Innovation Challenges in Automotive Electronics

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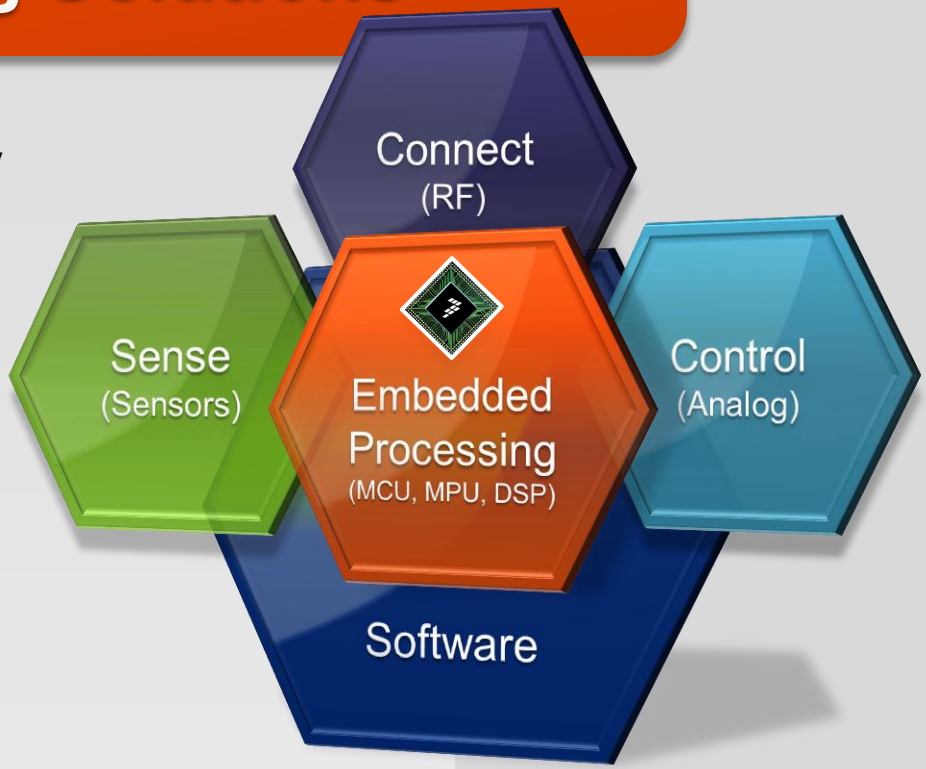
Freescale - A Global Leader of Embedded Processing Solutions

Two Core Product Groups

- Automotive, Industrial & Multi-Market Solutions
  - Microcontrollers
  - Sensors
  - Analog
- Networking and Multimedia Solutions
  - Communications Processors
  - Applications Processors
  - RF Power

