Nano-Technologien: Quelle des automotive Fortschritts

Fachdialoge Nanotechnologien, Berlin BMUB, 26. September 2017

B. Hellenthal, AUDI AG, Competence Center Electronics & Semiconductors

NETFLIX
AUTOPIL

Fahrzeug Kundenschnittstelle von morgen

>90%

Quelle der Innovationen:

Nano-Technologien

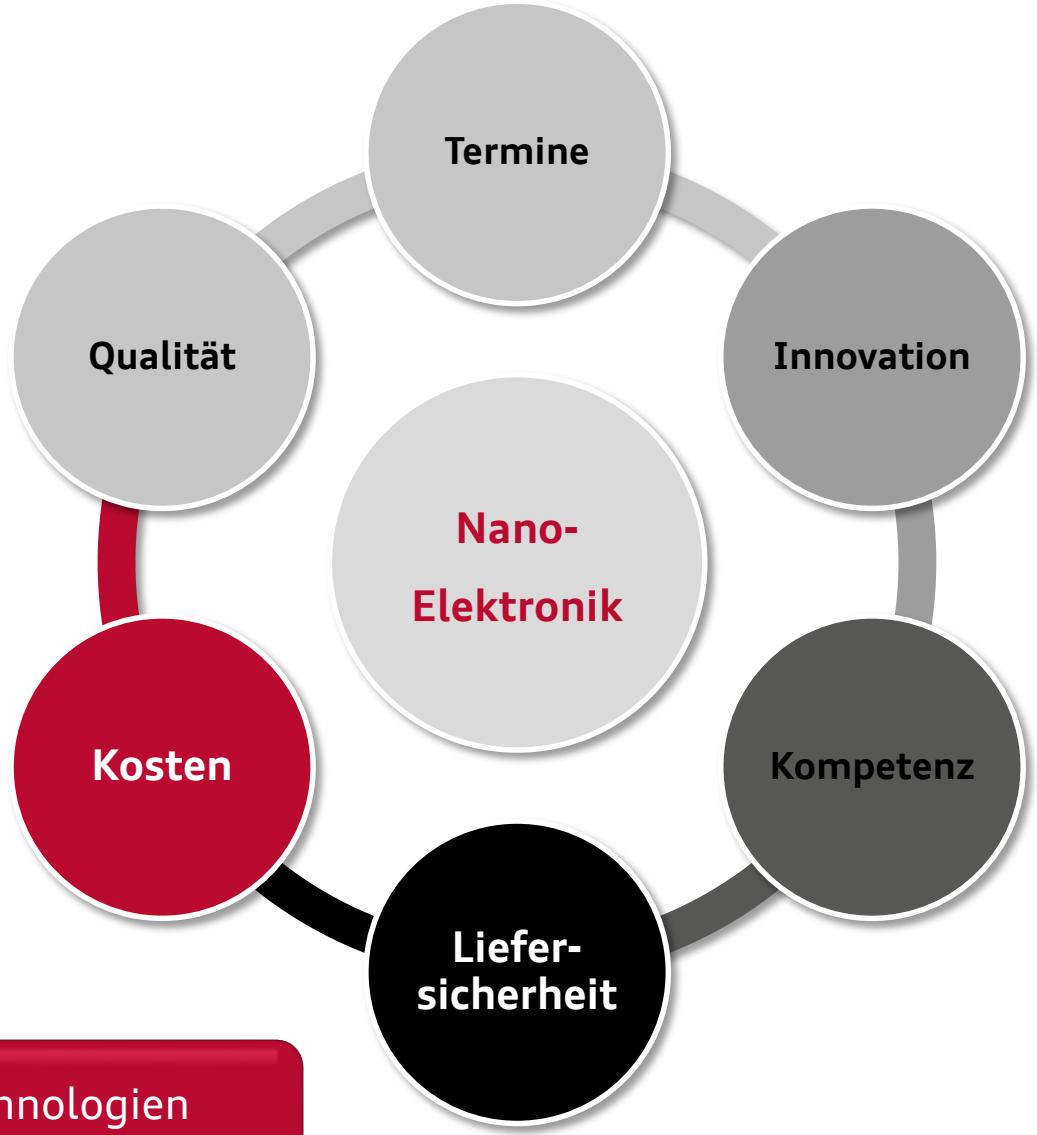
#drivenbyVorsprung

Notwendige Evolution

Infotainment	Infotainment	Infotainment	Infotainment	Cockpit Computer	Next (R)Evolution
2012	2014	2015	2017	2019	2021
MIB1	MIB2	MIB2	MIB2+	MIB3	MLB3
Computing Power	x2	x3	x5	x10	xXXL

