

Herausforderung Automobilelektronik: Ergebnisse einer weltweiten Trendstudie

How to Master the Electronics Challenge – Results of a Global Roland Berger Trend Study

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Fig. 1

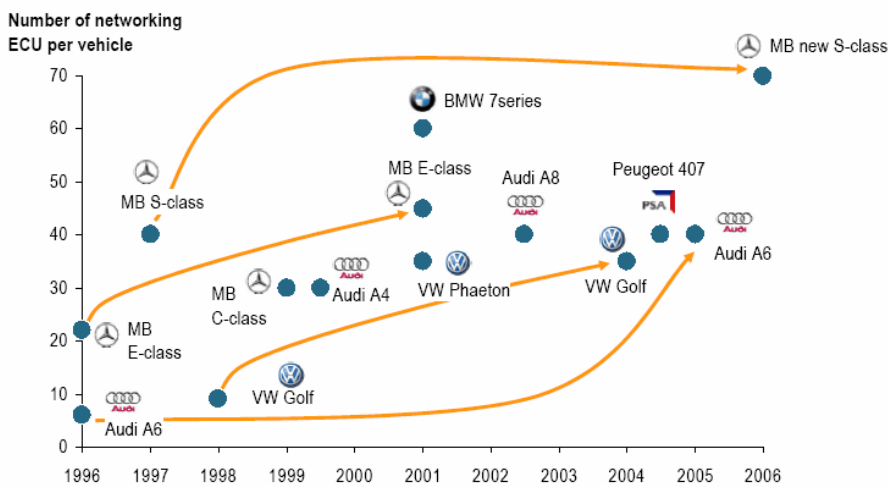


A. **Background and approach:**
In-vehicle electronics is the biggest challenge facing OEMs worldwide

Fig. 2

The Automotive industry is facing a permanent increase in in-vehicle ECUs – driven by new model launches

Increasing electronics complexity

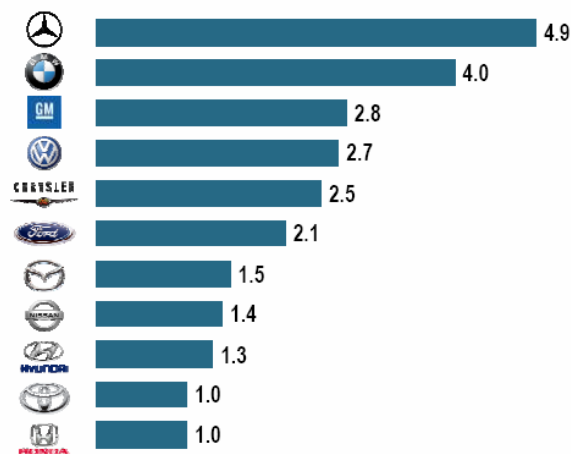


Source: Roland Berger analysis; company information

Fig. 3

Significant E/E-related quality problems have shaken the reputations of all OEMs – Some are tarnished more than others

Vehicle E/E problems by brand 2003 [%]



Source: Hansen Report, Roland Berger

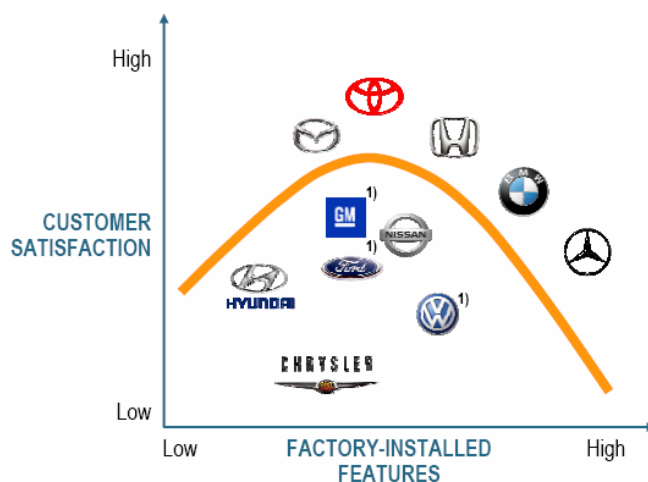
COMMENTS

- > A clear correlation exists – the more features installed, the greater the quality problems
- > Japanese OEMs are seen as quality leaders – comparatively low number of features but a mature technology level
- > European OEMs tend to install more features than American or Asian OEMs, but have experienced more quality problems
- > Technology-focused German premium OEMs want to further increase maturity of applied technology and E/E quality level

Fig. 4

OEMs have embraced an array of new features – But have they really succeeded in pleasing their customers with these extras?

