

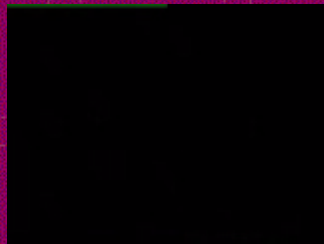
Testen van embedded software

Najaarsevent TestNet 2003

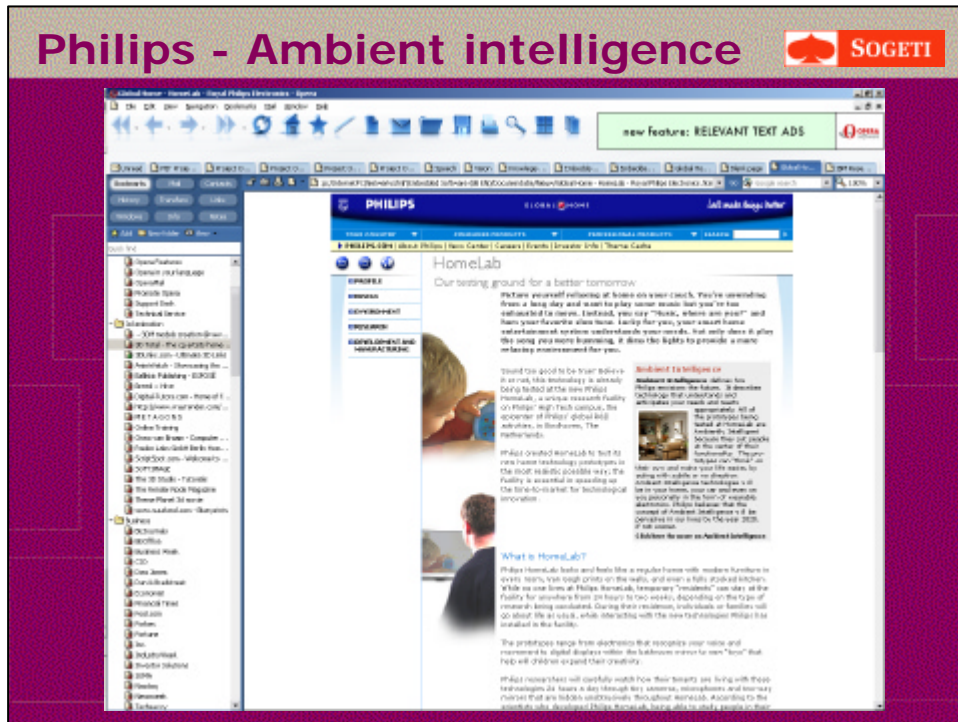
Edwin Notenboom

Sogeti

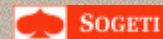
edwin.notenboom@sogeti.nl



Philips - Ambient intelligence



Philips - Ambient Intelligence



This is our vision of 'Ambient Intelligence': people living easily in digital environments in which the electronics are sensitive to people's needs, personalized to their requirements, anticipatory of their behaviour and responsive to their presence.