Eine modulare Plattform ermöglicht jährliche Evolution.
Durch strategische Partnerschaften Innovationszyklen wie in der Konsumer-Industrie.

Einfluß der Nano-Technologien
Handlungsfelder und Abhängigkeiten



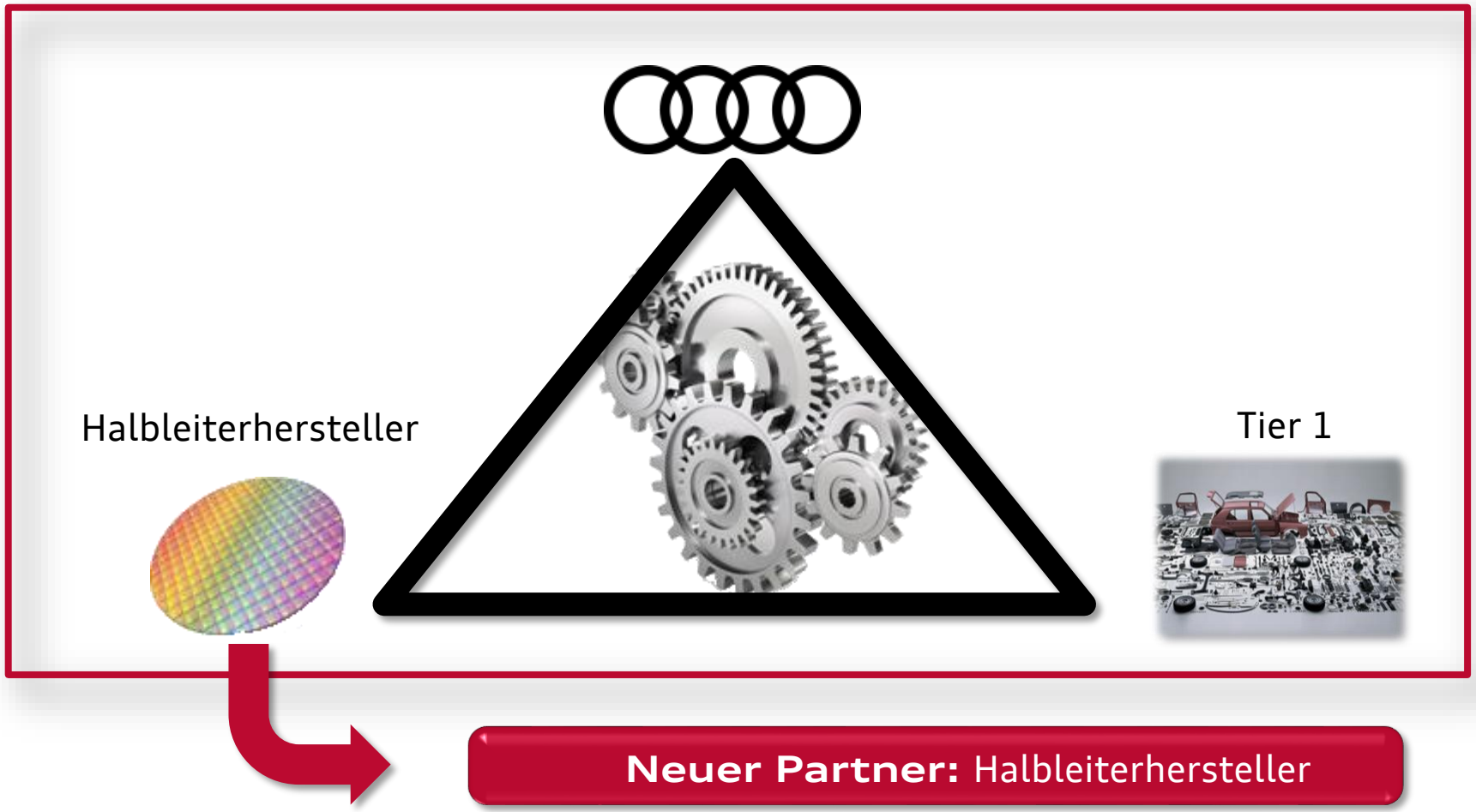
Weiter steigende Abhängigkeit von Nano-Technologien

