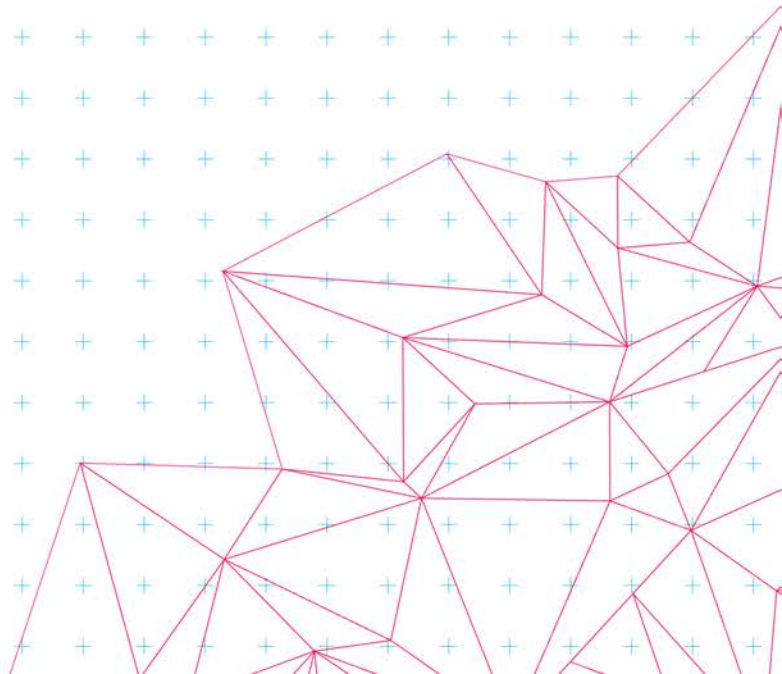


Challenge name	<i>Electrifying the Transport Industry</i>
Challenge owner	<i>DAF Trucks N.V.</i>
	<input checked="" type="checkbox"/> Company <input type="checkbox"/> Research <input type="checkbox"/> Student team
	<i>Kati Brock, Bas Perdok, Jac van Orsouw</i>
Brief summary	<i>The transportation industry is changing rapidly, driven by new types of powertrains that enable the transition towards zero-emission vehicles (ZEV). While the environmental benefits and concrete applications of ZEV are becoming more evident, there is still a lot of uncertainty around what will happen after the end of life of ZEV vehicles and their batteries. More specifically, there are currently only few concrete examples of viable business opportunities in the ZEV aftermarket, though the potential is huge, think of battery upgrading, recycling, 2nd life of batteries, etc. In this challenge we would like you to explore the aftermarket of ZEV so that you can develop concrete business ideas that will support the transformation of the transport industry and contribute to today's sustainability and circular economy targets and ambitions.</i>

About the challenge owner

DAF's roots go back to 1928, when the brothers Hub and Wim van Doorne built the foundation for the fastest-growing truck producer in Europe. In 1996, DAF was acquired by PACCAR, one of the largest manufacturers of medium- and heavy-duty commercial vehicles in the world. DAF has more than 8.500 employees, produces more than 200 trucks a day and 60.000 a year, and offers products and services through more than 1100 dealers. DAF is currently working on expanding and diversifying their product and service portfolio, focusing more and more on sustainability. In the past year, we have introduced a number of electric and hybrid trucks. Aside from these product innovations, we are expanding our (electrification) offering to also include charging infrastructure and connected

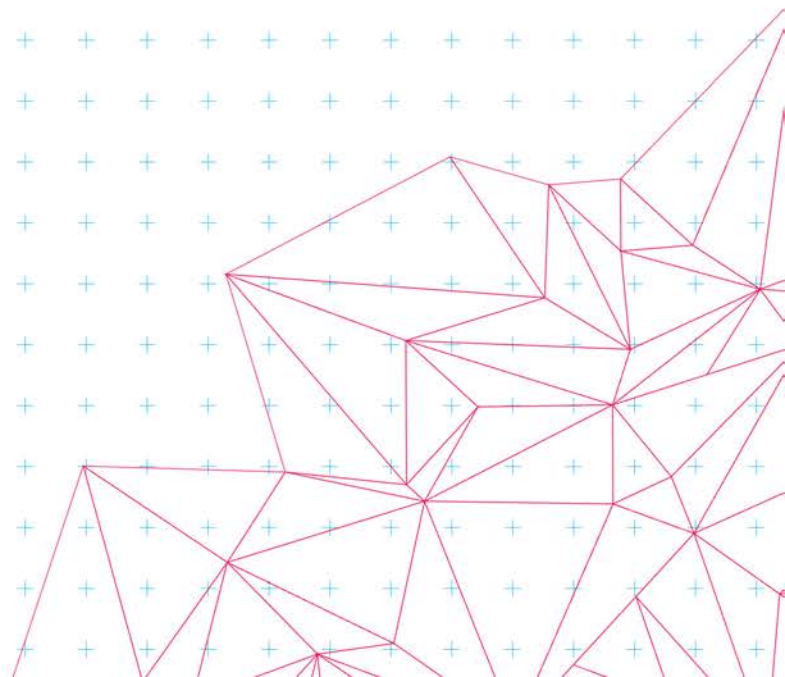
services, with the aim to create the best possible uptime and total cost of ownership (TCO) for our customers and a more sustainable future.



Challenge description

The transportation industry is changing rapidly, driven by new types of powertrains, rapid advancements in autonomous driving, and the explosion of connectivity opportunities. While in the past the business model for the transportation industry was quite simple (i.e., selling trucks), the advancements in (connectivity) technology, the evolution of socio-economic trends (i.e., online shopping, truck driver shortages), and the environmental challenges (i.e., reduction in CO₂, electrification), enable and even demand the development of new services and business models to create and capture value. Specifically, electrification is high on the agenda, not only of policy makers and countries, but also on our customer's customers. Indeed, it's often not necessarily our direct customers that want to make the transition from Internal Combustion Engines (ICE) to Zero Emission Vehicles (ZEV), but rather their customers, think of an Albert Heijn or Jumbo. We see more and more examples of ZEV being purchased and used in daily business, with many Original Equipment Manufacturers (OEM), such as DAF, developing more electric trucks and related services.

While the application of ZEV is gaining more and more popularity, there are still many unknowns, especially when it comes to the aftermarket and end of life of such vehicles. To be fully sustainable, there needs to be more focus on what happens with ZEV and their batteries when they reach the end of their lifetime or need to be replaced/upcycled halfway through the lifetime of the truck, think of battery recycling or 2nd life of batteries. In this challenge, we would like you to investigate potential business opportunities based on ZEV and their batteries to contribute to a more sustainable business case and circular economy.



Challenge Picture



Input and involvement of challenge owner

The transition towards electric trucks and everything that comes with it, is new to us, our customers, and the industry, so there are no clear directions and next steps at the moment. We are collectively looking for how to make electrification for commercial vehicles work and we look forward to hearing your ideas and insights that will help shape this transition. As such, our direct involvement will depend on the wishes of the project group, we can be as much or as little involved as you want. In general, we are here to learn from you and your insights.

Resources

- Coaching sessions by us and our colleagues at the DAF facilities in Eindhoven and/or online (planning and amount of hours are highly flexible).
- Equipment that can be used to prototype (e.g., computers, simulators) as well as access to relevant data sources.

- *Contact details of important stakeholders in our network (both inside and outside DAF and PACCAR, including dealers and fleet managers).*
- *A guided tour through the DAF production facilities (depending on Corona regulations).*

