

# DAIMLER

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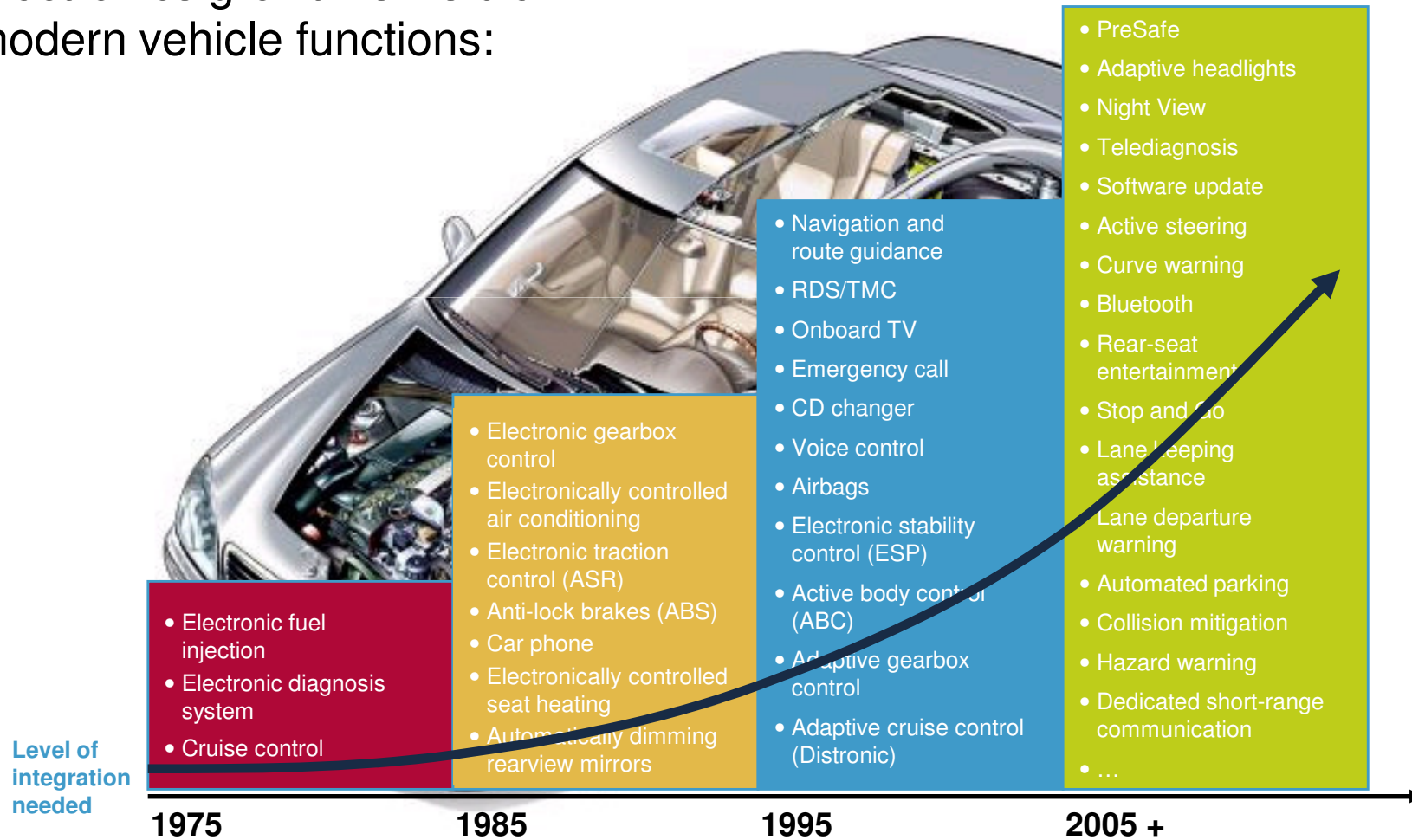
## Software and Safety A Contradiction?





