SIEMENS VDO
Automotive

General introduction DCE + automotive electronics

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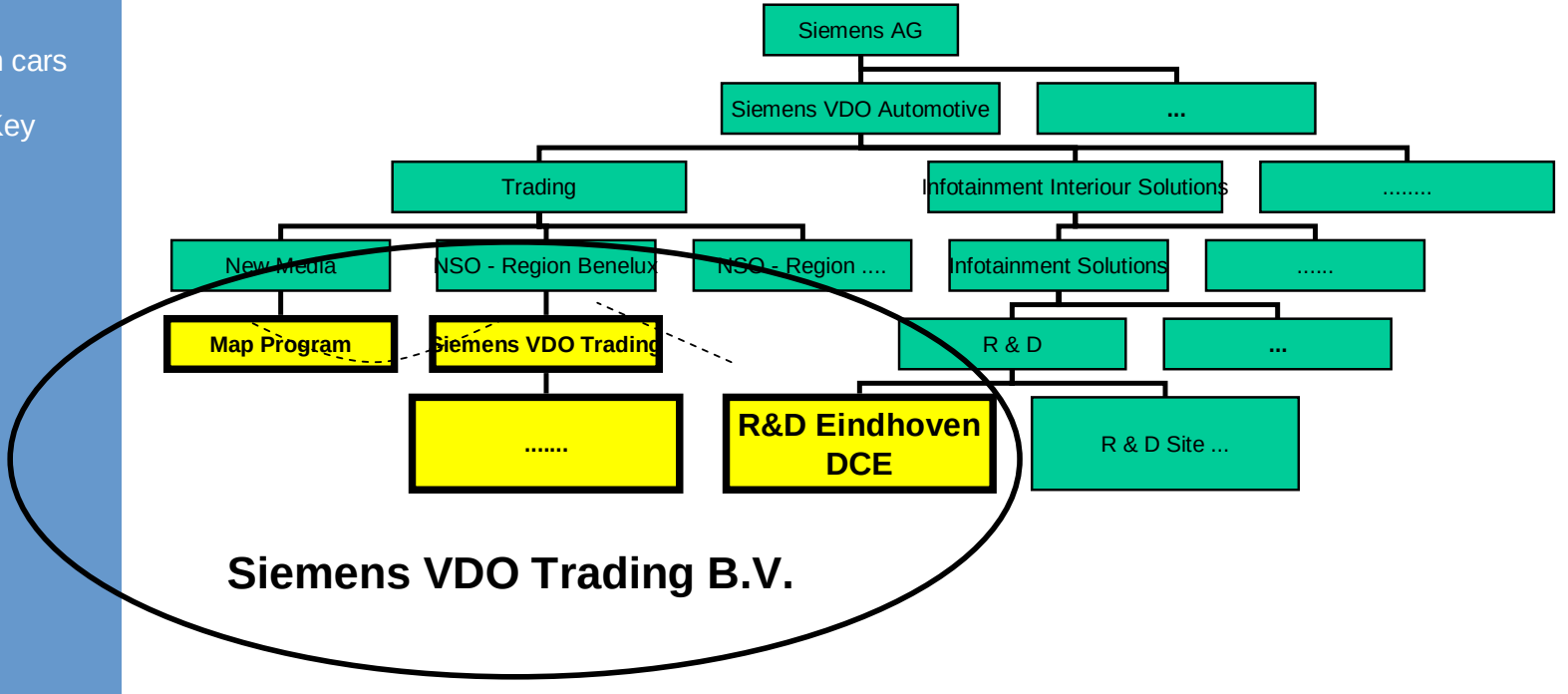
Supplying value

Organisation

- Introduction DCE
- Overview R&D navigation
- Electronics in cars
- Automotive Key Drivers



Siemens VDO IS - Development Center Eindhoven (DCE)

- R&D Center for Automotive embedded software and hardware development
- Part of Dutch organisation “SiemensVDO Trading BV” (together with Dutch trading organisation)
- Located Luchthavenweg 48 (near Eindhoven Airport)
- Focus:
  - Navigation
  - Pre-development of Radio/Audio
  - Navigation map development
- Recent History:
  - >1998 Philips Car Stereo
  - 1998-2001 Mannesmann VDO
  - 2001> SiemensVDO Automotive

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±200 FTE (Software, Electronics and System Engineering)

