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AUMOVIO and commercial vehicles: A technology partner in a changing market – trends, challenges and outlook

Road freight transport is a central pillar of modern economies. The vast majority of goods in Europe are transported by road – reliably, flexibly and cost-effectively. Despite policy efforts to shift traffic to other modal options, the fundamental structures of freight transport have hardly changed in years: Trucks remain indispensable, particularly for regional and medium-distance transport – the market is growing. Therefore, road transport is and will remain the dominant mode of transport compared to rail and waterways.

At the same time, demand for transport services continues to grow, driven by urbanization, globalized supply chains and e-commerce. In the long term, the commercial vehicle sector is not only systemically important but also structurally capable of growth – even against the backdrop of profound technological changes. As a result, it is increasingly coming into the focus of business and politics as the key to supply security, economic resilience and achieving climate goals.

Transformation drivers in the commercial vehicle market

The fundamental role of the commercial vehicle sector is clear as is the pace at which the market is currently evolving. The industry is undergoing a comprehensive realignment – not so much as a disruptive break, but rather as a gradual, multifaceted and long-term process of adaptation. The question is: What factors are shaping this transformation, and in what direction are they changing the market? The answer: There is no single dominant driver. Instead, the development of the commercial vehicle market is determined by several closely interlinked factors: regulatory requirements, technological advances and economic conditions operate in parallel and influence each other. This interplay gives rise to the key areas of action that are shaping the market today and will continue to do so in the coming years.

1. Decarbonization and powertrain transformation

Regulatory requirements set clear targets for reducing CO₂ emissions, thereby accelerating the transformation of powertrain systems. Battery-electric drives are gaining importance, particularly in regional distribution transport, while diesel powertrains will remain relevant in long-distance transport for the foreseeable future. Although nearly all OEMs are currently pursuing development projects for other powertrain concepts, such as fuel cells, these currently play only a minor role. For fleet operators, the decisive criterion in choosing a drive system is overall cost-effectiveness: their decisions are increasingly guided by the total cost of ownership over the entire lifecycle.

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AUMOVIO_PP_Electrification

Electrification as a key to decarbonizing commercial vehicle transport.

2. Digitalization and software-based vehicle architecture

With digitalization, commercial vehicles are increasingly evolving into software-defined vehicles (SDVs). Functions are no longer determined exclusively by hardware but are controlled by software and continuously developed throughout the vehicle's lifecycle. In the context of commercial vehicles, the primary focus is on efficiency. Larger, centralized ECUs take over the tasks previously handled by many small control units distributed throughout the vehicle. By being connected in this way, the vehicles enable data-driven services, predictive maintenance and better integration into fleet and logistics processes. This increases the demands on system architectures, data management and integration. The ability to combine vehicle, software and backend reliably is becoming a key differentiator.



AUMOVIO_PP_SDV

Software makes commercial vehicles more connected, efficient and updateable.

3. Safety and automation

Safety requirements and automation continue to gain importance in the commercial vehicle market. Driver assistance systems are increasingly becoming standard and are mandated by regulations in many markets. Furthermore, automation is coming into focus, particularly in long-haul transport, and promises new operating models. Autonomous driving addresses issues such as the driver shortage and offers potential for greater efficiency, safety and predictability in logistics processes. In addition to technological maturity, regulatory frameworks and regional differences play a decisive role in the introduction of these technologies.

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AUMOVIO_PP_Safety

Driver assistance systems increase safety and efficiency in commercial vehicle operations.

4. Economic pressure and demands for efficiency

Commercial vehicles are capital goods whose use is heavily focused on efficiency and availability. Consequently, economic conditions play a crucial role. Rising costs, margin pressure and long vehicle lifecycles are placing greater demands on manufacturers and suppliers. New technologies must therefore prove themselves not only technically but, above all, in actual operation. Robustness, reliability and cost-effectiveness remain key criteria – even in the context of transformation.

New requirements for suppliers in the commercial vehicle market

The areas of transformation described above present a particular challenge for suppliers in the commercial vehicle market, such as AUMOVIO: They must drive technological innovation while also taking into account market conditions that differ fundamentally from those of the passenger car market.

For instance, the market is characterized by lower production volumes, long development cycles, a high variety of variants, and an extended obligation to provide spare parts. Different usage profiles, vehicle configurations and body types lead to significantly greater complexity in development and integration than in more standardized markets. At the same time, the demands placed on new technologies are increasing. Solutions must not only prove themselves technically over the long term but also be implementable in existing vehicle and system landscapes and function reliably in real-world operation. Furthermore, the development of modern assistance and software solutions requires high investments, which are not always economically viable for the commercial vehicle segment.