Number of electronics features vs. customer satisfaction



1) Group assessment

Source: Wards; JD Power; Roland Berger analysis

COMMENTS

- > An increase in electronics content is not automatically valued by customers – but nor is low E/E content
- > We see a correlation between customer satisfaction and the increasing complexity created by E/E features
- > Especially Mercedes and BMW struggle because of their efforts to be innovation leaders
- > Japanese OEMs garner the highest customer satisfaction – achieved through well balanced electronics content

Fig. 5

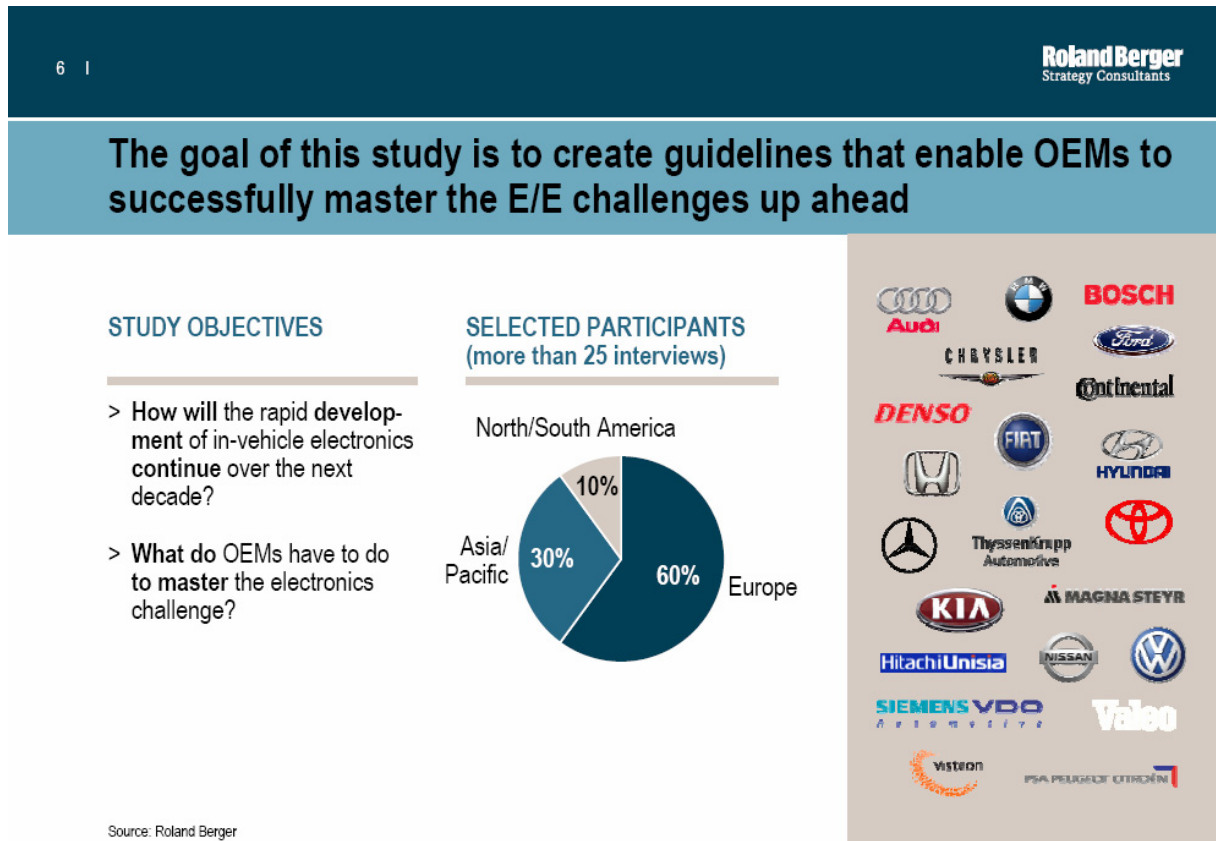