±110 BSc, ±50 MSc, ±5 PhD

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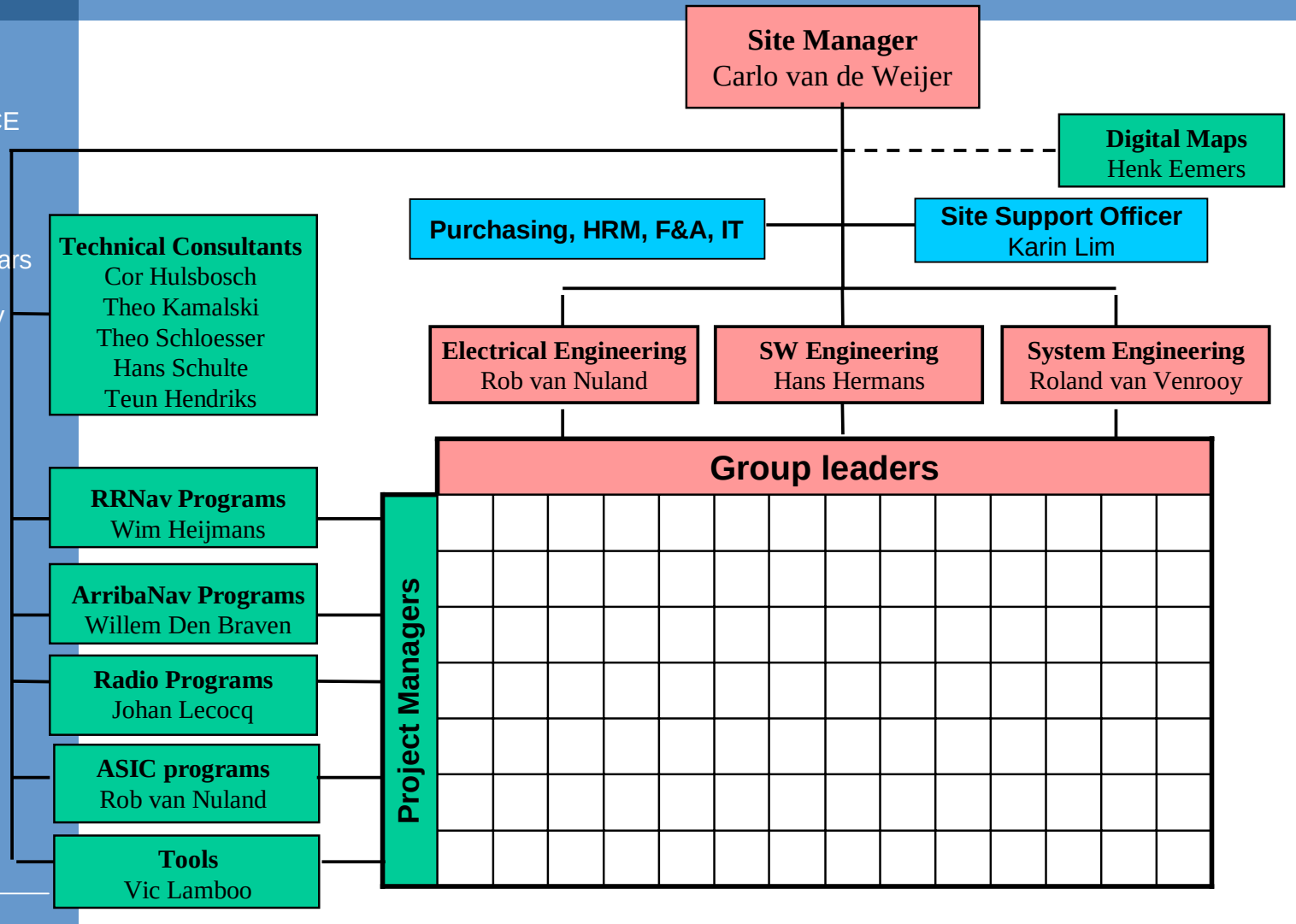

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Being located in the Eindhoven region…

- **Distance to customers / applications (= travel time, cost)**
  - ☹ **Link to end customers takes more effort**
  - ☺ **Innovation**
  - ☺ **Assures ability to work platform oriented**
- **Embedded software valley of Europe (technology centres, universities, resources ++)**
- **Automotive oriented region (incl. lab facilities!)**

Radio and Navigation systems

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Integrated solutions

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Current Navigation Development focus