Four Primary Markets

- Automotive
- Industrial
- Networking
- Consumer



Platform-Level Solutions

>50 Year Legacy

>5,500 Engineers

>6,000 Patent Families

>18,000 Customers

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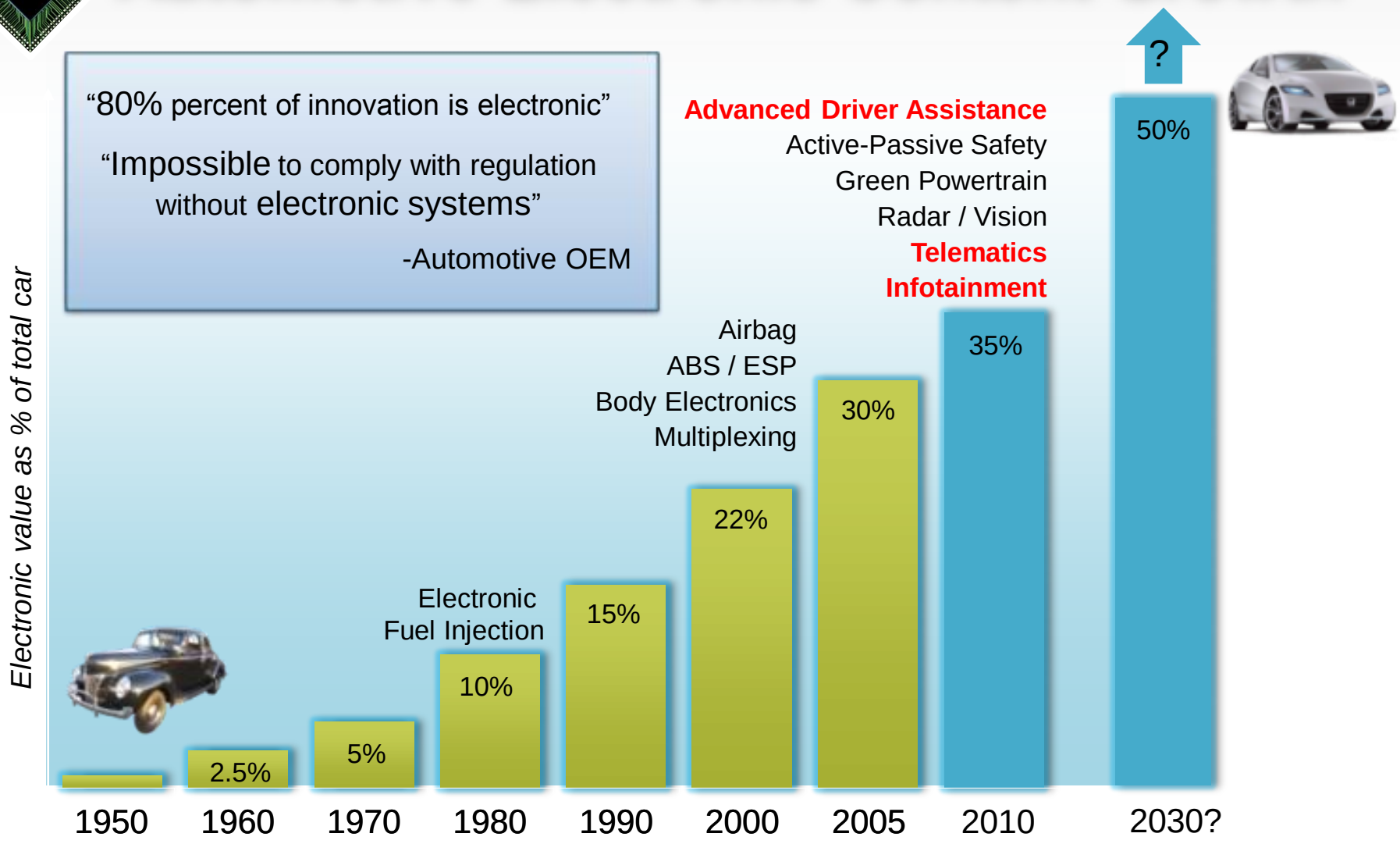
Automotive Electronic Content Growth



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Evolving Vehicle Safety Systems

Passive Safety

- Airbag
- ABS
- Stability Control

Active Safety

- Blind spot detection
- Adaptive cruise control
- Lane departure warning

Predictive Safety *(Connected Car)*

- Collision avoidance
- Hazard early warning
- Traffic management

Autonomous Car

- Vehicle trains
- Predictable traffic flow
- Driver independent

1995 2005 2015 2020

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Consumer vs Automotive
- two worlds collide

Source: QNX

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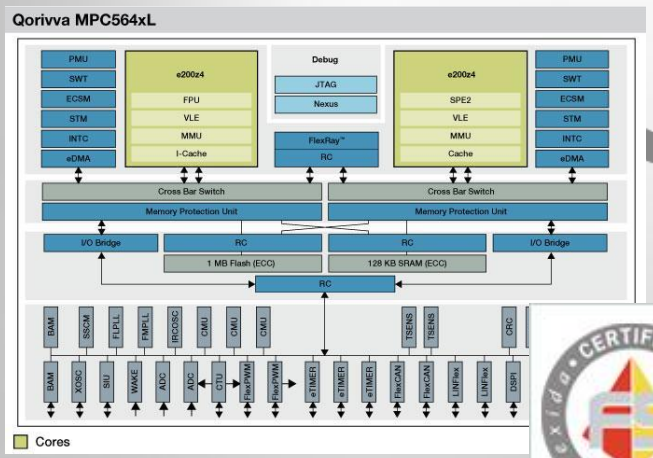
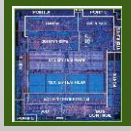
Software vs Hardware

AUTOSAR

Source: BMW



1982: 2µm
20.000
Transistors
8-bit CPU



In last 30 years
2,500x shrink
1,000x Flash
10,000x functionality

2013: 40nm
>200.000.000
Transistors
Multi Cores
>300MHz, up to
16MByte Flash

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Misguided Legislation

"I'm just putting everyone on notice. A car is not a mobile device"

David Strickland
Administrator of the National Highway Traffic Safety Administration, USA

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Summary

- Electronics innovation vital
- Timeline challenges
- Software & hardware co-existence
- Win-win collaboration way forward
- Legislators need guidance

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