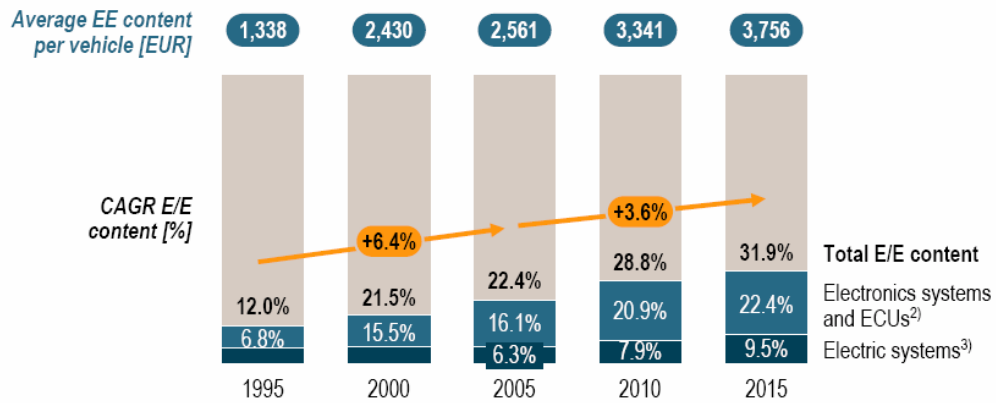
Fig. 6



Fig. 7

The amount of electronics in vehicles will increase even further – Albeit at a slower pace than in the past

Development of average E/E content per vehicle [%]¹⁾



1) Excl. mechanical, hydraulic and pneumatic portion of systems
 2) Incl. software plus actuators, sensors, housing
 3) Wiring harness, power generation, power distribution, etc.
 Source: Strategy Analytics; Roland Berger analysis

Fig. 10



C.

The solution:

OEMs need to pursue a holistic electronics strategy to master the challenges up ahead

