



CONNECTED VEHICLES

WHEN THE TRUCK BECOMES A DIGITAL PLATFORM

With connectivity today extending to the entire rig, including tyres and fuel tanks, the truck 2.0 is one of the cornerstones of the digitalisation of transport, offering companies automated, shared and anticipatory methods to manage the activity and movements of people, fleet and goods.

Consequently, connected vehicles will be under the spotlight at SOLUTRANS 2017 (from 21 to 25 November 2017 at Lyon - Eurexpo).

CONNECTED TRUCKS: ALREADY IN EVIDENCE ON THE GROUND

While the autonomous truck (insofar as being driverless) will have to wait a few more years before it takes to the roads of Europe, the connected vehicle already exists in reality on the ground.

Heavy goods vehicle telematics have been an established component of transport management systems for many years, even if they are not yet fully widespread or adopted in full by all vehicles and firms. They have provided an initial connection between operations and the driver and truck via real-time fleet positioning and through the recording and reporting of driving profiles, fuel consumption and driving time.

Telematics has also connected the firm to the vehicle by allowing the transfer of data such as road maps, address details, task lists and recommendations to drivers, directly onto an on-board screen. On this mature telematics market, heavy-duty vehicle manufacturers have for many years remained in the shadows of on-board IT and software processing specialists. TRIMBLE TRANSPORT & LOGISTICS, for instance, will soon be fitting its on-board/mobile system XPS to nearly 7,000 vehicles from the main European subsidiaries of XPO Logistics, replacing RENAULT TRUCKS solutions. But everything is beginning to change...





TELEMATICS AND AUTONOMY

Following in the footsteps of an industry 4.0 which is digitalising and 'hyperconnecting' everything, connectivity has become a standard aboard new generations of vehicles, from HGVs to passenger vehicles, but also LCVs, work site machinery and transport. Manufacturers today are operating a shift from basic telematics solutions to embedded intelligent systems multiplexed with vehicles' electronic networks and connected to sensors, radars and lidars. DAIMLER, for example has announced that nearly 400 vehicles are connected to the Truck Data Center, its new on-board system fitted to the latest generation of MERCEDES heavy goods vehicles. This set of interconnected components offers the truck a form of intelligence, enabling it to self-examine itself and, in the manner of an IT server, transmits and receives data nonstop.

Technical progress tends to focus on the driving autonomy of trucks, following the developments achieved by the automobile industry. The tests of convoys of autonomous HGVs, otherwise known as platooning, conducted on European roads as part of the European Truck Platooning Challenge in 2016, but also planned in Germany by MAN and DB Schenker for 2018, are just a foretaste of the new generations of connected trucks which will one day become autonomous.

Innovation surrounding connected vehicles and the utilisation of technical data pushed to the extreme limit also allow the launch of new services for carriers such as fleet management and digital tools or remote diagnostics and predictive maintenance.

CONNECTED RIGS

But before addressing the impact of connected vehicles on the optimisation of transport, it is important to bear in mind that connectivity does not just apply to trucks but to the notion of the entire rig, comprising the tractor, its trailer and is various accessories.

And 2017 is set to be the year of the connected trailer for industrial bodywork specialists who will take the opportunity at SOLUTRANS to unveil new telematics solutions or major updates of existing versions:

- LAMBERET which is working on a remote diagnostics and predictive maintenance solution for trailers;
- or KÖGEL and its KTTM telematics model which allows users to send technical data from the electronic braking system (EBS) such as temperature measurements or trailers' positions.

Also worth noting is the development or reinforcement of retrofit telematics solutions for trailers, either connected to the tractor unit or independent. Historical industry figures working in HGV telematics (Transics, Vehco, Astrata, Trimble, Blue Tree Systems, etc.) are establishing partnerships with bodywork and equipment manufacturers to integrate trailer data in their fleet management web portals or develop their own autonomous trailer connection terminals. This way, a single software solution can centralise the data of tractor units and trailers, including from different brands and equipment.