# Electronics-driven Vehicle Features

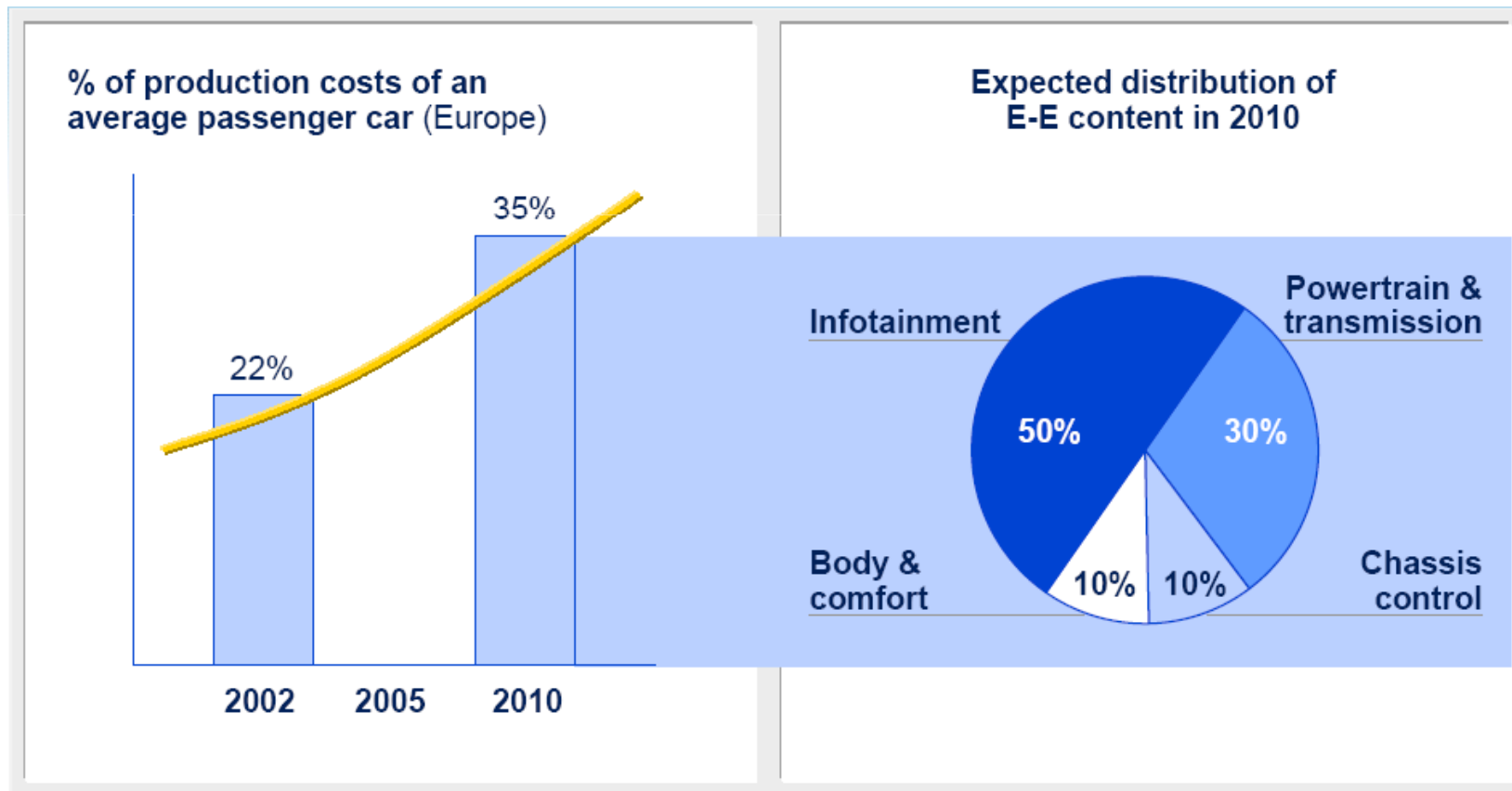
Electronics growth is visible in modern vehicle functions:





# Vehicle Electronics Prospects

Vehicle electronics are set to represent 35% of vehicle production costs, even more in the premium and luxury segments:

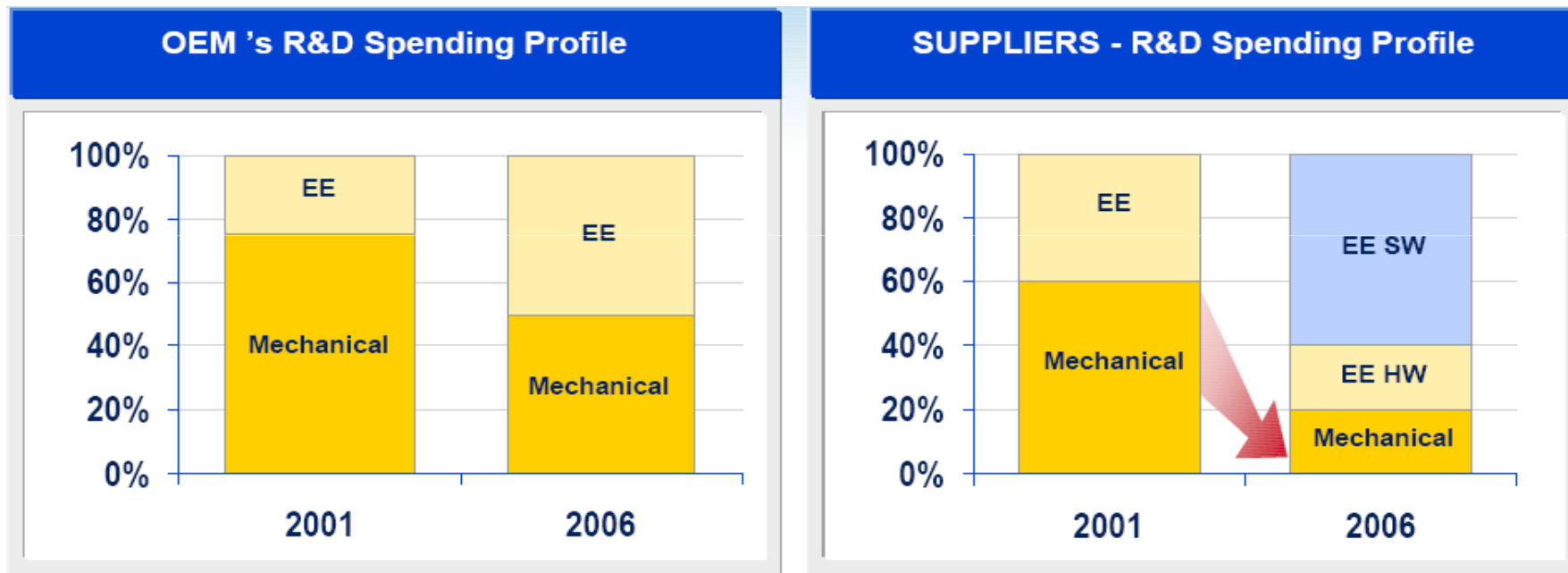


Source: Arthur D. Little



# Automotive R&D Spending

OEMs and suppliers reflect the trend towards electronics in their R&D budgets:



Source: Arthur D. Little

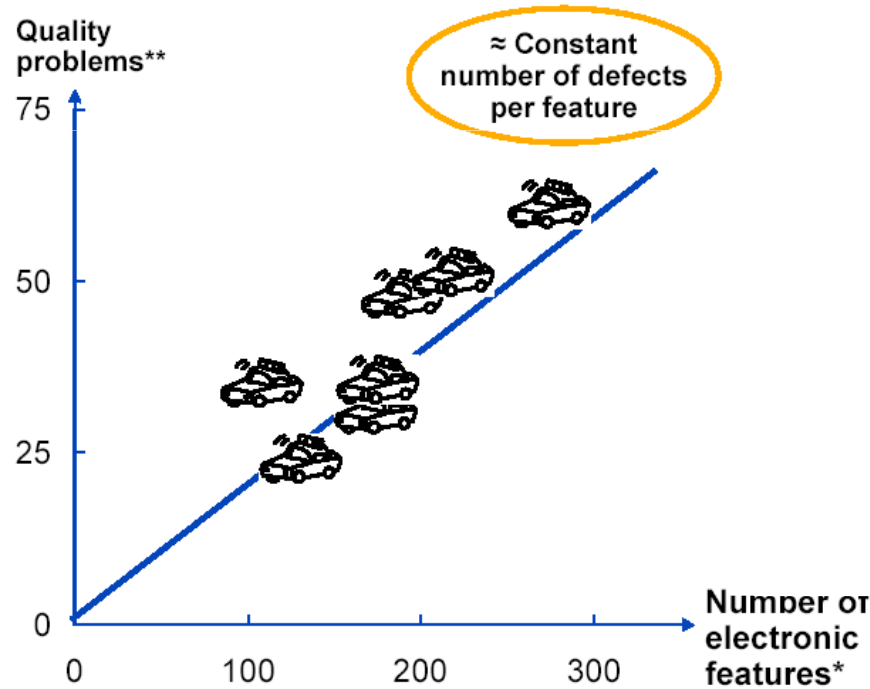
*Software, mainly implemented at the suppliers side, plays an increasing role. Hence, the term "electronics" (or the often used "EE") is somewhat misleading. It is more about "information technology" applied to the vehicle.*



# Vehicle Electronics Problems

Vehicle quality issues correlate with increasing complexity in electronics:

**CORRELATION BETWEEN QUALITY AND ELECTRONICS CONTENT\***  
Comparison of different premium models, 2003



\* Interior and body features

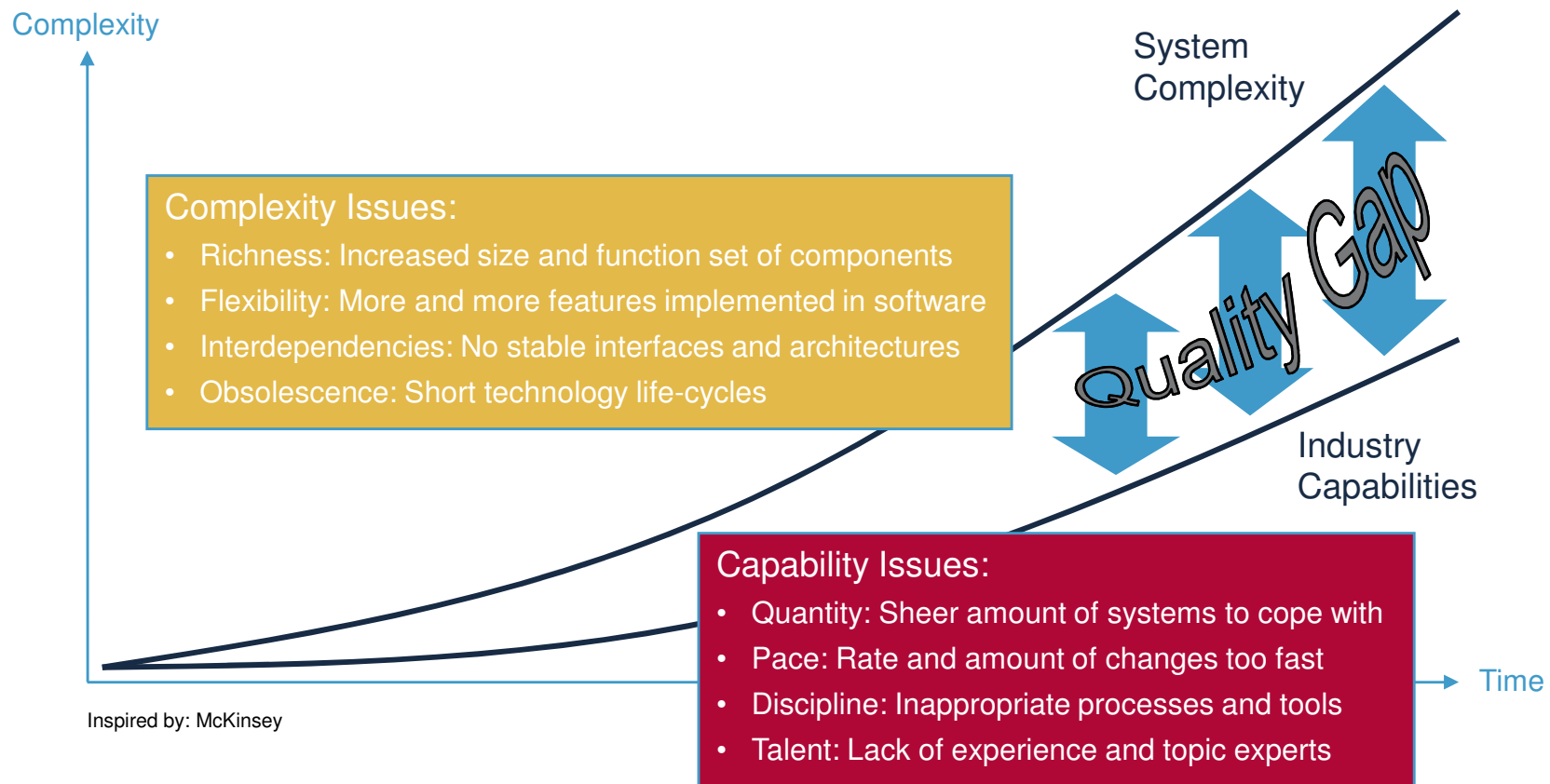
\*\* JD Power IQS rating, defects per 100 vehicles, October 2003, total of "Features and Controls", "Sound System", and "HVAC"

Source: JD Power, McKinsey



# The Vehicle Electronics Quality Gap

The capabilities of the automotive industry have not kept pace with the increasing electronics system complexity in the vehicle:





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## So Let's Talk About This

Safety as the most challenging automotive electronics domain:

Vehicle Safety Concepts  
Walter Ziegler  
Daimler AG

Software technology to address keep safety systems safe:

Automotive Software Engineering  
Tibor Farkas  
Fraunhofer-Institut für Offene Kommunikationssysteme (FOKUS)

Communication technology as a way out?

Connecting the Vehicle: The New Paradigm  
Manuel Simas  
Microsoft Deutschland GmbH