- **Improve current systems:**
  - **Cheaper (integrate hardware in ASIC, standardize components, ++)**
  - **Increased performance**
  - **More features (Multiple route planning, radar trap warning, improved MMI e.g. by voice control, 3D maps, Augmented reality, automatic map update)**
- **Connecting navigation to the car and environment**
  - **Link to infrastructure**
    - **TMC**
    - **Road Pricing**
    - **Floating Car Data**
    - **GST**
    - **+++!**
  - **Link with other electronic systems**

Radar warning

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(check www.nooitmeereenboete.nl)

3D Navigation

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Augmented reality

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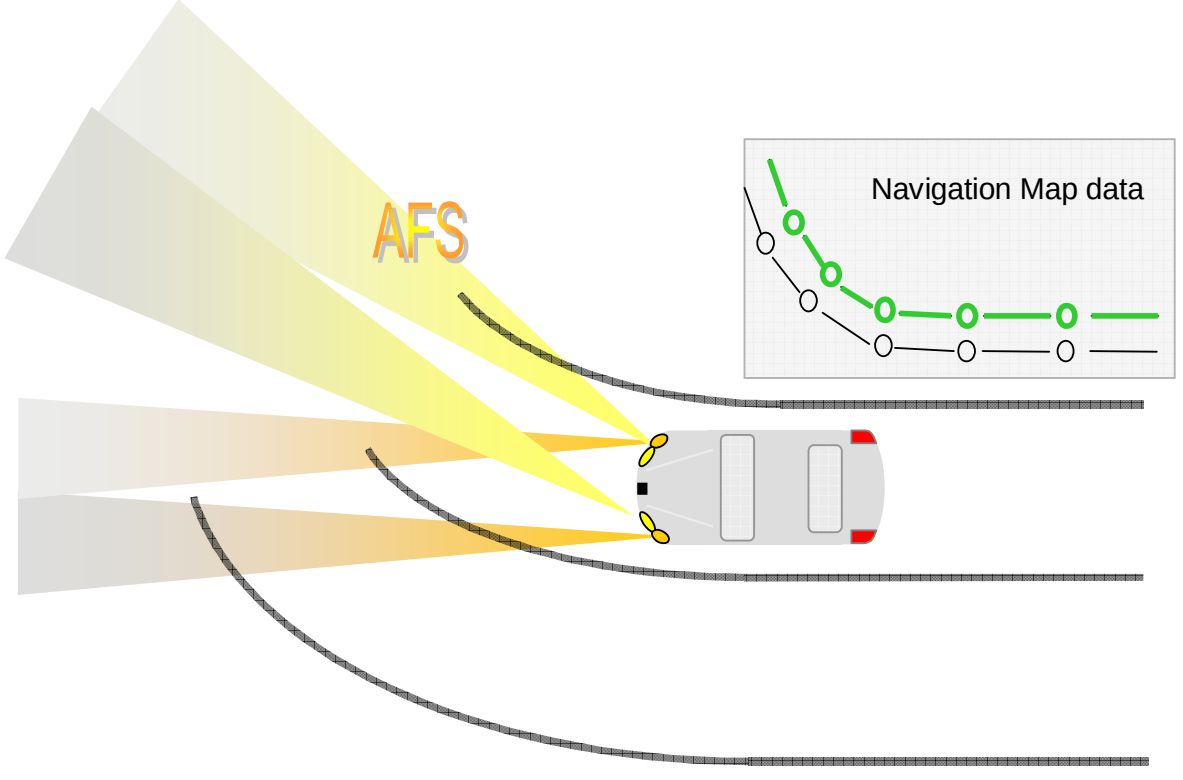
- **Connecting navigation to the car and environment**
  - **Link to infrastructure**
    - **TMC**
    - **Road Pricing**
    - **Floating Car Data**
    - **GST**
    - **+++!**
  - **Link with other electronic systems**

