The Fully Networked Car

The Fully Networked Car @ the Geneva International Motor Show (FNC 2011)

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Outline

Future Challenges to the Automotive Industry

The Fully Networked Car

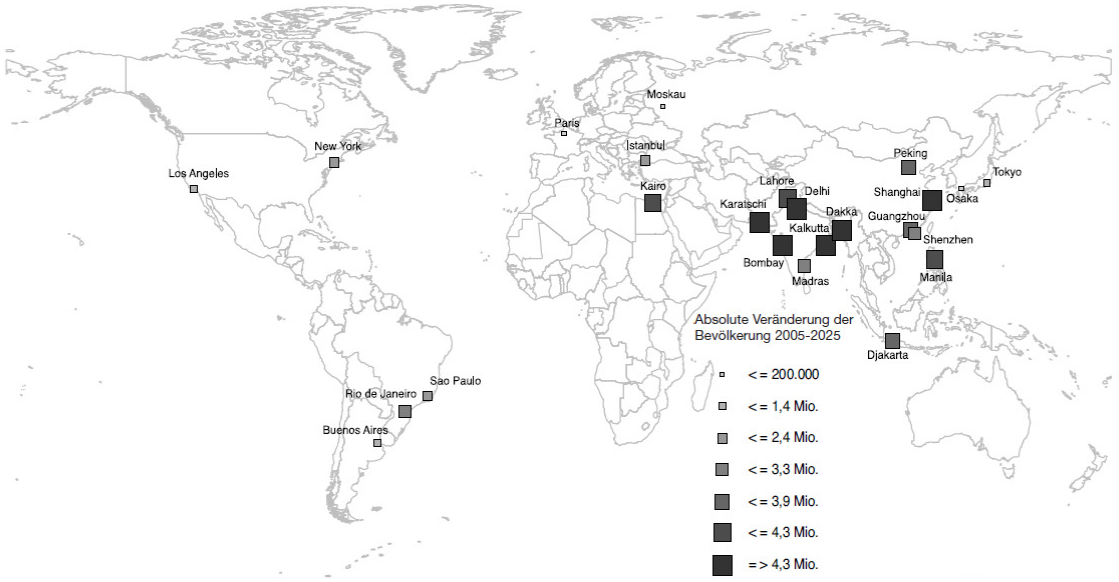
- Value proposition
- Today‘s Application Areas
- Key Technologies

Summary

Future Challenges to the Automotive Industry

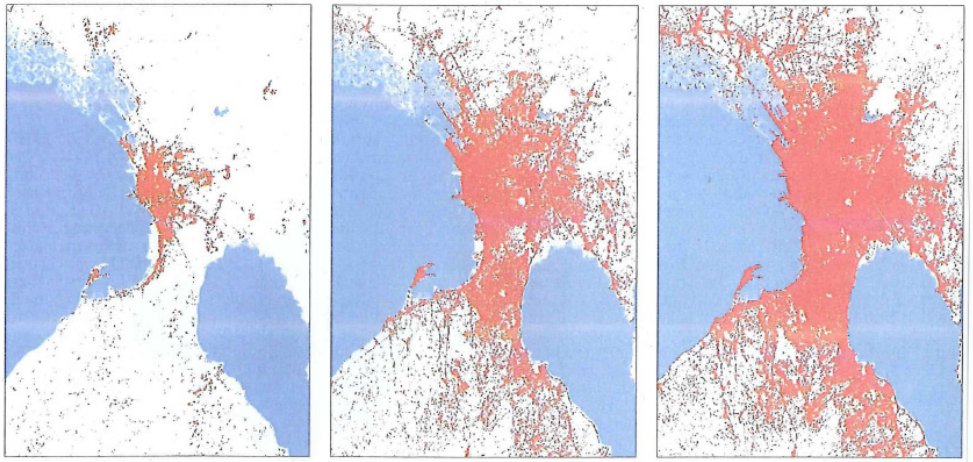
- Rising Energy Demand worldwide
  - Today 900 Mio Vehicles
  - 98% fossil fuel
  - 2020 1.1 billion vehicles
- End of cheap Oil
  - Displace petroleum
  - Increase energy diversity
- Urbanization (Megacities, Megaregions)
- Climate Change
  - Global Warming
  - Demanding CO_2 regulations
- Mobility Trend towards Electrification

