

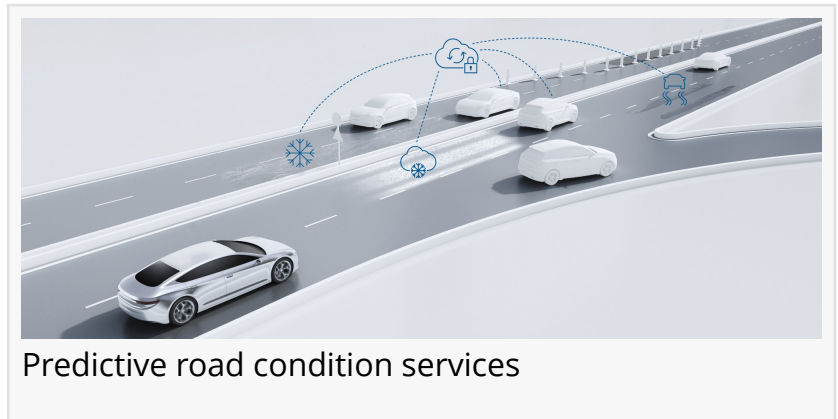
IAA Mobility 2023: Bosch is growing with solutions and technology for the software-defined vehicle

Sales of vehicle computers expected to amount to billions of euros

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-- Software is the linchpin for the future of mobility. No other company can match the solutions and technology Bosch offers for the software-defined vehicle across all domains – from central vehicle computers to cloud

solutions to semiconductors. Here, Bosch benefits from its strength not only in automotive software but also in the hardware required for it, and is already posting robust growth in vehicle computers. The company expects sales of 3 billion euros in 2026 from computers for driver assistance and infotainment alone. Overall, business developments for Bosch are positive, even though the environment remains volatile and challenging.



Predictive road condition services

In the Mobility business sector, sales are expected to grow by a solid 10 percent in 2023, after adjusting for exchange-rate effects. This growth includes price effects, but also marked volume increases. “Bosch knows its way around software and is using it to shape the future of mobility. Our technology will make the software-defined vehicle a reality and help get it onto the road,” said Dr. Stefan Hartung, chairman of the Bosch board of management, at IAA Mobility 2023 in Munich.

“In the software-defined future of mobility, it’s not only hardware that will be vital, but the interaction of software from various sources as well,” Hartung continued. More than ever, Bosch is also positioning itself as a software company for mobility, while at the same time further developing its hardware expertise. As part of this effort, the company is reorganizing its Mobility business sector effective January 1, 2024. This will strengthen cross-divisional collaboration. Bosch employs 38,000 software developers in its mobility operations alone – more than any other company in the automotive industry.

Bosch software makes mobility safer and more sustainable

Software-defined vehicles call for a new, centralized IT and electronic architecture. Bosch is one of the few companies that is developing this architecture – and that knows how to control the interaction between automotive electronics and the cloud. The company offers hardware-agnostic software that runs on chips made by different manufacturers. One result of this is special middleware for driver assistance and automated driving systems, which also helps decouple software and hardware. Vehicles in which software is the starting point of design and development can give drivers a personalized, digital driving experience. New functions in areas such as driver assistance can be added to the car over the air via software updates. “We’ve gotten used to constant updates on our smart devices. Cars, too, should be able to receive new functions at any time, regardless of any facelifts or model changes. With Bosch solutions for automotive software, cars will be capable of more,” said Dr. Markus Heyn, member of the board of management and chairman of the Mobility business sector. “That’s because software is the key to further enhancing convenience and sustainability,” he continued. In electric cars, for example, software facilitates connected energy and thermal management, thus reducing battery charging time by up to 20 percent.

The electromobility business is developing well for Bosch. The company is on track to achieve sales of 6 billion euros in 2026. Even last year, Bosch was able to increase its output of components for electric cars by some 50 percent. In 2023, production of electric motors alone will double. Bosch software plays a key role in the wider electromobility industry as well; for example, in automated battery recycling systems. Not only is software able to identify the origin and condition of batteries, but by guiding users through process steps, it also enables quick and safe disassembly of battery packs.

New control concept independent of any hardware

Although hardware and software engineering are becoming separated, they are also mutually beneficial. This is particularly evident in modern accident protection systems such as the new ESP generation. The key innovation here is a new control concept: Vehicle Dynamics Control 2.0. This software can intervene not only in the braking system, but also in the electric powertrain and electric steering system. This means less countersteering and shorter braking distances, and thus greater safety for drivers. The major benefit for automakers is that the new control system can be integrated into either a central vehicle computer or the ESP control unit, and will be available in the future as a discrete software package. It will be part of vehicle motion management, a software solution that coordinates all aspects of vehicle motion by centrally controlling the brakes, steering, powertrain, and chassis.

Bosch industrial technology along the entire value chain

However, it is not only driving that Bosch software will change, but also the way vehicles are manufactured. For example, the company secures automotive supply chains with the help of a track and trace solution. By recording the position and condition of transport crates in real time, this solution provides for transparent and secure tracking. The Industry 4.0 software Nexeed helps significantly reduce scrap rates in battery-cell factories from their current level of 10 to 15 percent. In addition, Bosch can use artificial intelligence (AI) to detect anomalies and errors in

automotive production at an early stage, thereby reducing manufacturing costs. Bosch is already using such AI software at 50 of its own plants. At the company's location in Bursa, Turkey, the software has already helped reduce manufacturing costs significantly.

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