Navigation systems:
ADAS: Advanced Driver ASsistance

Example I: the use of road look-ahead data for AFS

predictive lighting before entering a curve



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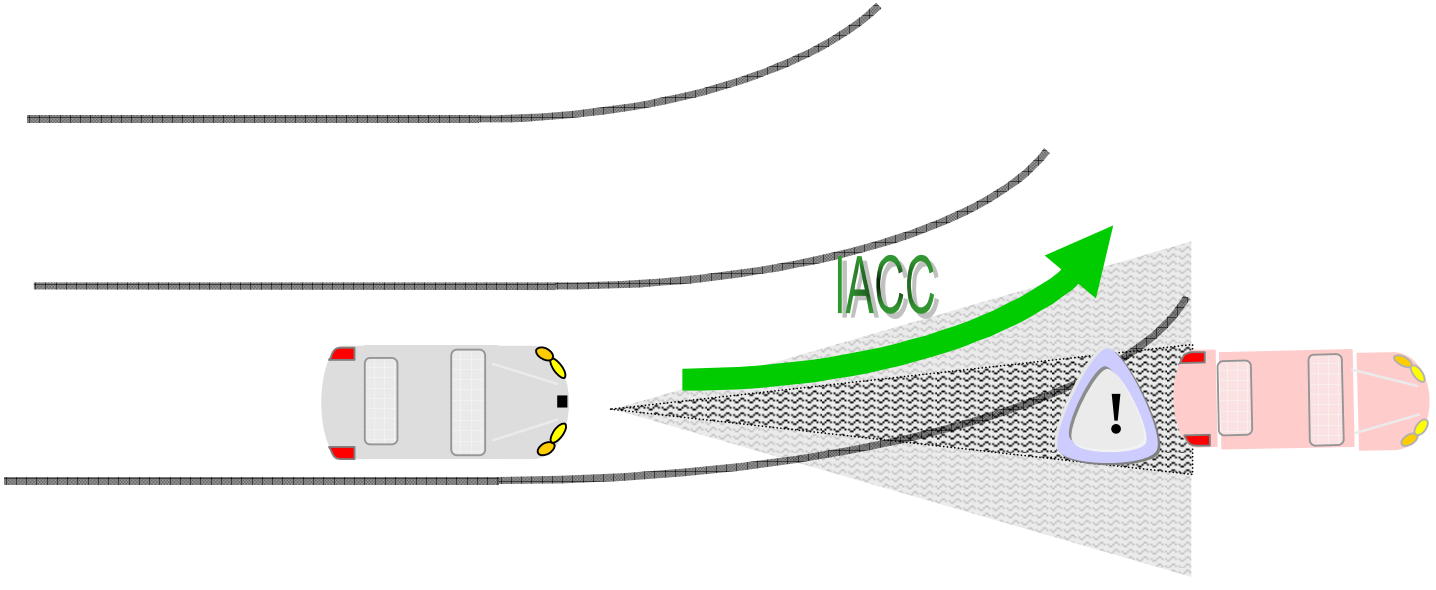
Navigation systems:
ADAS: Advanced Driver ASsistance

Example II: the use of road look-ahead data for IACC

avoid unneeded slow-downs for an upcoming curve



Navigation systems:
ADAS: Advanced Driver ASsistance

Other examples of ADAS-useable information from navigation:

- Country-information with regard to fuel quality
- Influencing shift algorithms for automated and CVT drives
- Differentiating emission management depending on location (urban – rural – highway)
- Maximum speed indication (also depending on e.g. rain)
- +++

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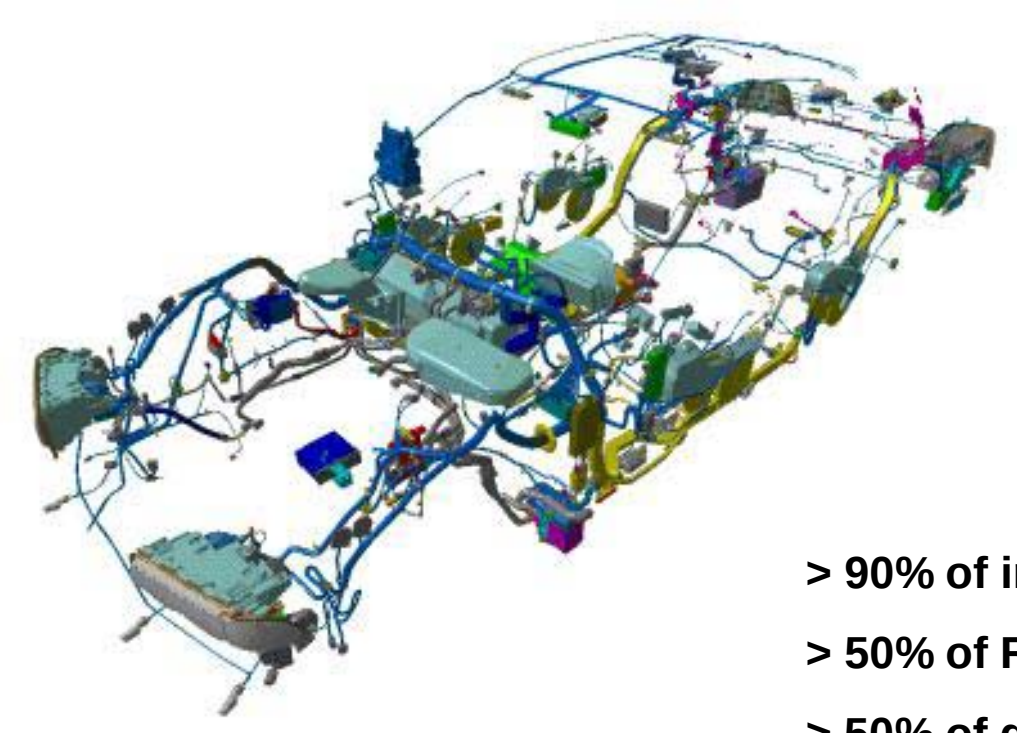
Electronics in cars