Fig. 11



Fig. 12

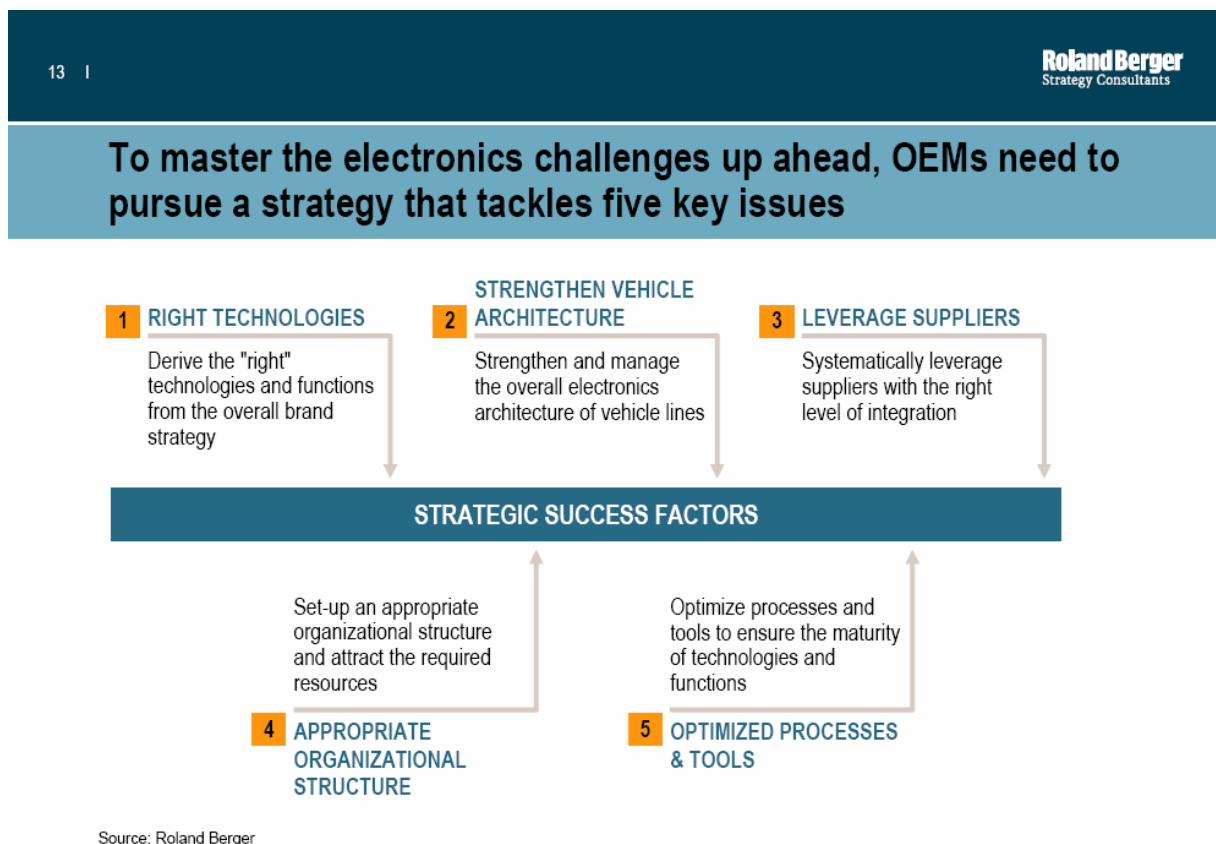


Fig. 13

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The selection of the "right" E/E technologies allows for clear differentiation thus creating competitive advantage

Prioritization of E/E technologies – Example BMW

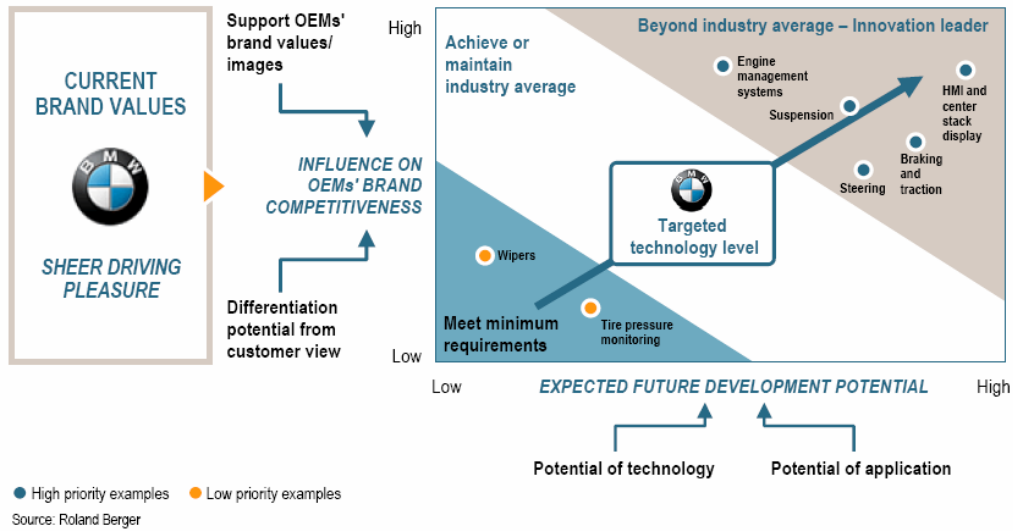


Fig. 14

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To cope with the increasing complexity, OEMs are switching to standardized architecture across domains and vehicle platforms

