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A computer on wheels – The importance of electronics and software in automotive is rapidly increasing

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- **The cost of electronic components per vehicle will rise from US\$3,145 to US\$7,030 by 2025**
- **Electromobility is the main driving force, with autonomous driving another important factor**
- **Roland Berger study shows serious effects along the entire value chain**

Munich, January 2020: The car of tomorrow will be a computer on wheels: autonomous driving, greater connectivity and an electric powertrain will accelerate this development. As a result, the importance of electronic components and software in vehicles is steadily increasing – with drastic changes for the entire industry. This is the key finding of Roland Berger's study "Computer on Wheels / Disruption in Automotive Electronics and Semiconductors."

"The triumphant advance of the software-driven car is leading to dramatic changes along the entire value chain," says Falk Meissner, Partner at Roland Berger and co-author of the study. "All players in the industry are affected: while OEMs, for example, will have to spend considerable resources on module integration in the future, semiconductor manufacturers are increasingly becoming software providers as well."

Costs for electronic components increase dramatically

The experts at Roland Berger assume that the cost share of electronic components in relation to all components will grow from currently around 16 percent to around 35 percent by 2025. The financial outlay for electronic modules in a typical premium car is currently US\$3,145. In the case of the "computer on wheels" – a semi-autonomous, electrified car – the cost per vehicle will already be US\$7,030 by 2025.

About a quarter (US\$725) of the costs can generally be attributed to digitalization. However, more than half of the increase (US\$2,235) is due to powertrain electrification. This makes electromobility the central cost driver. In autonomous driving, the additional funds required for automotive electronics (US\$925) are largely accounted for by computing power and sensor technology. "Autonomous driving requires not only a shift from human decision-making to artificial intelligence, from memory to map and from the senses to sensors, but also investment in the technologies required for this," says Meissner. About half of the cost increase must be spent on cameras, LIDAR, radar and ultrasound sensors. The rest goes to the AI-controlled central processing unit that receives and analyzes all sensor data and determines the vehicle's actions.

Partnership as a strategy

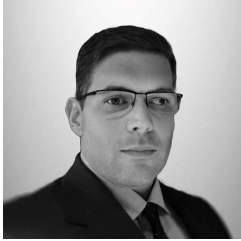
The industry has already partially reacted to the development. For example, car manufacturers are entering into partnerships with competitors and forming consortia with semiconductor specialists.

"Only very few companies will be able to map the entire electronics and software supply chain on their own and bear the corresponding investments," comments Meissner. Before companies take such steps, they should first redefine their position in the value chain. "Only then can manufacturers and suppliers decide which know-how in the fields of electronics, semiconductors and software they need to build up and which cooperation will bring advantages".

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Contacts



Raphael Dörr

Press Contact

Head of Corporate Communications & PR

raphael.doerr@rolandberger.com

+49 89 9230 8792



Silvia Constanze Zösch

Press Contact

Press Contact Global PR

silvia.zoesch@rolandberger.com

+49 89 9230 8750