AUMOVIO as a partner in the commercial vehicle market

AUMOVIO treats commercial vehicles as a standalone, strategically important business with its own organization, portfolio and a clear focus on the needs of manufacturers, fleets and workshops. AUMOVIO's Commercial and Special Vehicles (CSV) segment has dedicated resources, operates independently, and is specifically tailored to the unique characteristics of this market. This is complemented by a broad market presence across multiple segments. AUMOVIO addresses not only trucks and buses, but also off-highway applications as well as fleets and workshops. This positioning broadens the perspective beyond the traditional OEM business and creates proximity to the requirements throughout the entire operational and lifecycle of commercial vehicles.

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AUMOVIO_PP_Commercial_Special_Vehicles

AUMOVIO develops solutions for commercial and special vehicles.

Strategically, the commercial vehicle business is clearly defined as a growth area for AUMOVIO, and its importance is also underscored organizationally: CSV is anchored at the executive board level, and AUMOVIO is explicitly investing in the truck market. At the same time, the business is built on long-standing, deep customer relationships, robust market knowledge, regulatory expertise and a global presence with local customer proximity. This positions AUMOVIO in the commercial vehicle market not only as a technology provider but as a specialized partner with a long-term commitment. The goal: to identify market requirements early, develop specific solutions, and closely support customers in an increasingly complex environment.

Technological solutions for the commercial vehicle market

Building on this foundation, AUMOVIO serves the commercial vehicle market with a broad portfolio: The focus is not on individual products, but on solutions for typical application areas, ranging from efficiency and electrification to user experience, safety, and software-based functions to connectivity as well as compliance and lifecycle services.

A key focus area is supporting the electrification of commercial vehicles. To this end, AUMOVIO develops solutions that enable and optimize the efficient operation of electric vehicles – particularly through the interaction of energy and thermal management as well as charging infrastructure. These include, for example, systems for the intelligent use of vehicle and environmental data, solutions for managing the thermal behavior of electric components, and technologies for controlling and integrating charging processes. In the commercial vehicle context, the primary focus is on range, availability and efficient integration into operational processes.

At the same time, safety and driver assistance systems play a central role. AUMOVIO offers advanced driver assistance solutions (ADAS) for trucks and buses, including radar, camera and sensor solutions as well as associated control units designed to meet the specific requirements of commercial vehicle operations, such as harsh operating conditions, long product lifecycles and regulatory requirements like General Safety Regulation II. These systems address both legally required safety functions and more advanced applications for greater safety and operational efficiency.

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AUMOVIO_PP_ADAS

Driver assistance systems help make journeys safer and prevent accidents.

Within the vehicle itself, the portfolio also includes instrumentation, instrument clusters, displays and multimedia solutions, as well as fully equipped driver workstations and vehicle and body control units for various applications. Instrumentation is gaining particular importance in commercial vehicles: The transition from analog to digital clusters and cockpit domain solutions enhances functionality in the driver's cockpit and further increases content per vehicle. At the same time, control units and cockpit solutions form the basis for consolidating functions within the vehicle more effectively and reorganizing the human-machine interface.

With the transition to software-defined vehicle architecture, the portfolio is expanding to include centralized computing structures, connectivity, and data-driven functions. This includes high-performance computing (HPC), telematics solutions and additional connected control units that centralize functions, enable over-the-air updates and establish the connection between the vehicle, the cloud and the backend. In the commercial vehicle context, this is primarily an efficiency issue: software, HPC and telematics create the conditions for making vehicle data usable across domains, introducing new functions more quickly and managing the logistics chain more economically.



AUMOVIO_PP_Cybersecurity

Cybersecurity protects software-defined commercial vehicles and their connected functions.

This offering is complemented by solutions that address both in-vehicle and operational needs. The tachograph and compliance ecosystem under the VDO brand plays a central role here. The digital tachograph is an integral part of many new vehicles. At the same time, it forms the basis for advanced applications in fleet operations: In combination with telematics, services, workshop solutions and standardized fleet management applications in the cloud, connected systems are created that support both regulatory compliance and operational efficiency within the fleet. In this way, AUMOVIO connects the vehicle, the fleet and the workshop, broadening the perspective beyond the individual vehicle to a holistic understanding of commercial vehicle operations.

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AUMOVIO_PP_Tachograph

The digital tachograph combines compliance, fleet efficiency and connected services.

This results in a portfolio specifically tailored to the economic and operational requirements of the commercial vehicle market. What matters here is not the individual function, but the interplay of vehicle electronics, software and services: It is only through integration that solutions realize their added value – for example, through higher availability, more efficient fleet operations and better control of complex vehicle and logistics systems.



AUMOVIO_PP_Efficiency

Connected solutions under the brand VDO increase efficiency in commercial vehicle operations.