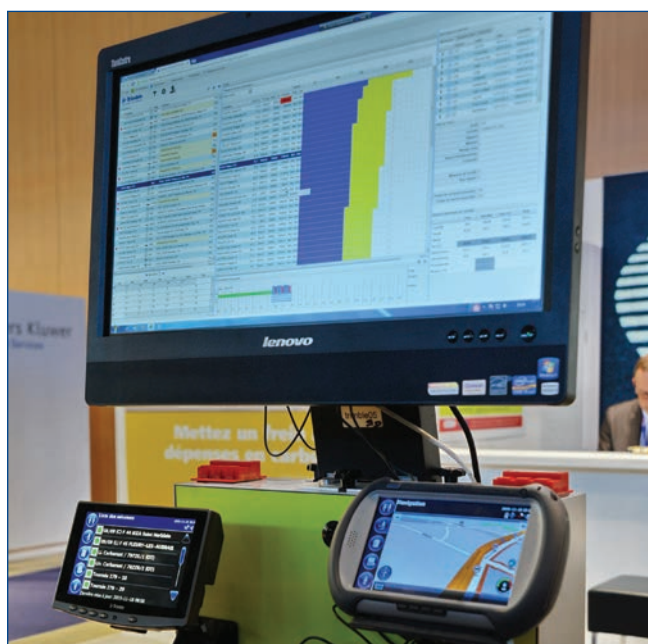


IOT, SENSORS AND MOBILE APPS

In parallel, start-ups are using the potential of cloud technology and sensors in the trailer or on tyres to develop entry-level solutions which also function independently of vehicle brands and models.

But the trend of bodywork manufacturers ramping up their digital offering and developing their own connectivity systems is also a factor which improves service offerings: predictive maintenance, real-time measurement of cargo (temperature, light or humidity levels), intelligent door locking and unlocking systems, etc. Finally, the increasing use of connected devices inside and outside the vehicle opens up the way to new practices and feedback of information. Tyre management solutions offered by MICHELIN or CONTINENTAL, for example, featuring a pressure sensor and in-cab data display, connect the tyre fleet with the firm to allow it to monitor tyre wear in real time. The company BRAY TRANSPORTS in the north of France announced in May this year that it had lightened payloads by an average of 100 kg per vehicle, equating to 10 tonnes across the fleet, thanks to better control of connected accessories.

Since adopting the ContiPressureCheck system by CONTINENTAL, carriers can now dispense with a spare tyre, offering savings in the tyre budget. Other objects also interface with the truck to improve driving conditions and safety: digital rear view mirrors connected to cameras which expand the field of vision or film the interior of the trailer; the smartphone to command the vehicle's infotainment system; a connected wristband or heart sensor to measure the driver's state of fatigue; the electronic toll badge that can interact with motorway barriers or environmental taxation toll devices; fuel tank stoppers such as PROTECTFUEL or ALERTGASOIL which continuously measure and transmit consumption and emit a warning in the event of an anomaly; a tablet application to command the skip or silo from outside the vehicle, etc.



OPTIMISING DELIVERY ROUNDS, TRACKING, REMOTE DIAGNOSTICS

The scope of opportunities is huge if one considers the vehicle as a computer on wheels into which one can plug an unlimited quantity of computerised accessories.

The tracing/tracking of trucks and goods will become as systematic as geo-positioning journeys. Delivery schedules will be continuously readjusted using real-time monitoring of incidents on the road to consistently meet deadlines, reduce kilometres travelled and minimise consumption and pollution.

Connected vehicles are also and most importantly about being able to measure a vehicle's state of health by implementing continuous remote diagnostics. This is achieved by predictive maintenance contracts launched notably by SCANIA and MERCEDES under the name UpTime, or ServiceCare by MAN who launched a new activity-specific maintenance programme in April 2017. The principle is to allow the machines to continuously analyse the technical data of vehicles so as to help aftersales in planning services at the best possible moment, not too early and not too late. With the consent of carriers, workshops have access to automated maintenance reports in real time. In the event of a breakdown, technicians are advised immediately and can mobilise the usual procedures. But, even better, predictive algorithms are expected to have already forecasted the possible breakdown and will alert the technical centre that a worn part must be replaced! Downtime due to maintenance is thereby anticipated and reduced by continuous remote fleet diagnostics, also facilitating the spare parts order process. In the event of an incident on the road, the connected truck will automatically guide Aftersales both in solving the breakdown remotely and in organising geo-located breakdown assistance, for example.