Ganzheitliche Audi Halbleiterstrategie

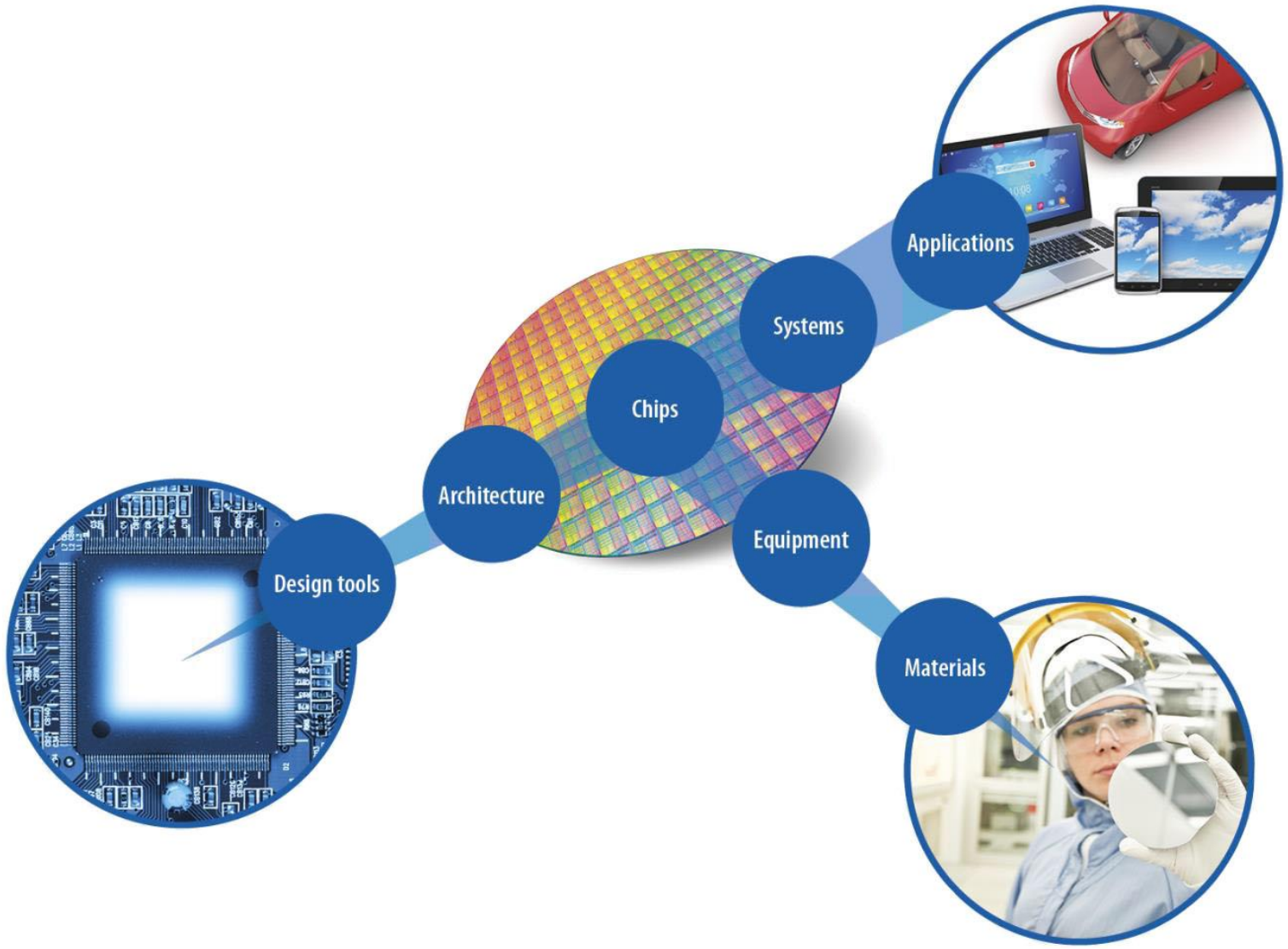
Audi **P**rogressive **S**emi**C**onductor **P**rogram (PSCP)