Urbanization



Example: Manila

Süddeutsche Zeitung 16.11.2010

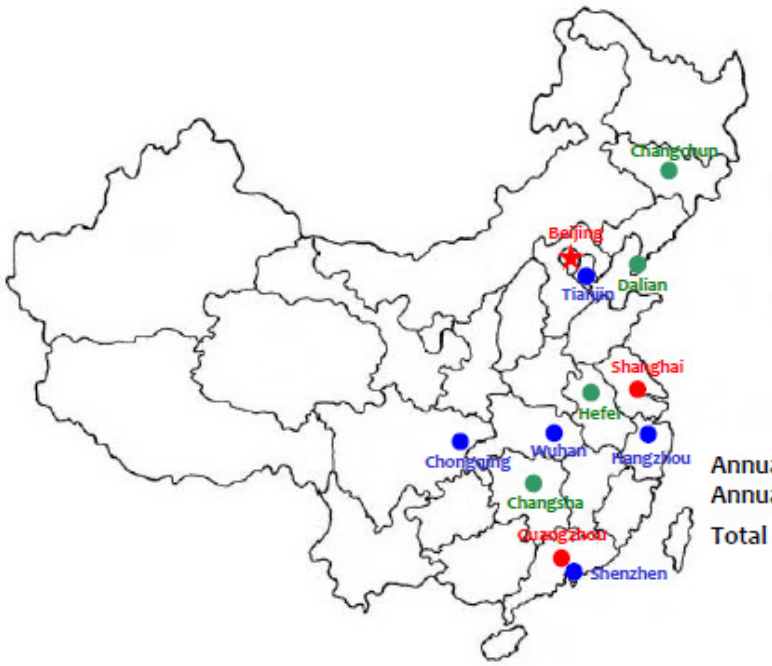


Manila, 1975. *Manila, 1988.* *Manila, 2010.*

Quelle: VDA

Mobility Trend towards Electrification

Bus and Taxi Population and Fuel Consumption in China



	Bus	Taxi
Metropolitan cities	23.000	53.500
Big cities	8.000	17.000
Important cities	4.000	12.000
Σ Total	500.000	1.200.000

Annual fuel consumption of buses in China is 17.6b L
Annual fuel consumption of taxies is 16.9b L
Total annual fuel consumption is about 28M tons

Build Your Dreams

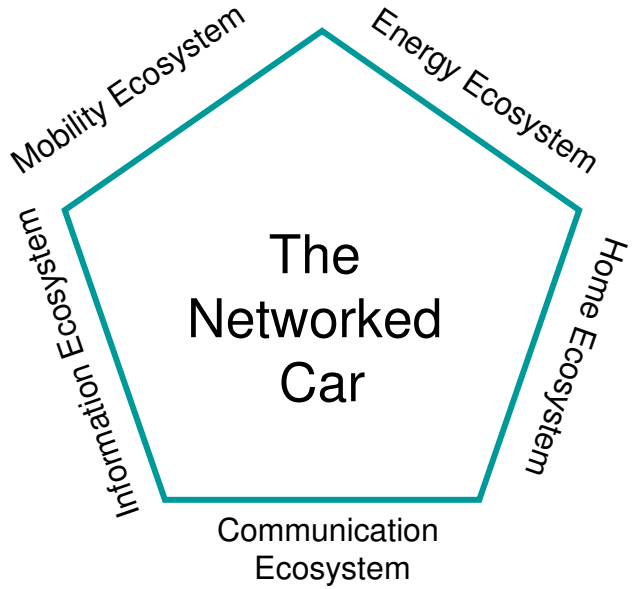
Challenges in Context with the Fully Networked Car

VDA

- New Energy Systems / Electrification
  - Communication between vehicle and energy systems during electricity charging.
  - BEV's can consume renewable electricity (CO_2 Potenzial: Zero Emission Cars).
- Traffic Flow Management
  - Traffic hold ups cause major economic costs (in Germany ~17 Mrd. Euro per annum*).
  - Telematics can help to prevent traffic hold ups and related CO_2 emissions.
- Intermodal Mobility
  - The Networked Car is an active part of modern and efficient mobility patterns.
- Traffic safety
  - 46% Reduction of fatalities between 2000 and 2010.
  - Car to Car communication for less road accidents and more efficient emergency management.

