



Bosch pools its software and electronics expertise in one division with 17,000 associates

Future fields of mobility

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- ▶ A single source for software-intensive systems for future vehicle architectures
- ▶ New Cross-Domain Computing Solutions division with 17,000 associates
- ▶ Market for software-intensive electronic systems to grow by some 15 percent annually
- ▶ Annual expenditure of 3 billion euros on automotive software expertise

Stuttgart, Germany – Today's cars are changing, above all as a result of software and electronics. The market for software-intensive electronic systems is expected to grow by some 15 percent annually between now and 2030. Since Bosch wants to extend its leading position in this market, it is establishing a new division, Cross-Domain Computing Solutions. From the start of 2021, existing and new customers will receive electronics systems and the requisite software from a single source: a division with roughly 17,000 associates. "Even now, a vehicle contains some 100 million lines of software code. Only a company with wide-ranging electronics and software expertise will be in a position to shape the future of mobility," says Dr. Stefan Hartung, member of the board of management of Robert Bosch GmbH and chairman of its Mobility Solutions business sector.

The move toward ever more sophisticated electronics and ever more software is quickly picking up pace. The result is a considerable increase in the complexity of automotive engineering. For the new division, the goal will be to reduce this complexity through cross-domain software and electronics solutions. In addition, it will aim to get new vehicle functions on the road significantly faster. To achieve this, Bosch has assigned software, electrical, and electronics engineers from the areas of driver assistance, automated driving, car multimedia, powertrain, and body electronics to the new unit. "Bosch is an automotive electronics pioneer. Moreover, for quite some time now, it has also been a software company. And in the future as well, our new division is predestined to make further progress in the digitalization of vehicles," Hartung says.

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Software will play a key role in the cars of the future

Where a car included roughly 10 million lines of software code ten years ago, the software of automated vehicles will include between 300 and 500 million lines of code. To put this in context, just one million lines of software code are the equivalent of nearly 18,000 printed pages. "Software will play a crucial part in determining a vehicle's features and feel in the future. It will help make cars ever more intelligent, and provide drivers with a tangible benefit," says Harald Kroeger, member of the Bosch board of management in Bosch's Mobility Solutions business sector. The supplier of technology and services was quick to recognize the significance of vehicle software, and has been developing it in-house for nearly four decades, with a current annual spend of 3 billion euros. Traditional software engineering in individual, discrete units is increasingly coming up against its limits. This is why Bosch is pooling its automotive software engineering resources in the new Cross-Domain Computing Solutions division. "Supplying software from a single source is our response to the enormous challenge of making cars ever more digitalized," Kroeger says. He will be responsible for the new division, which in the future will develop both the software on which the vehicle computers and control units are based and the software for vehicle functions ranging from park-assist and lane-keeping support systems to music streaming. The result will be the much faster release of new functions, brought to users by software updates. This will allow automakers to offer their customers a coherent, integrated driving experience.

Actively shaping the transformation in automotive electronics

In addition to cross-domain software development, Bosch is devoting a lot of effort to future-proofing vehicles' E/E (electrical/electronic) architecture. This is why the company is also making the new division responsible for the development of vehicle computers, control units, and sensors. Their smooth interaction will be crucial in the future. "The core task of Cross-Domain Computing Solutions will be to make the complexity of electronic systems controllable. In addition, the systems will have to be as reliable as possible," Kroeger says. In this respect, Bosch is focusing in particular on powerful vehicle computers as the technical basis for the digitalization of modern vehicles. With more and more functions featuring in every part of the vehicle, these computers combine the tasks of individual control units. "Today's premium vehicles feature more than 100 individual control units, and even compact vehicles have between 30 and 50. Such powerful computers will allow us to significantly reduce these numbers," Kroeger says. And with vehicle computers – for cockpit and connectivity functions, for driver assistance systems, for automated driving, and for the powertrain – now being developed in a cross-domain unit for the first time, the result will be a consistent IT architecture throughout the vehicle. All the electrical and electronic components will thus be perfectly compatible. In addition, Bosch will be able to achieve valuable synergy effects.

Closer to the market and customers

With Cross-Domain Computing Solutions, Bosch will be able to offer its customers vehicle electronics and software from a single source. “The dynamic shift toward ever more digitalization in the vehicle will crucially determine the shape of the new division. Our new set-up will allow us to satisfy new requirements – both of the market and our customers – even better,” Kroeger says. From the start of 2021, therefore, the entire Car Multimedia division and parts of the Powertrain Solutions, Chassis Systems Control, and Automotive Electronics divisions that develop software-intensive, cross-domain electronic systems will be brought together in the new Cross-Domain Computing Solutions division. This means that the new division will employ some 17,000 associates at more than 40 locations in over 20 countries. The employee representatives responsible will be involved in working out the details of the future organization.

Pooling manufacturing expertise

Bosch already pooled all the electronics manufacturing activities of its Mobility Solutions business sector in April this year. The Automotive Electronics division now coordinates the production of control units and vehicle computers across all vehicle domains. In this way, the company is also achieving synergy effects in its manufacturing operations. The new manufacturing network will employ some 24,000 associates across 21 plants in 14 countries.

Press photos: #2936882, #3071195, #3071196, #3071267, #3071268, #3071269, #3071535, #3071536

Further information:

[Facts and figures about electronics and software in vehicles](#)

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Mobility Solutions is the largest Bosch Group business sector. In 2019, its sales came to 46.8 billion euros, or 60 percent of total group sales. This makes the Bosch Group one of the leading automotive suppliers. The Mobility Solutions business sector pursues a vision of mobility that is safe, sustainable, and exciting, and combines the group's expertise in the domains of personalization, automation, electrification, and connectivity. For its customers, the outcome is integrated mobility solutions. The business sector's main areas of activity are injection technology and powertrain peripherals for internal-combustion engines, diverse solutions for powertrain electrification, vehicle safety systems, driver-assistance and automated functions, technology for user-friendly infotainment as well as vehicle-to-vehicle and vehicle-to-infrastructure communication, repair-shop concepts, and technology and services for the automotive aftermarket. Bosch is synonymous with important automotive innovations, such as electronic engine management, the ESP anti-skid system, and common-rail diesel technology.

The Bosch Group is a leading global supplier of technology and services. It employs roughly 400,000 associates worldwide (as of December 31, 2019). The company generated sales of 77.7 billion euros in 2019. Its operations are divided into four business sectors: Mobility Solutions, Industrial Technology, Consumer Goods, and Energy and Building Technology. As a leading IoT provider, Bosch offers innovative solutions for smart homes, Industry 4.0, and connected mobility. Bosch is pursuing a vision of mobility that is sustainable, safe, and exciting. It uses its expertise in sensor technology, software, and services, as well as its own IoT cloud, to offer its customers connected, cross-domain solutions from a single source. The Bosch Group's strategic objective is to facilitate connected living with products and solutions that either contain artificial intelligence (AI) or have been developed or manufactured with its help. Bosch improves quality of life worldwide with products and services that are innovative and spark enthusiasm. In short, Bosch creates technology that is "Invented for life." The Bosch Group comprises Robert Bosch GmbH and its roughly 440 subsidiary and regional companies in 60 countries. Including sales and service partners, Bosch's global manufacturing, engineering, and sales network covers nearly every country in the world. The basis for the company's future growth is its innovative strength. At 126 locations across the globe, Bosch employs some 72,600 associates in research and development, as well as roughly 30,000 software engineers.

Additional information is available online at www.bosch.com, iot.bosch.com, www.bosch-press.com, twitter.com/BoschPresse