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## Next steps towards clean heavy-duty transport: New tools and methodologies are needed

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The automotive market is currently undergoing two major transitions: Automation and Electrification, striving for cleaner and more efficient transportation solutions. As the vehicles transition from mostly mechanical systems to a complex mix of mechanical, electrical and software components, new challenges arise in the development processes around them. Advanced vehicle control strategies including automation, with their increasingly sophisticated ECU's and sensors, pose challenges on development, verification and robustness, requiring advanced tools and facilities. These rely on various combinations of modelling and testing to accelerate complete development cycles. Vehicle electrification, together with green energy sources, offers a good outlook toward reducing the CO2 transport emission. Different battery technology defines the challenges for scaling up this technology. Battery prices drop significantly with new developments and wider usage. Whether the electrification of heavy duty transport targets full electric vehicles, already making their way on the market (e.g. electric buses and delivery trucks) or hybrid solutions (e.g. for long haul applications, although competing full-electric concepts are slowly emerging: e.g. Nikola One, Tesla Semi), a stronger focus on battery technology, modelling and control (including predictive thermal and charge management) is needed. This comes in the form of mixed simulation and testing, and requires strong links to the intended application. The pleanary speech will address these major transitions of the automotive world, and will provide more isight via a relevant case study.

## Biography

Andreea Balau has completed her PhD in System Engineering at Gheorghe Asachi Technical University of lasi. As a PhD student, She worked in the framework of the EU co-financed BRAIN project "Invest in Intelligence", her research focused on automotive driveline modelling and control and she was part-time teaching assistant on System Theory and Control Engineering topics. She is currently employed by TNO, the Dutch Organization of Applied Research, in the Powertrains department. Her activities are related to after treatment modeling and control topics, predictive powertrain control topics and project leading roles. She is currently involved in different European projects like Transformers, EMC2, EcoDriver, HiFi-ELEMENTS and CERBERO.

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