> 90% of innovations

> 50% of R&D cost

> 50% of defects

Source: INPRO / Technology Watch 2003

Electronics in cars

Software

Jaguars ongewild in achteruit door softwarefout

Jaguar heeft 68 duizend auto's teruggehaald na de ontdekking van een softwarefout in de versnellingsbak. De bug zet de voertuigen in hun achteruit, waardoor ze op hoge snelheid teruguitrijden. Het probleem treedt op bij een te laag oliepeil in transmissie. Met het aanspringen

Elektronik-Pannen

Anteil der Elektrik/Elektronik bei Pannen von Kraftfahrzeugen im Jahr 2002

Marke	Pannen pro 1000 Fahrzeuge	Anteil der Elektrik/Elektronik
Seat	24,5	45,3 %
Peugeot	26,2	48,3 %
Citroen	29,8	48,4 %
Fiat	42,3	48,9 %
Skoda	34,2	51,4 %
Nissan	18,1	52,4 %
Audi	15,4	55,1 %
BMW	20,3	55,6 %
Opel	23,9	56,1 %
Ford	21,6	56,4 %
VW	18,9	56,5 %
Chrysler	60,3	58,1 %
Saab	59,1	61,2 %
Mazda	11,5	62,9 %
KIA	39,4	63,1 %
Porsche	12,6	63,2 %
Mercedes	22,2	63,5 %
Renault	35,9	64,2 %
Toyota	10,3	66,3 %

Grafik: J. Runo

Quelle: Sonderstudie ADAC-AutoMarxX

Eerste virus voor auto's ontdekt?

donderdag 27 januari 2005 10:56
Door: Xander Hoose

Antivirus-producent Kaspersky Labs deelt ons mee dat nu ook auto's op de lijst van mogelijk besmette voorwerpen terecht zijn gekomen. Een niet nader genoemd persoon heeft namelijk gemeld dat zijn nieuwe Lexus-auto een virus heeft opgelopen.

Het gaat om de Lexus LX470, LS430 en Landcruiser 100. Deze auto's zijn voorzien van het Symbian besturingssysteem en kunnen via bluetooth aan een telefoon gekoppeld worden. Op deze manier kan het virus van de telefoon naar de auto overspringen. Kaspersky heeft geen verder commentaar gegeven over het hoe en wat van auto-virussen, maar met de toenemende integratie van computersoftware en auto's is het zeker een punt dat goed bekeken moet worden.

Van PCMWeb, Januari 2005

Electronics in cars

Some more key figures (source Arthur D Little):