*www.simtd.de

The fully Networked Car: Value Proposition



Opportunities

- Enable intermodal mobility
- Leverage new energy systems
- Enhance safety
- Improve traffic management

Challenges

- Rising complexity
- New application areas
- New stakeholders

The fully Networked Car: Today‘s Application Areas

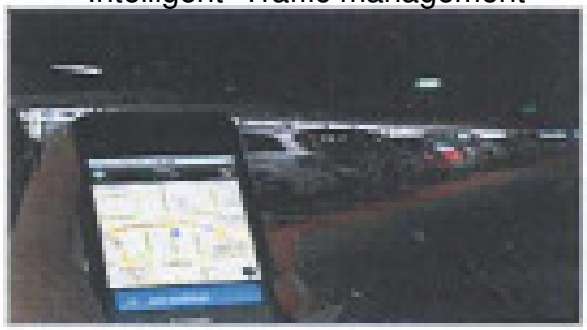
Future Navigation

Car to Car Communikation

Infotainment

Driver Assistance

Intelligent Traffic management



The fully Networked Car: Key technologies

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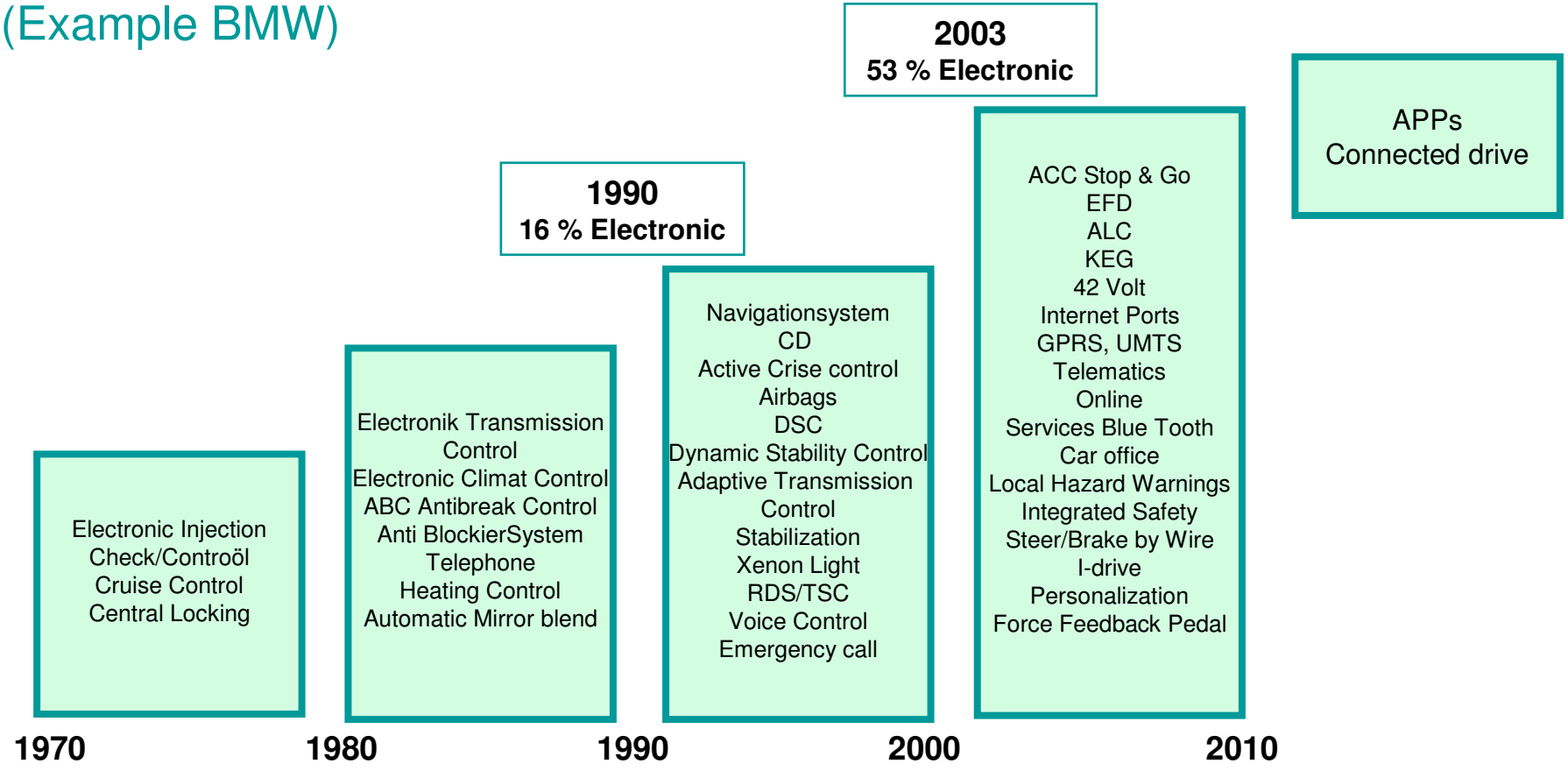
Embedded Systems in Automotive Industry, (Example BMW)