Definition of electronic platforms

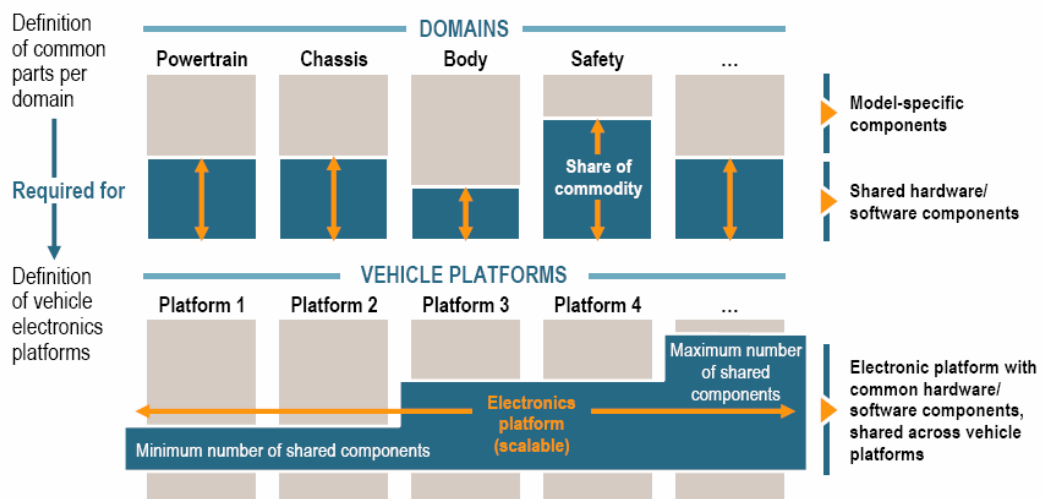


Fig. 15

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New electronics architecture models and standardization will alter the role allocation between OEMs and suppliers

Split of development tasks in software development

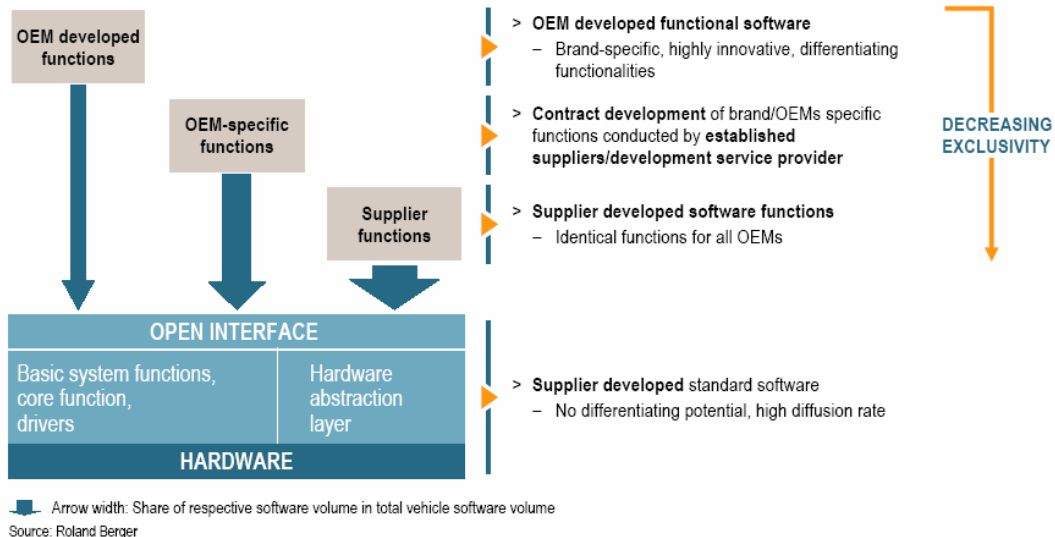


Fig. 16

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We expect R&D to be organized around vehicle functions in the future – Supported by a strong vehicle integration unit

