DRIVING THE AUTOMATION OF TRANSPORT

Press Release

ATLAS-L4: Funding project with partners from the vehicle industry, software development, scientific research and administration to bring autonomous trucks to the streets

MAN Truck & Bus, Knorr-Bremse, Leoni and Bosch are joining forces for greater safety, flexibility and efficiency in logistics. Together with automated logistics provider Fernride and test tool manufacturer BTC Embedded Systems, they aim to have autonomously driving trucks on the highway for the first time by the middle of this decade in the ATLAS-L4 project. The Fraunhofer-Gesellschaft, the Technical University of Munich (TUM) and the Technical University of Braunschweig are providing scientific support for the project, while TÜV SÜD and Autobahn GmbH are contributing their expertise with regard to practical feasibility and the approval process.

The ATLAS-L4 (**A**utomated **T**ransport between **L**ogistics centres on highways, **L**evel **4**) research and development project combines expertise from industry, scientific research and infrastructure operators in hitherto unique ways to create an integrated approach to the operation of autonomous vehicles on public motorways and highways. ATLAS-L4 intends to demonstrate that the use of Level-4 automated and thus driverless vehicles on the highway is feasible, laying the foundation for innovative transport and logistics concepts. The project makes direct use of the new opportunities opened up by the legislation on autonomous driving passed in 2021, in which Germany is set to hold a worldwide pioneering position. In this way, ATLAS-L4 contributes both to the future-proof design of road freight transport and to strengthening Germany as a business location.

The overarching aim of the project, funded by the Federal Ministry for Economic Affairs and Climate Action is to use autonomous driving between logistics hubs on the motorway to make an effective contribution towards the avoidance of congestion and accidents, to operate vehicles with greater fuel efficiency and to counteract the shortfall of drivers by eliminating the less attractive driving tasks.

Trucks are essential for the transport of goods all around the world, but the sector is under pressure: In Germany alone, traffic jams cause billions of

euros in economic damage every year, around 90 percent of road accidents are the result of human error, and a lack of drivers is halting growth for many companies. The BGL (German Freight and Logistics Association) reports that there is a shortage of around 60,000 professional freight drivers in Germany today. Although around 17,000 new drivers join the profession each year, around 30,000 professional drivers retire, with the result that the problem will worsen significantly.

Self-driving trucks can provide a solution. They can certainly improve road safety, reduce congestion with forward planning and optimise operating hours. At the same time, self-driving trucks drive more evenly, making them more fuel-efficient and therefore more environmentally friendly. Automated processes throughout the supply chain – for example at depots, at transhipment points or between logistics centres – relieve the burden on drivers and can help to make truck driving a more attractive career prospect. That's good for the profession, good for society, good for the companies and, last but not least, good for the environment – a multiple win-win situation.

With ATLAS-L4, those involved in the project are taking a huge step towards making autonomous commercial vehicles a reality. By the middle of the decade, a concept for the operation of automated trucks on the highway that can be transferred to industrialization should be available. Each partner brings its own expertise to the development of the driverless prototype truck.

Project partners and roles

Commercial vehicle manufacturer MAN Truck & Bus is responsible for overall system development and the integration of all components into the vehicle. The transmission of data to the vehicle and commissioning of the control centre that will provide the technical monitoring of the test runs as specified in the legislation on self-driving vehicles are also MAN's responsibility.

Knorr-Bremse, the global market leader for braking systems, is developing a special, redundant braking system architecture which will enable trucks with Level-4-autonomy to operate safely in any situation.

Project partner Leoni's task is to ensure that both the on-board network and the electronic cable distribution for the automation system always work reliably, regardless of any possible faults that may occur.

Bosch Automotive Steering is developing an error-tolerant steering system for ATLAS-L4 that meets all the requirements of SAE-Level-4-automation.

Munich-based start-up Fernride is researching teleoperation possibilities in the hub-to-hub-scenario addressed by the project. With Fernride's

teleoperations platform, autonomous vehicles can be monitored and controlled remotely if necessary.

The test tool manufacturer BTC Embedded Systems AG concentrates on scenario-based and simulated test procedures for whole-vehicle verification and safety validation, paying special attention to critical driving situations.

The Fraunhofer Institute for Applied and Integrated Security AISEC is developing methods for security risk analyses within the project, specially tailored to the field of automated trucks.

The TUM Institute of Automotive Technology is contributing its expertise in a variety of aspects of driving dynamics and developing interaction concepts for technical supervision.

The Institute of Control Engineering at the TU Braunschweig is developing concepts for the safe operation of Level-4-trucks and the technical self-awareness of automated vehicles.

TÜV SÜD will bring its extensive experience of test environments for automated vehicles to the project test runs, examining the capabilities of the vehicles themselves and the validity of the simulations and evaluating the safety of the vehicles in this sponsorship project as part of the approval process.

