. And, not least, that he can replace several car drivers and thus boost safety,” says Lennart Pilskog, director public affairs at Volvo Trucks.

Future challenges remain

However, although the SARTRE project has developed well-functioning road train prototypes there are still challenges that have to be overcome before the system can become an everyday reality. For instance, it is necessary to continue working to boost reliability, which must be on a par with that of an aircraft's autopilot before road trains can emerge as a truly viable transport solution on public roads.

Another challenge that remains is the transition from driving in a convoy to manual driving and vice-versa. It has to be absolutely clear who is responsible for driving a trailing vehicle and exactly when that responsibility is transferred. This is not merely a technical issue, a lot depends on driver acceptance and the necessary feeling of safety and security.



Legislation is another vital issue that requires further attention. According to the Vienna Convention it is illegal not to have control over one's own vehicle. This means that automated driving is not allowed. Adapting both the Vienna Convention and the national legislation of the various EU member states is estimated to take about ten years.

“Despite legislative challenges, there are so many benefits to be derived from road trains – in terms of traffic flow, safety, the environment and not least haulage firm profitability – that I believe this will become a reality in one form or another,” states Lennart Pilskog.

Although it may take time for wireless road trains to become a reality, applying the technology in other areas could mean the research results are put to use in the near future. The new communication technology, that is to say wireless car-to-car and car-to-infrastructure, may be used in both cars and trucks for a wide variety of purposes such as to provide warnings about accidents, obstacles or ice on the road.

“It's a lot like being able to look around the corner, it'll be a major help in improving safety on the road,” concludes Lennart Pilskog.

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Facts SARTRE (Safe Road Trains for the Environment):

- Project start: September 2009
- Project conclusion: September 2012.
- Budget: 6.4 million euros.
- Financer: The EU Commission contributed 60 % of the research funds for the project as part of its Seventh Framework Programme, while the participating companies financed the remainder.
- Project management: British technology specialists Ricardo Ltd.
- Participating companies: Ricardo Ltd, UK, Idiada and Tecnalia Research & Innovation, Spain, Institut für Kraftfahrzeuge Aachen, Germany, SP (Technical Research Institute of Sweden), Volvo Car Corporation and Volvo Group Trucks Technology
- Purpose: To develop strategies and technologies that allow road trains which offer significant environmental, safety and comfort benefits on today's motorways, without requiring modifications to road infrastructure.
- New technology developed as part of SARTRE: Human-Machine Interface (HMI), the communication between human being and car and advanced car-to-car communication.
- Aspects which remain to be solved: Legislation, responsibility issues and a common communication standard



- Can become a reality: In about ten years, once legislation has been modified.

Volvo Trucks' active safety systems

The truck used in the SARTRE project is equipped with all the safety systems that Volvo Trucks currently offers, including ESP (Electronic Stability Program), Lane Keeping Support, Driver Alert Support, Lane Change Support and Adaptive Cruise Control.

For more information about:

- ESP: <http://www.youtube.com/watch?v=gDUX1HguiJs>
- Lane Keeping Support: <http://www.youtube.com/watch?v=dw6Kqb9t3J8>
- Driver Alert Support: <http://www.youtube.com/watch?v=UeHOM6OT5bc>
- Lane Changing Support: <http://www.youtube.com/watch?v=4DvGHnuJvKM>
- Adaptive Cruise Control: <http://www.youtube.com/watch?v=X41FWOAxYgU>

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