Source: VDE, Positionspapier „Embedded Systems2, 2010

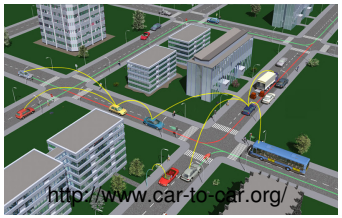
The fully Networked Car: Key technologies

VDA

Steps of Evolution in Telematics

1	2	3
Collective Information Systems (Traffic signs) Driver receives Information	Individualized Information Systems (Navigation System) Car receives Information	Car to X Communication () Car collects and distributes Information

http://www.testberichte.de



http://www.car-to-car.org/

Car to X communication for Safe and Intelligent Mobility

Test field for Fully Networked Cars:

simTD

Germany, Frankfurt Area

Focus areas of simTD

Traffic Management | Drive and safety | Additional services

The fully Networked Car: Key technologies

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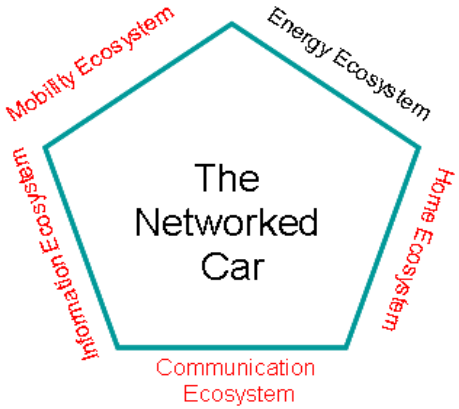
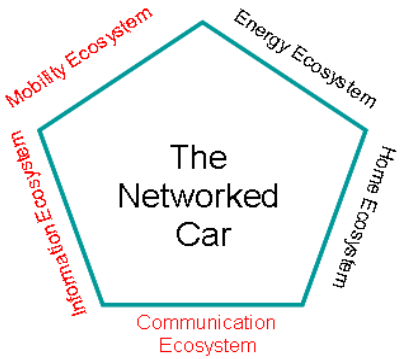


A North american Example
OnStar: Provider of Mobility services

- Communikation
- Navigation
- Remote Diagnosis
- Emergency suppart
- Leasure offers

OnStar Corporation is a subsidiary of General Motors that provides subscription-based communications, in-vehicle security, hands free calling, turn-by-turn navigation, and remote diagnostics systems throughout the United States, Canada and China.

The fully Networked Car: Key technologies



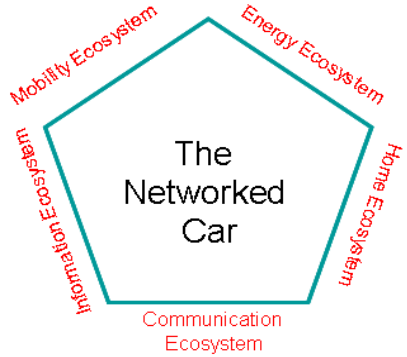
Audi Launches iPhone Apps for Monitoring Your Car 03. Nov. 2010

The iPhone app works by receiving info from the cars OBD-II port and sends it large amounts of data.

Examples for data exchanged:

- Emissions information
- How much CO_2 the car is putting out
- Every time you mash the peddle
- Data logging with GPS
- The ability to find where ever your kids have taken the car.