Customized development for the commercial vehicle market

The development of technologies for the commercial vehicle market follows its own set of rules. Lower production volumes, a wide variety of variants and long product lifecycles place different demands on development processes than those in the passenger car segment. At the same time, the solutions must be robust, reliable and cost-effective over many years.

AUMOVIO addresses these requirements with dedicated truck development. Systems are specifically designed for the unique operating conditions of commercial vehicles, such as durability, functional safety, integration into various vehicle configurations and the requirements of fleet operators and body manufacturers. At the same time, AUMOVIO leverages technological advancements from the passenger car sector where they can be meaningfully applied. Particularly in the areas of software, sensor technology, assistance systems and connected architectures, developments from high-volume markets can serve as accelerators. They make it possible to bring new functions to market maturity faster and transfer them economically to the commercial vehicle context.

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Adaptation to the specific requirements of the commercial vehicle market is crucial here. Technologies are not simply transferred, but rather specifically refined and “robustified” to meet the diverse usage profiles, high mileage and specific regulatory frameworks. This combination of independent truck development and targeted technology transfer creates the foundation for uniting innovation and cost-effectiveness in the commercial vehicle market.

Automation as the next step in development

Driving automation is considered one of the most challenging areas of development in the commercial vehicle market, with significant potential in long-haul transport. For AUMOVIO, automation is therefore a strategic technology focus area. In this regard, AUMOVIO draws on expertise in key core technologies. These include sensor technology, control units, software and the integration of complex systems into robust vehicle and redundancy architectures. These capabilities form the foundation for gradually advancing assistance systems toward higher levels of automation.

A particular focus is on the industrialization of such solutions. Automation in the commercial vehicle context requires more than just technological feasibility: systems must function reliably and be economically viable. AUMOVIO addresses these requirements through a close integration of development and validation. In doing so, the company relies on collaboration along the value chain. Together with partners such as Aurora, AUMOVIO is working to develop autonomous functions toward series production readiness and to transfer them into commercial vehicle operations.



AUMOVIO_PP_Autonomous_Trucking

Together with Aurora, AUMOVIO is driving autonomous commercial vehicle solutions toward series production readiness.

System partners throughout the entire vehicle lifecycle

This growing complexity of modern commercial vehicles is also changing the nature of collaboration within the industry. Topics such as software-defined vehicle architectures, automated driving as well as new electronics and software stacks can no longer be developed in isolation by individual companies. Instead, new forms of collaboration are emerging in which manufacturers and suppliers work together more closely and at an earlier stage in the development process.

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In this environment, AUMOVIO is involved in development partnerships that go beyond traditional customer-supplier relationships. Particularly in architecture and software projects – e. g. in the context of SDV or centralized computing architectures – systems are jointly designed, validated and brought to production readiness. This involves not just individual components, but the interaction of entire system landscapes. This form of collaboration also reflects the economic landscape. High development costs, for example in the areas of software or automation, mean that investments are increasingly shared and organized through partnerships. In certain technology fields, even competitors are cooperating to leverage economies of scale and reduce development risks.

At the same time, the focus is expanding beyond pure development. In the commercial vehicle market, where vehicles remain in service for many years, issues such as availability, updatability and maintainability are gaining importance. Solutions must be designed so that they can be operated economically and continuously advanced throughout their entire lifecycle. This results in a direct correlation between technical design and long-term total cost of ownership. Against this backdrop, AUMOVIO's role is evolving: moving away from that of a traditional supplier toward a partner that supports manufacturers in architectural decisions, integrates systems, and considers their operational performance. This development is also being driven by global dynamics, such as the increasing expansion of development and production capacities in Asia, where new momentum is emerging particularly in the field of electrification.



AUMOVIO_PP_Truck_City

AUMOVIO is a globally positioned technology partner for OEMs in the commercial and special vehicle market.

Outlook: Transformation as a permanent state

The transformation of the commercial vehicle market is not a temporary upheaval, but a long-term trend. Decarbonization, digitalization and automation will continue to shape and drive the market in the coming years – at varying speeds, but with a clear direction. At the same time, innovation cycles are becoming shorter. New technologies and functions must be developed and brought to market more quickly, without losing sight of the specific requirements of commercial vehicle operations. This further increases complexity for all market participants.

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Against this backdrop, specialization and system expertise are becoming increasingly important. What is needed are solutions that not only address individual functions but also integrate into complex overall architectures and function reliably under real-world operating conditions. At the same time, collaboration across the entire value chain is becoming a decisive factor for success. Manufacturers, suppliers and other partners must work more closely together to implement technological innovations economically and translate them into scalable solutions.

It is essential to combine technological expertise with market understanding and partnership-based development models. This is precisely where AUMOVIO comes in: with a dedicated focus on the commercial vehicle market, cross-system expertise and the commitment to making innovation economically viable in real-world commercial vehicle operations.

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