R&D transformed into a functional organization

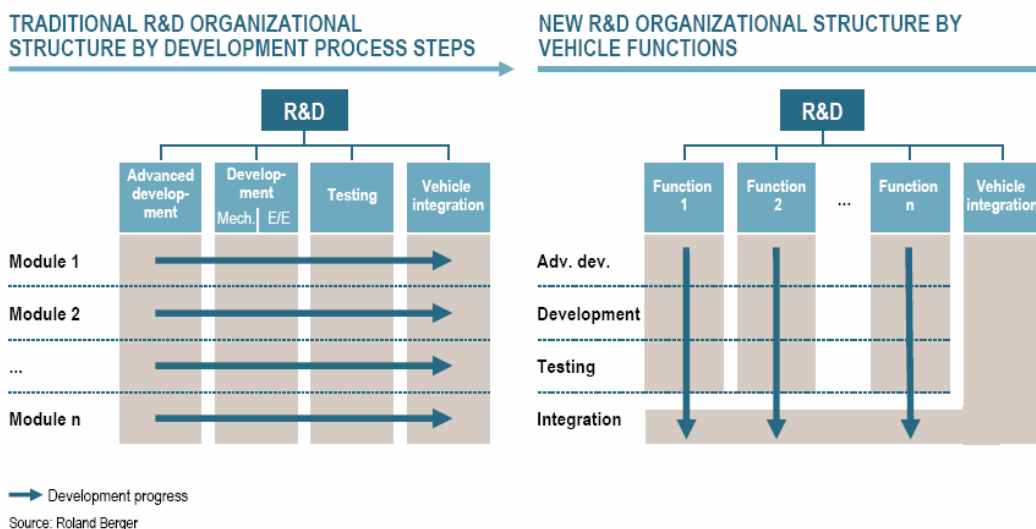


Fig. 17

We expect future electronics and vehicle development processes to become aligned – More frequent E/E updates expected

Life cycle comparison

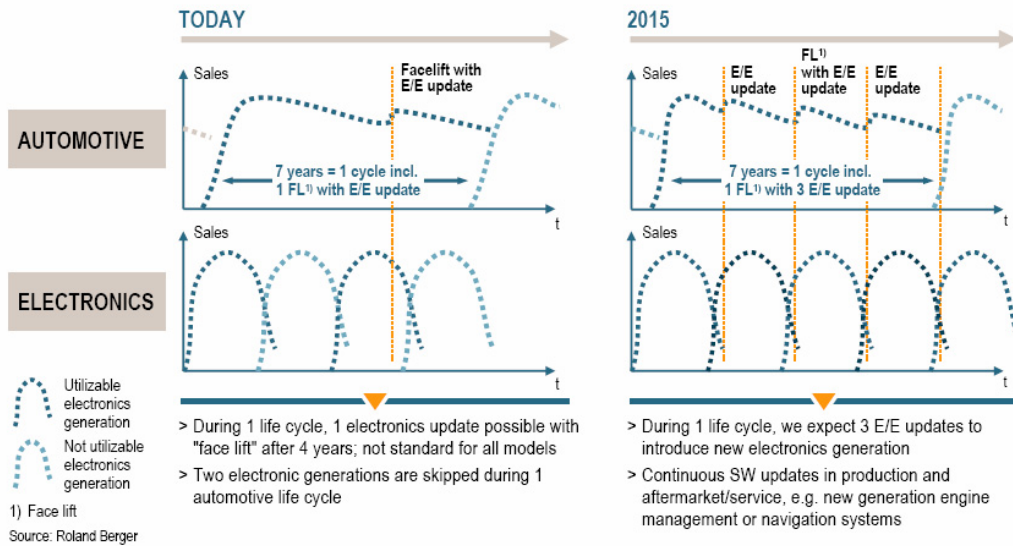


Fig. 18



D.
Conclusion

Fig. 19

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A holistic strategy is crucial for OEMs to master the increasing complexity of in-vehicle electronics

- The **automotive electronics market** will **experience strong growth** until 2015 – Albeit at a slower pace than in the past
- The main **challenge** will be **to handle** the accompanying **in-vehicle complexity**
- The implementation of a **comprehensive electronics strategy is key** to master the electronics challenge of the next decade

Source: Roland Berger

Fig. 20

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Your Roland Berger automotive electronics experts – Get in touch with us

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Fig. 21

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Fig. 22