In 2010

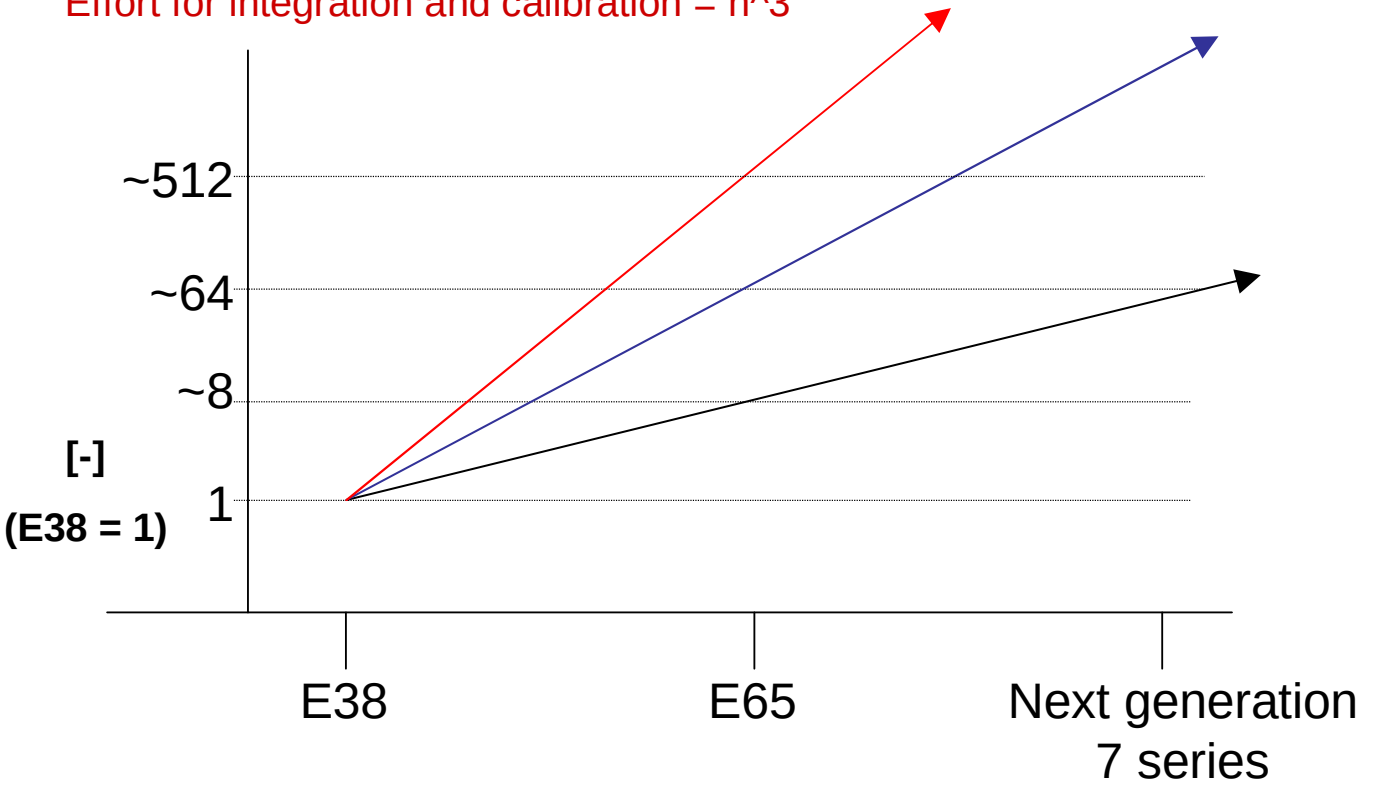
- **35% of the production cost of average vehicle is electronics (22%) or software (13%) related**
- **50% of application for software is in the area of infotainment (30% power train & transmission)**
- **75% of differentiation between two cars will be realized through SW**

Electronics in cars; evolution of BMW 7-series

Signals on CAN-bus = n

Sender / receiver interaction = n^2

Effort for integration and calibration = n^3



Source: BMW 10/2002

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Automotive key drivers

- **Standardization**
- **Long development life cycles of cars (3-5y)**
- **Reliability**
- **Automotive specifications: EMC, temp, shock, humidity, lifetime, low price, ++**
- **Distributed systems + consequential integration problems**
- **Diagnose services**
- **Long term service (obsolescence, maintenance)**
- **Global business**
- **HW culture**

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Automotive key drivers
Available top-expertise in region

- **Standardization**
- **Long development life cycles of cars (3-5y)**
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Back-up slides

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Consortia & Forums with representation of DCE-member(s)

Projects

ActMAP (5fw) MAPS	Actualisation dig.
PR^{e}VENT (6fw)	MAP-ADAS interface
INVENT (DE)	Routing to NAV
AGORA (5fw)	On-the-fly referencing
GST (6fw)	One System for EU - Open System - Security - Payment - Safety Channel
Allegro (NL)	support SAG => FCD
Mobil Info (DE)	under prep. Adv Devt
Gateway (DE)	TollCollect next gen.

Forums

ADASIS F.	I/F MAP-ADAS
TMC Forum	Maintenance and new devts
Telematics F	Automotive solutions - Board member - GTP Global Telematics Protocol - I/F phone – display
eSAFETY F.	political & socio-economical

Liaisons

ACEA	Exchange of information
FIGIEFA (CLEPA)	Open market requirements
VDA	AK Verkehrsmanagement

Partnerships (a.o.)

AUTOSAR AUTomotive Open System ARchitecture

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AUTOSAR

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