AutomotiveConnect: Commercial Vehicles

Driving Performance in the Digital World
OEMs that manufacture commercial vehicles are re-examining the way they do business, in order both to increase their ability to deal with disruptions like peaks and troughs in demand and to address changes in the expectations of the fleet operators and similar organizations who are their customers. From working with these OEMs, Capgemini understands the challenges and has developed an approach, AutomotiveConnect, that offers solutions to help with every stage of the product lifecycle. This model is the next evolution of our well-received AutomotiveConnect concept for the automotive industry as a whole.

Commercial vehicle manufacturers need to deal with market disruptions

The commercial vehicle business currently looks healthy, with the truck fleet expected to grow at a compound annual growth rate (CAGR) of 4.3% until 2020 (figure 1), though growth rates vary considerably between markets.

But even compared with the rest of the automotive industry, this is a highly cyclical business, with OEMs well aware that they are extremely vulnerable to peaks and troughs in demand. A transportation company looking to purchase buses will simply delay the purchase if a recession comes along, having decided that they can manage with their existing fleet for a bit longer than planned. That means the effect of a recession on commercial vehicle manufacturers is even more pronounced than the impact on a passenger vehicle company like GM or Ford.

OEMs know that their best bet for smoothing out the peaks and troughs is to sell services as well as products. If instead of selling 20 vehicles to a trucking company they sell leases or “power by the hour”, then recession-hit customers can simply scale down their spending rather than stop altogether. But moving to this model is not so easy.

Apart from market instability, other sources of disruption include regulatory change, increasing expectations from fleet operators regarding uptime, and increasing public and government pressure to reduce environmental impact. The role of the dealer is becoming more complex, with dealers (and other third parties) developing on-board tools and services that need to co-exist with those that OEMs provide.

At the same time, the technology options available to support commercial vehicle OEMs are widening with the advent of vehicle connectivity, big data and autonomous driving (with “platooning” or convoy management of particular interest to the commercial vehicles market). Security is a major concern here – not only do drivers and passengers have to be kept safe, but goods also have to be protected to retain their value. In addition, if a vehicle is carrying a hazardous material such as nuclear waste, the consequences of an autonomous vehicle being hacked could be a catastrophe on the scale of Chernobyl.

Opportunities and challenges

Apart from dealing with disruptive market change, another reason OEMs are reviewing their way of doing business is to respond to current opportunities and challenges.

For example, B2B customer expectations are evolving rapidly; the fleet owners and managers who are the customers of commercial vehicle manufacturers expect more than just great driving performance from their fleet. Tomorrow’s “connected fleet manager” will be sitting in something like NASA mission control reviewing every aspect of the fleet via a dashboard-style screen showing who is where, which vehicles need service, and which driver is accelerating too much and using too much fuel – and contacting the drivers as necessary.
The main enabler of these expectations is more “intelligent” and communications-enabled vehicles. Commercial vehicles need to be equipped with strong telematics capabilities. Pundits suggest autonomous driving capabilities could reduce operating costs by 66-75%⁴, mainly through elimination of labor costs. Other revolutionary advantages of autonomous driving include optimized fuel efficiency through stabilization of fleet speeds, fewer accidents, lower insurance costs, and faster delivery, since regular rest breaks won’t be needed.

Commercial vehicle OEMs need to improve their ability to combine information about vehicles and customers to produce insights that can be acted on. When a tire needs replacing, for example, the fleet operator would like to direct the driver to a nearby garage with a special offer on tires – saving money and maximizing the time the vehicle’s on the road. OEMs themselves need more insights – for example, they should be able to predict when a fleet owner will be looking to upgrade or change their buses, and what models they will want to buy. The supply chain should be demand-driven, rather than reactive as it is at present – more vehicles should be built to order and fewer built to stock.

Another group of challenges relates to operations, and the need to make use of digital manufacturing to go to market faster and with better products. Revolutions in digital manufacturing are improving product quality and uptime of assembly lines. New technologies such as additive manufacturing are making complex parts much easier to manufacture, resulting in overall cost reductions. However, realizing these savings can be hard. Many companies have spent several years designing and implementing new processes and systems, yet have never managed to roll them out beyond a few of their manufacturing sites. The challenge is to gain the efficiencies of standardization without sacrificing the responsiveness demanded by customers today.

So the industry faces a lot of disruption, but this can provide opportunities as well as headaches. Capgemini’s research with the Massachusetts Institute of Technology (MIT) over several years, together with our collaborations with companies in sectors such as retail, demonstrate the enormous advantages available to organizations that embrace the digital economy and restructure around the customer. This is equally true for the automobile industry. Disruptive change opens up business opportunities to add value for customers and increase profitability for OEMs.

A practical response to the challenges and opportunities

We believe the industry’s response is best planned around the four areas of activity identified above: customer, vehicle, insights and operations. Capgemini has established four corresponding focus areas within its automotive practice under the heading of AutomotiveConnect for Commercial Vehicles:

Telematics and connectivity are revolutionizing commercial vehicle operation, with enormous opportunities for OEMs.”