Neuer Lösungsraum
Zusammenarbeit im Projekt

... Synergien ermöglichen neue Innovationen



Wertschöpfungskette der Elektronik



Source: 'European Industrial Strategic Roadmap for Micro- and Nano-Electronic Components and Systems – Report to VP Kroes by the Electronic Leaders Group' (June 14, 2014)

Pilotiertes Fahren

Long-range Radar

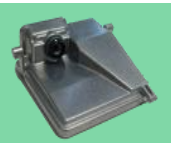
Nacht-sicht

Ultra-schall

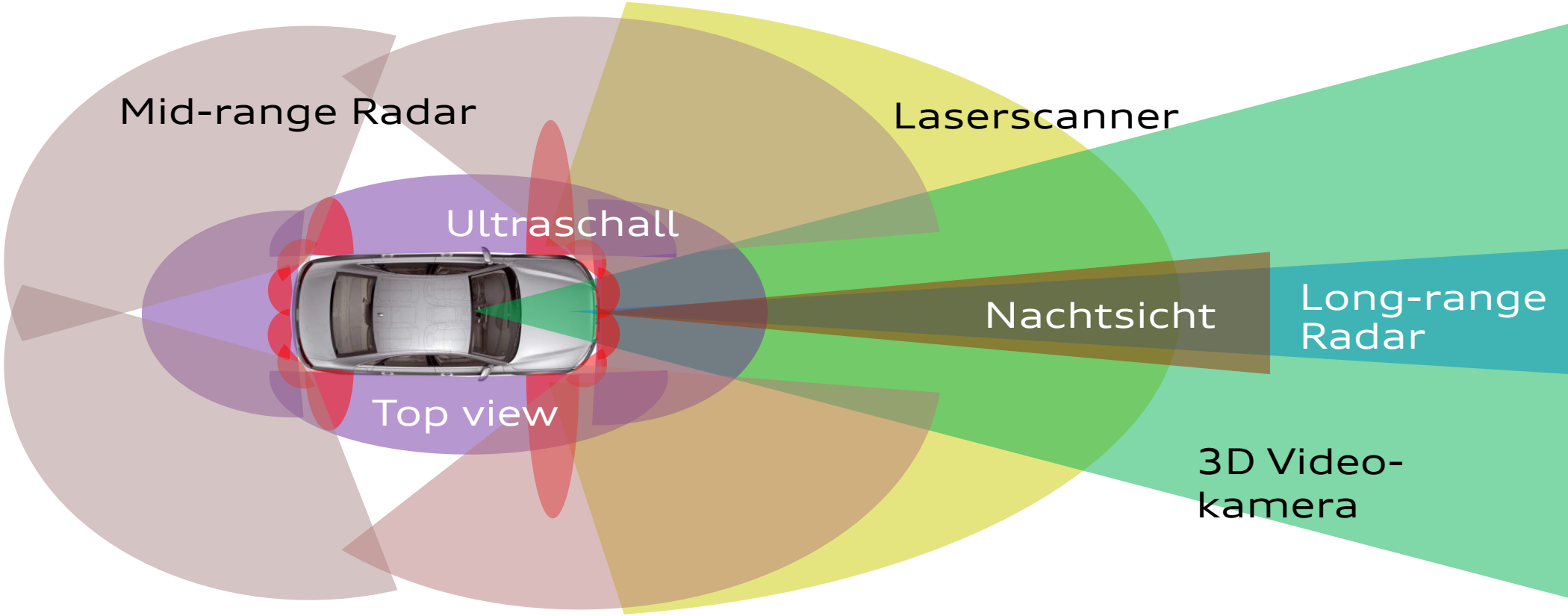
Top view

Mid-range Radar

3D Video-Kamera



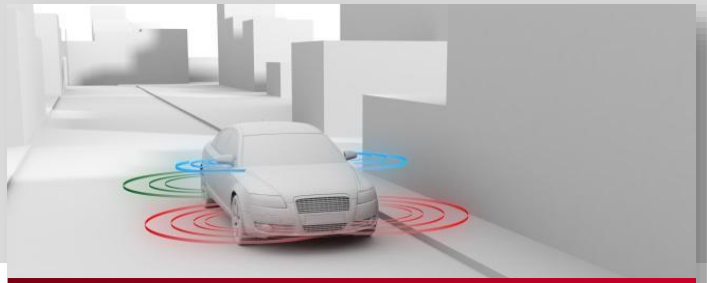
Laser-scanner



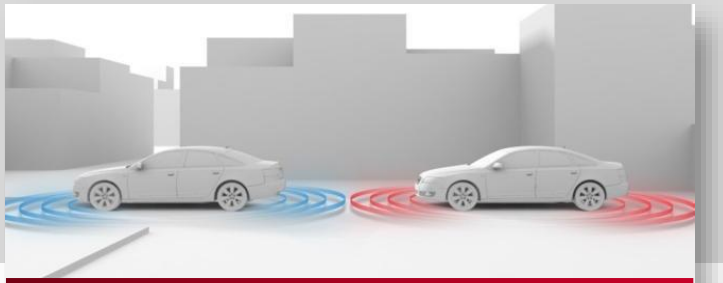
Sensorweiterentwicklung (Funktionen, Leistung)
ermöglicht 3D 360° Umwelterkennung

Smart Car – das lernende Fahrzeug

Das Auto...