With the introduction of its first cooperative "roadworks warning" service, Autobahn GmbH has laid the foundations for the networked and automated traffic system of the future and contributes its experience regarding the requirements for automated driving to the ATLAS-L4 project from the roads operator's point of view.

Comments from the project partners

MAN Truck & Bus SE

"For MAN, ATLAS-L4 is an important step on the path towards hub-to-hub automation, with which we are already looking towards future series applications for Logistics 4.0. Having the extensive competence of the partners in the ATLAS-L4 project on board is an invaluable advantage with regard to the high demands on safety and operational suitability placed on a future self-driving truck," says Dr. Frederik Zohm, MAN Truck & Bus executive board member responsible for research and development.

Knorr-Bremse Commercial Vehicle Systems

"We are very much looking forward to working with our project partners to develop highly-automated trucks by the middle of this decade with the aim of meeting market demands. As part of this project, Knorr-Bremse is in charge of all aspects surrounding the redundant braking system architecture – including a safety concept. This enables the safe and economical operation of Level-4-commercial vehicles and provides consistently safe braking and control in any situation," says Dr. Jürgen Steinberger, Member of the Management board at Knorr-Bremse Commercial Vehicle Systems.

Leoni AG

"We are tremendously pleased to be embarking on this ground-breaking project with our partners. The results will provide essential insights into the safe implementation of highly automated driving and will help us to develop safe systems for new types of mobility," explains Walter Glück, CTO of Leoni's Wiring Systems Division.

Robert Bosch Automotive Steering GmbH

"Coupled with the skill of our project partners, the ATLAS-L4 project offers us the opportunity to develop steering systems for fully self-driving commercial vehicles. This has enabled us to tackle challenges such as durability and safety at an early stage of our steering system product development. Together, we are defining the standards for self-driving commercial vehicles," explains Jennifer Endres, Head of Development, Robert Bosch Automotive Steering.

Fernride

"We are very pleased to be working with such well-known partners to bring automated trucks to our streets. Fernride's platform technology makes it possible to remotely control a truck during trials or provide operator assistance to an automated vehicle at any time. Fernride guarantees constant availability and safe operation of autonomous trucks in all driving situations and can also meet the legal requirements concerning 'technical supervision'. Together, we will drive logistic's automation forward with ATLAS-L4," believes Hendrik Kramer, co-founder and CEO of Fernride.

BTC Embedded Systems

"As a manufacturer of premium tools for software development and testing in the automotive sector, BTC Embedded Systems sees ATLAS-L4 as a tremendous opportunity to work closely with MAN and other partners to establish simulative, scenario-based testing in cloud-based environments as an efficient and effective solution for the overall vehicle verification and safety validation of self-driving vehicles," says Dr. Udo Brockmeyer, board chairman of BTC Embedded Systems.

Fraunhofer Institute for Applied and Integrated Security AISEC

"To bring fully automated trucks safely to the motorway, they must be comprehensively protected against cyber-attacks such as unauthorised remote access. With ATLAS-L4, we want to ensure that security is an integral part of any autonomous truck and is taken into consideration throughout the entire product lifecycle," says Prof. Dr. Claudia Eckert, Director of the Fraunhofer AISEC.

Technical University of Munich, Institute of Automotive Technology

"The ATLAS-L4 project enables us to translate our research findings in the fields of automated and teleoperated driving into near-series reality. Together with our partners from scientific research and industry, we are making a major contribution towards resource-efficient and cost-effective mobility for the future with ATLAS-L4," says Prof. Dr. Markus Lienkamp, Technical University of Munich.

Technical University of Braunschweig, Institute of Control Engineering

"The ATLAS-L4 project represents the opportunity for the Institute of Control Engineering at TU Braunschweig to research the development and authorisation of automated vehicle prototypes and investigate questions for future series applications – especially focusing on the inherent risks and safety of these systems. Close cooperation between partners with different fields of expertise, including those from the automotive industry, software development and scientific research, will enable the ATLAS-L4 project to make a significant contribution to the development of safe, automated vehicles," says Prof. Dr.-Ing. Markus Maurer, Technical University of Braunschweig.

TÜV SÜD

"For TÜV SÜD, the ATLAS-L4 project is a great opportunity to share our international experience in the field of highly automated vehicles and to ensure safe operation of an autonomous truck that conforms to regulations and standards," says Patrick Fruth, CEO of the Mobility Division at TÜV SÜD.

Autobahn GmbH des Bundes

"Road safety, free-flowing traffic and the resulting reduction in congestion are the central aims that we pursue tirelessly. We want to develop the German motorways into a fully digital, networked and automated traffic system," says Stephan Krenz, board chairman at Autobahn GmbH.

Further information on the ATLAS-L4 project, the project partners and press contacts for the partners can be found at: https://www.atlas-l4.com/en/