Wolfgang Bernhard, Daimler Trucks

1 Tillemann, L., and McCormick, C., “This could be the biggest hurdle for driverless cars”, in Fortune, February 15, 2016 http://fortune.com/2016/02/15/driverless-cars-google-lyft/
Connected Vehicle

Telematics on a truck or bus should be able to tell drivers when they’re driving at the wrong speed, when they need to increase horsepower to get up a hill, and so on – but they need to relay that information to the fleet manager’s “mission control room” as well, which means that the vehicle must be connected. With commercial vehicles, connectivity is mainly about maintenance and vehicle management. A driver only drives for a maximum of 10 hours a day but a commercial vehicle can be on the road 24 hours a day. In order to minimize changeover times and maximize driver effectiveness, the vehicle should configure itself with the seat position and so on that a given driver likes. If the driver is “up the road”, i.e. needs to go and rest inside the vehicle, it should be able to provide the infotainment and so on that will keep the driver happy – after all, it’s their home. Vehicles also need to “learn” about frequently used routes and provide services proactively in line with the needs, wants and desires of fleet managers and drivers.

Technology options for making all this happen are already emerging. Commercial vehicles can be linked to the internet via hubs that aggregate details from onboard monitors and allow sophisticated monitoring and optimization of logistics, availability and costs. By adding real-time traffic information, it becomes possible to implement mobility management, allowing fast, safe and cost-effective transportation. Vehicle management systems can support drivers in minimizing vehicle operating costs and increasing driver comfort – for example, through a detailed vehicle status display or by transmitting usage data. Safety-relevant functions such as driver fatigue detection are also becoming available.

Changes like these will necessitate improvements to the human-machine interface (HMI) plus high levels of security and, of course, problem-free internet access. New control methods based on voice recognition and gesture will appear.

Please refer to our paper Connectivity for commercial vehicles – the need for an open platform for further ideas about how these changes can best be implemented.

Connected Insights

Companies can gain competitive advantage by applying analytics to customer and vehicle data, producing insights to enable the features and services discussed above. Obviously it is important to have the right telematics services installed in order to collect the right data. We find that the key insight for fleet management is “How’s my driving?” i.e. the amount of braking, acceleration and so on that’s being used; poor driving can not only wear the tires and increase fuel usage but also reduce the value of a vehicle. Another key insight is “What is about to break?” since knowing that your bus is running out of oil can minimize the time off road, as well as allowing timely generation of safety warnings. Connected Insights are a key enabler of developments like platooning or convoy management: With the right insights delivered in real-time, you can increase the sensitivity of braking, which in turn makes it possible to reduce the distance between trucks, and hence fuel usage. Similarly, with the right insights a vehicle can automatically adjust its engine configuration to provide the horsepower needed to get up a particularly steep hill.

“I anticipate that telematics will enhance the overall truck experience, from vehicle status monitoring to ultimately servicing the vehicle.”

Wade Long, Volvo Trucks

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Connected Operations
To achieve the visions for the Connected Customer, Vehicle and Insights, OEMs need to build commercial vehicles in more sophisticated ways. We advocate a Connected Operations approach that takes advantage of newer techniques such as 3D printing, additive manufacturing, manufacturing intelligence and predictive maintenance. These approaches help companies maximize their agility in every aspect of manufacturing, so they strengthen their ability to bring new products to market quickly and in accordance with customers’ preferences – including those products that need to be tailored to local requirements. To do this, it’s necessary to industrialize – i.e. standardize on best practice processes across the business – which must involve overcoming individual plants’ resistance to standardization. Templates and other tools can accelerate and de-risk the process, making it possible to industrialize while safeguarding the organization’s agility.

Capgemini offers many solutions to help OEMs across the commercial vehicles sector to address the four interconnected elements of the AutomotiveConnect approach and better meet the changing expectations of their customers.

“We want to intervene as quickly as possible to ensure we’re going to have the highest uptime available.”
Terry Kline, Navistar

Next steps
The changes discussed above have huge potential to benefit both commercial vehicle OEMs and customers such as fleet owners and managers. Successfully achieved, they can create brand loyalty even among hard-to-please customers.

However, the changes involve enormous and potentially risky change. Our commercial vehicles clients are finding that the model described above helps them approach those changes in a structured and low-risk way.

OEMs, retailers and customers all have a role to play in making the connected fleet a reality. OEMs must provide working solutions, retailers need to make sure that the right options are available for each market, and customers have to be willing to adopt digital technology at whatever level and pace is appropriate for their business.
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About Capgemini

With more than 180,000 people in over 40 countries, Capgemini is one of the world’s foremost providers of consulting, technology and outsourcing services. The Group reported 2015 global revenues of EUR 11.9 billion. Together with its clients, Capgemini creates and delivers business, technology and digital solutions that fit their needs, enabling them to achieve innovation and competitiveness. A deeply multicultural organization, Capgemini has developed its own way of working, the Collaborative Business Experience™, and draws on Rightshore®, its worldwide delivery model.

About Capgemini’s Automotive practice

Capgemini’s Automotive practice works with most of the leading automotive companies in the world. More than 7,500 specialists generate value for our clients every day through global delivery capabilities and industry-specific service offerings across the value chain, with a particular focus on our AutomotiveConnect propositions for OEMs, suppliers and retailers.

For more information: www.capgemini.com/automotive

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