Carriers receive a number of benefits, with new access to enriched information about the fleet, and, by extension, about activity. It can already be noted that the transportation service and customer service are improved by the real-time monitoring of tasks and information sharing with customers. Next, owners receive hard and fast benefits in the use and wear of resources by reducing kilometres travelled and consumption, monitoring driving profiles and the fleet's «state of health». Fleet managers also save considerable time by automating a great many everyday tasks, thus becoming more available for management or sales activities. For the profession, the connected vehicle is a crucial link in the digitalisation of transport. It places data at the heart of operational and decision-making processes. **This is why behind the connectivity of the truck lies an even more important challenge: data processing.**

CONNECTED TRUCKS AND BIG DATA

The rig is already connected today and will be increasingly so in the future, with the progressive emergence of new data-based communications networks (5G, Bluetooth 5.0, Sigfox and LoRa, HaLow Wi-Fi, etc.) and increasingly powerful processing algorithms, and with the increasing deployment of sensors and other connected objects in vehicles, and with machine-to-machine communication becoming ever more prevalent in the supply chain. And yet in spite of the best efforts of heavy goods manufacturers and tomorrow those of global giants such as GOOGLE, APPLE, TESLA and INTEL to contribute intelligence and speech to vehicles, nothing would be possible without algorithms and data analysis. This race to connectivity must therefore be placed in parallel with hardware development and software progress.

It is with good reason that MAN created the subsidiary RIO in order to develop a Cloud platform to centralise truck data and a suite of specialist applications designed by an ecosystem of partners. SCANIA has applied the same model, with the applicative portal ScaniaOne, accessible on tablets, or at DAIMLER with its portal FleetBoard and its range of associated applications. The objective is to share and simplify access to data for all transport players through online software boosted by powerful servers and calculation algorithms. This is also the major trend among publishers and integrators specialising in transport management and on-board IT, which develop «open portals» capable of connecting to or fitting into the IT systems and application ecosystem of all actors, from the order principal to the end customer. These new solutions capture all of the data from the vehicle and goods and redistribute it to the interested parties.

In addition, with the help of predictive mass data analysis tools, processing systems are enriched by performance reports and indicators which become strategic to optimise the profitability of transportation.

Finally, thanks to connectivity, the truck is becoming increasingly intelligent. By combining the data from sensors with cartographic databases and with the topographical indications

of roads, or even data emitted by infrastructure (traffic lights, signalling, gateway, car par, terminal, etc.) the connected vehicle automatically adapts driving styles and becomes semi-autonomous. Tomorrow vehicles will be able to automatically react in real time to weather, traffic conditions, the gradient of a slope, the sharpness of a bend or adopt the appropriate engine speed.

Before replacing the driver, the key challenge of the as yet embryonic concept of V2E (Vehicle To Everything), is to optimise transport and make it safe. **The technology is there, it merely remains to adapt regulations and train up transportation in all things relating to trucks 2.0!**

CONNECTED VEHICLES IN THE SPOTLIGHT AT SOLUTRANS

■ TALK
WEDNESDAY 22 NOVEMBER - FROM 10.30AM
TO 12.30PM

«SWEDEN DAY»

«Examples of Swedish solutions aiming to improve the efficiency of goods transportation, resulting from partnerships between the transport industry and Swedish universities and governmental bodies.»

■ TALK
WEDNESDAY 22 NOVEMBER - FROM 2.30PM
TO 4:30PM

«Commercial and urban vehicles: autonomous and driverless concepts: Utopia or reality?» and «Connected vehicles and semi-trailers: for better tracking of goods and people.»

■ TALK
THURSDAY 23 NOVEMBER - FROM 2:00 PM
TO 3:00 PM

«Smart City: Transpolis, the first laboratory town dedicated to urban mobility and smart and connected goods vehicles.»



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