Communicatie



Virtueel samenzijn



Thuiskomst



Tandenpoetsen



De ochtendkrant



HomeLab



Focus Testen

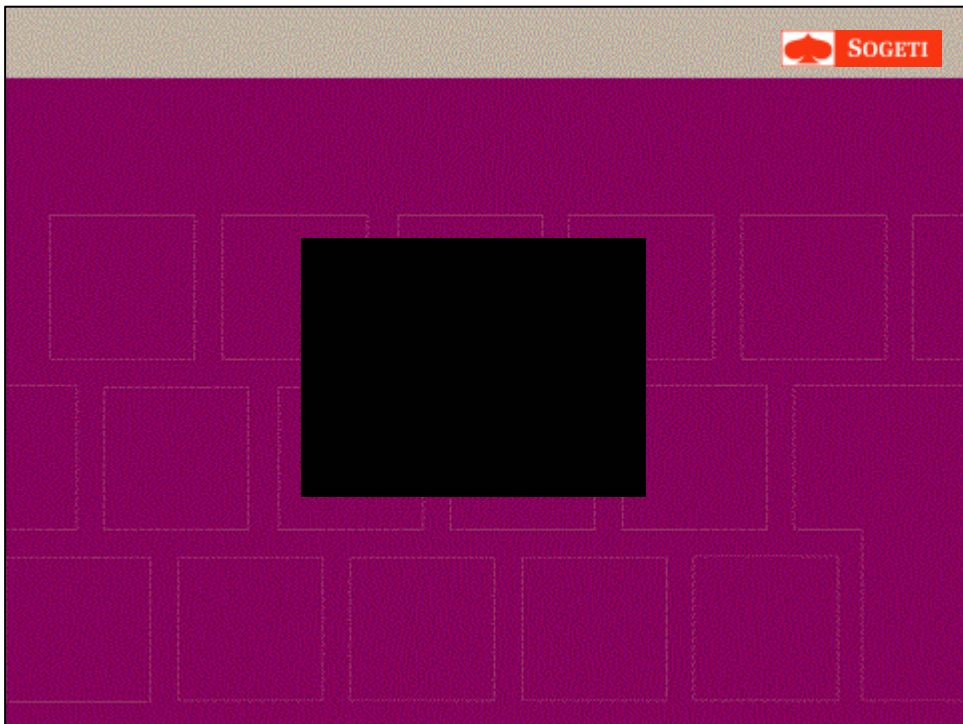
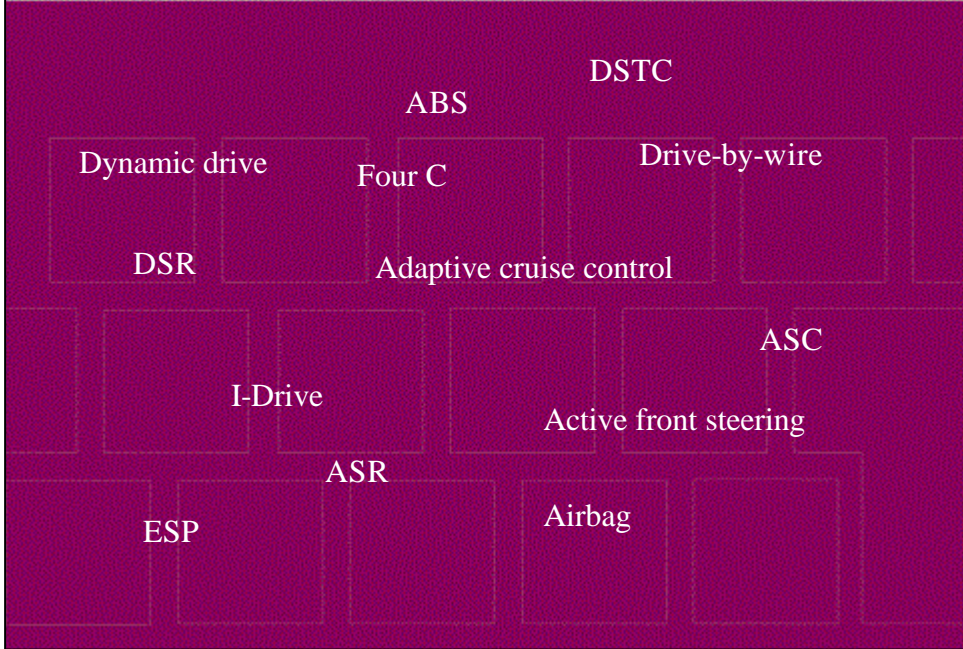


- Gebruikersgemak
- Protocollen
- Interactie omgeving/apparaat
- Interactie apparaten onderling
- Gegevensbeveiliging
- Uiteraard functionaliteit