The fully Networked Car: Key technologies



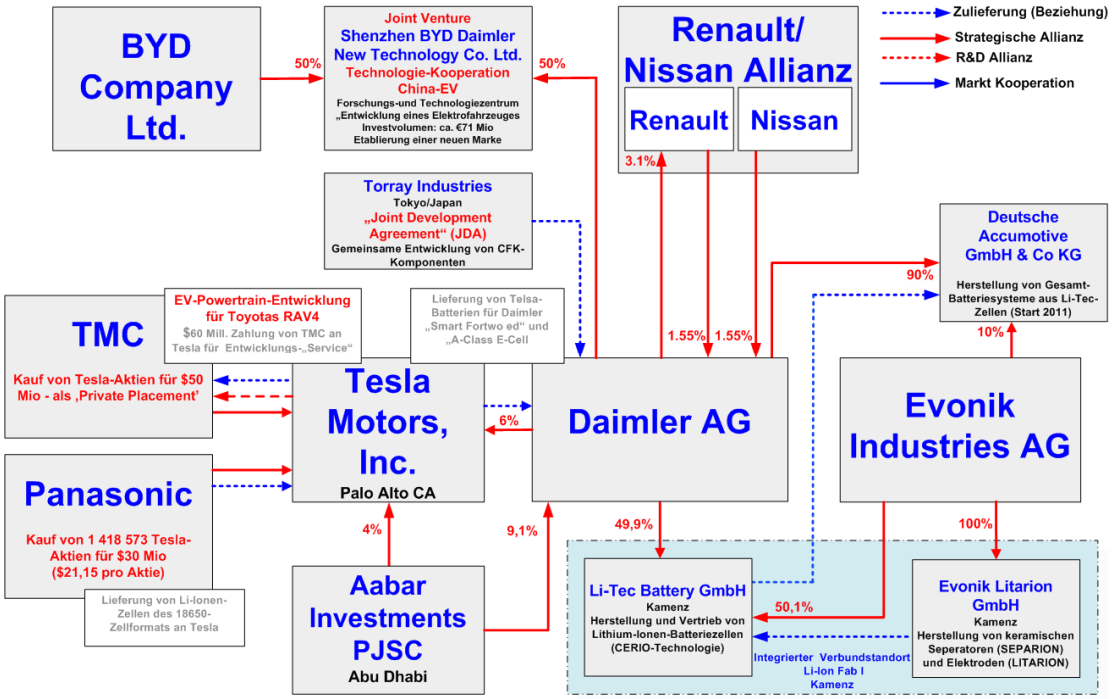
MEREGIO: E-Mobilität and Energy

Connection of Smart Home ans Smart Vehicles

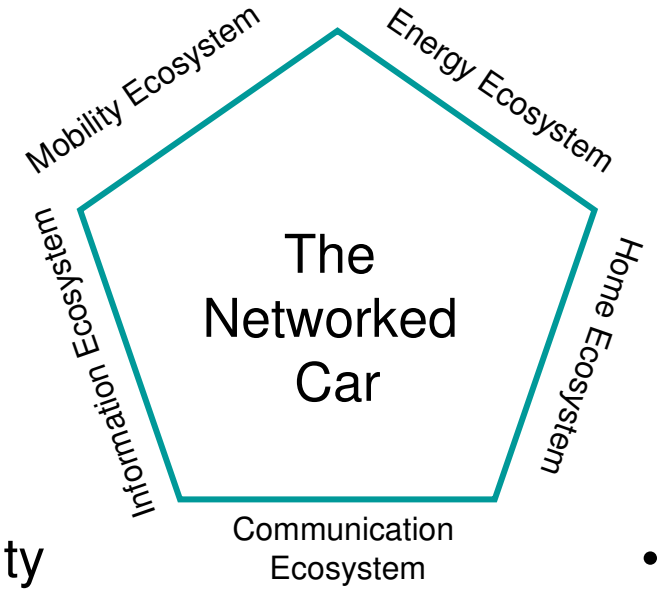
- Energy Efficient Home
- Batteries serve as an Energy Storages
- Bi-directional Charging Modes
- Intelligent Control System

Alliances for E-Mobility

Example: Daimler, Tesla, BYD, TMC



The fully Networked Car: Summary



Opportunities

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Challenges

- Rising complexity
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- New form of Co-Operations
- New business models will be required

Thank you for your attention!