... beobachtet

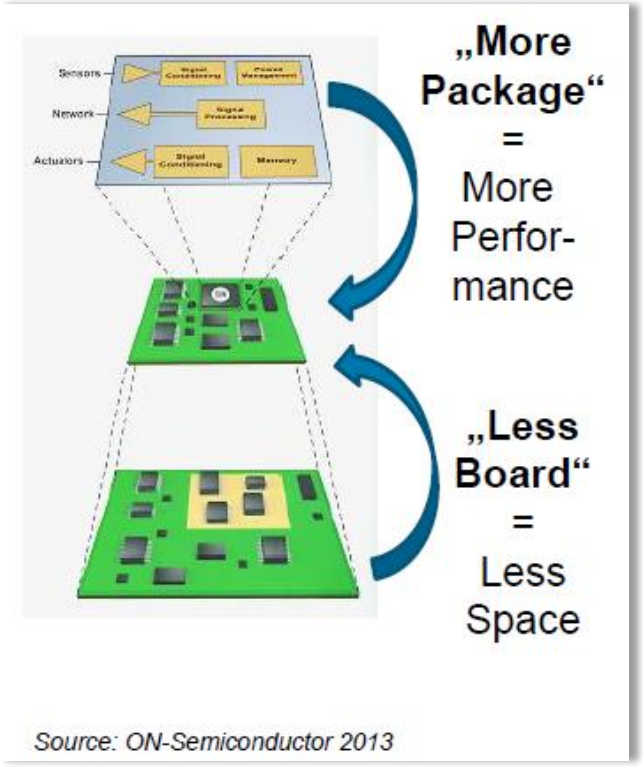


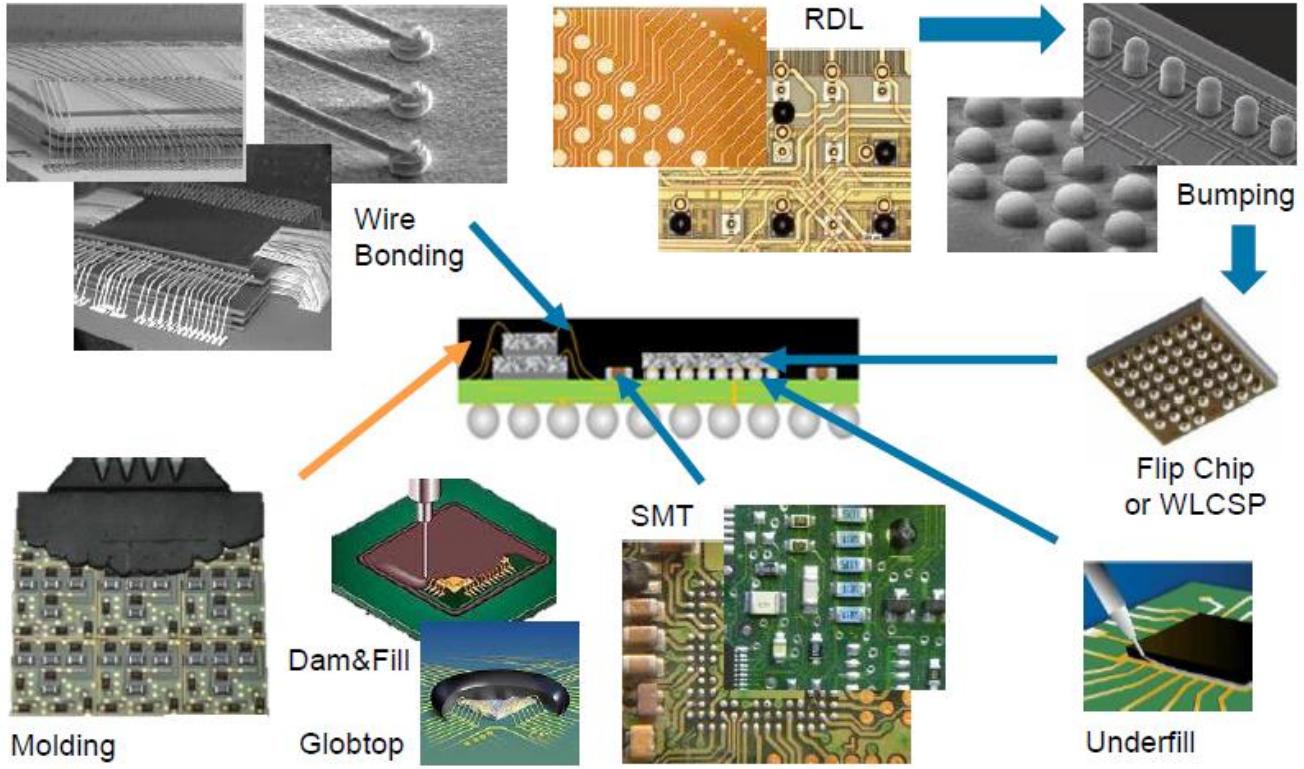
... kommuniziert

... entscheidet

Fortschritte in der Nanoelektronik

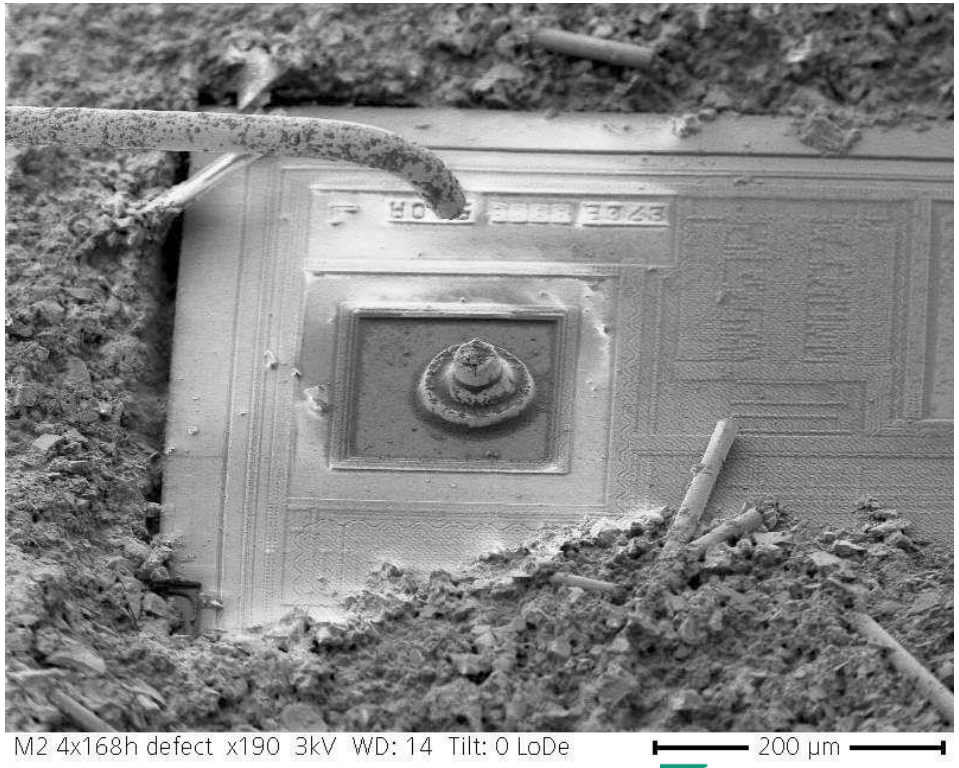
Systemintegration im Halbleitergehäuse



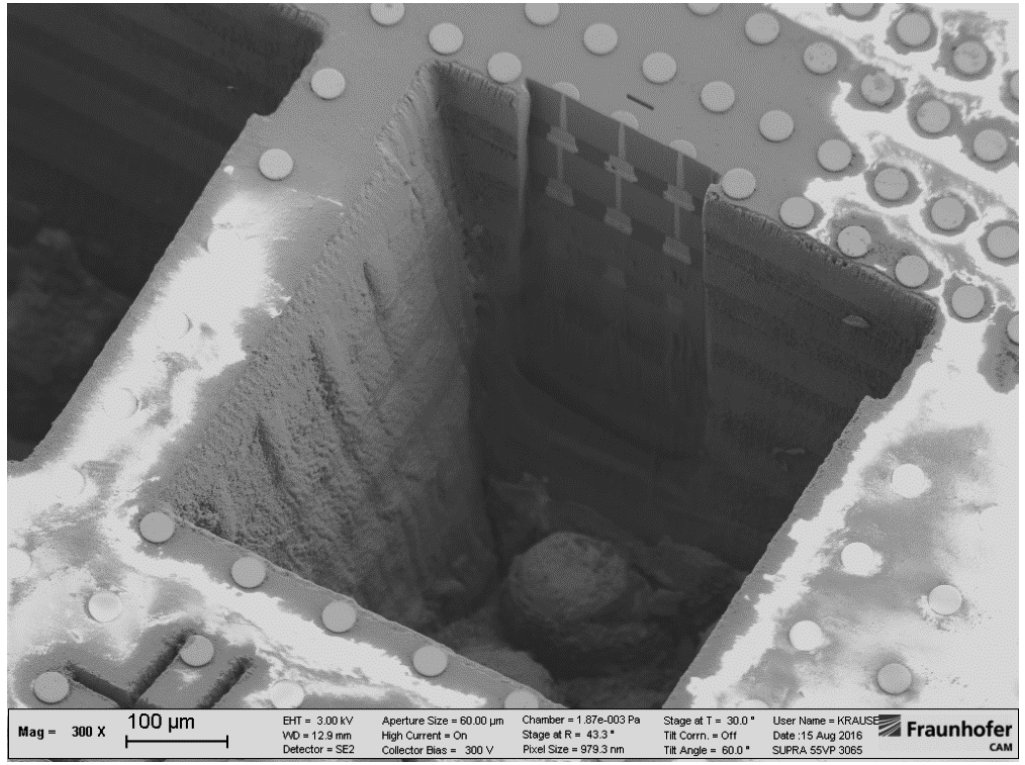


Hochintegration zu „More Package“

Die Bedeutung der Fehleranalyse

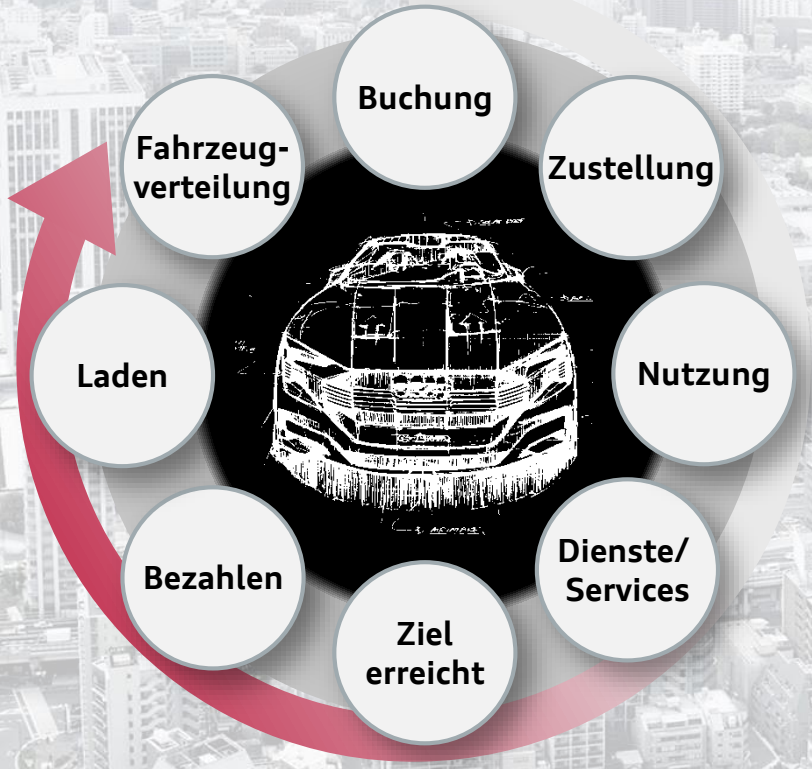


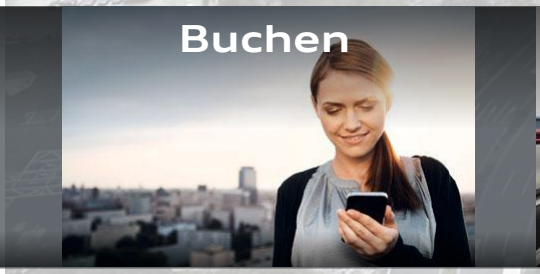
Source: Fraunhofer IMWS



Fortschrittliche Fehleranalyse ist die Grundlage für Innovation,
Geschwindigkeit, Qualität, Zuverlässigkeit und garantierte Funktion über Lebensdauer

End-to-End Kundenerfahrung
Autonomes Fahren

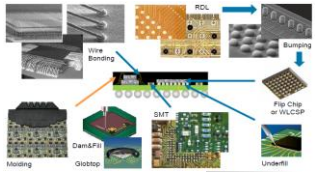




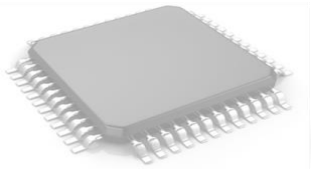
Zukunftstechnologien
Schlüsseltechnologie: Nano

5G Konnektivität

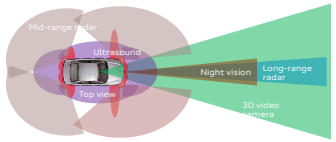
3D Integration



Nanoelektronik Halbleiter

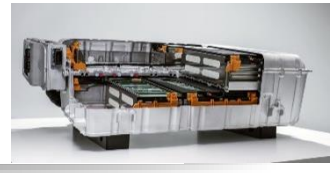


Sensoren



Leichtbau

Energiespeicher



Antriebseffizienz

Aktive Nanomaterialen

The Comeback

Thank you