Auto zonder software

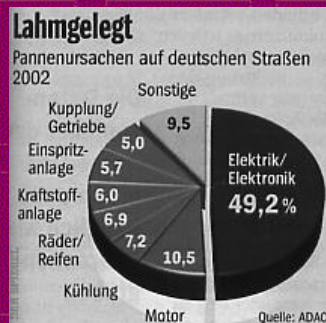


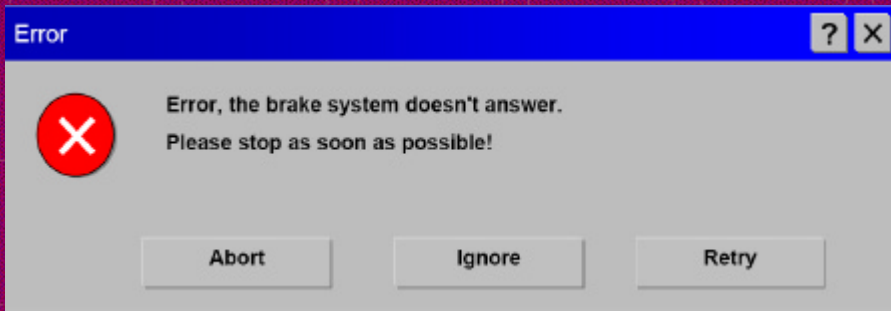
Software in auto's



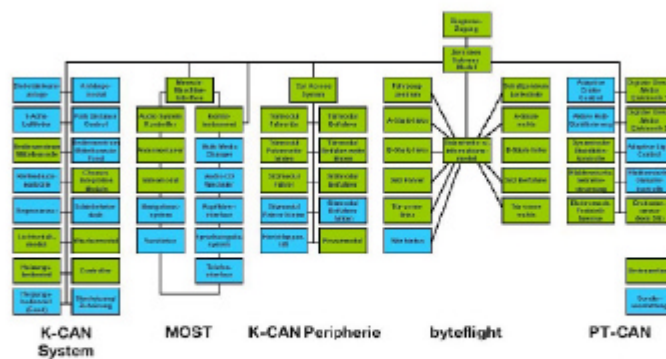
Fahrzeug steht, Kunde läuft

Durch digitale Steuersysteme wurden Autos sauberer, sicherer und komfortabler – doch inzwischen ist die Elektronik auch Pannursache Nummer eins. Mit einer gemeinsamen Initiative wollen sechs deutsche Hersteller und Zulieferer jetzt das Computerchaos bekämpfen.



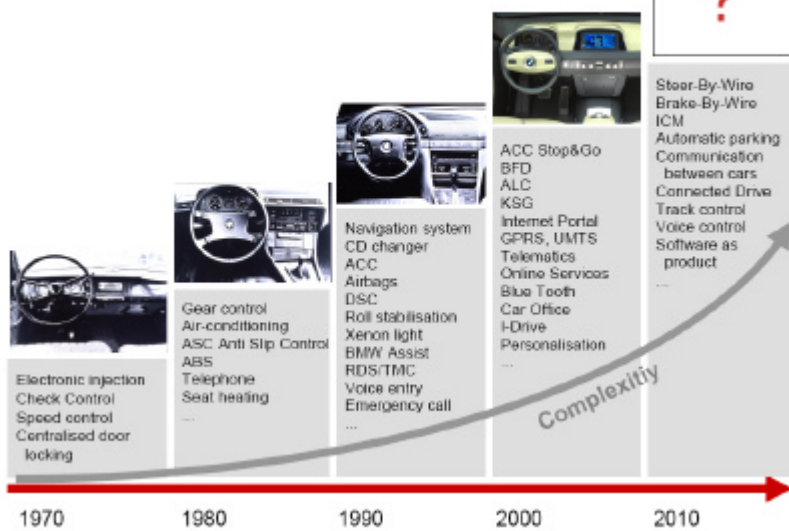


System Complexity.
Current 7-series.

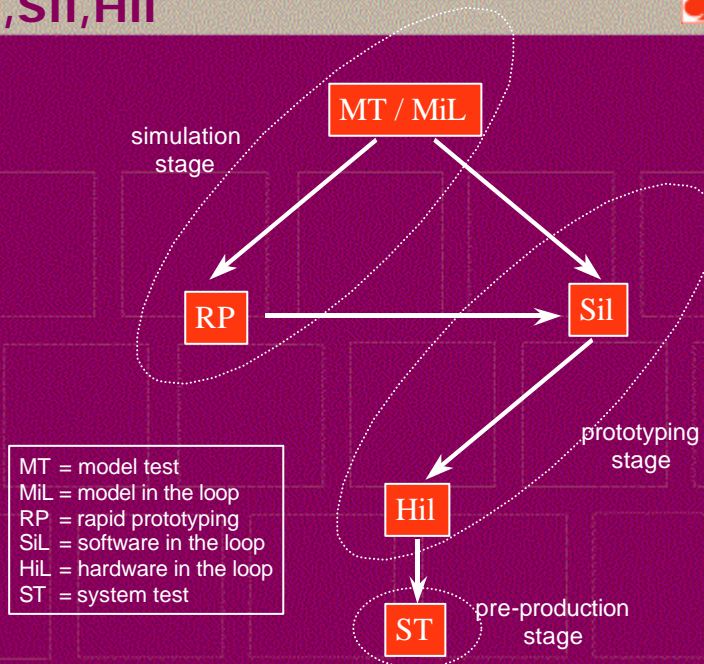


- App. 65 ECUs
- 5 Bus Systems
- Over 50 MB Software
- BMW's role in ECU/SW development: system specification and integration; implementation by partners

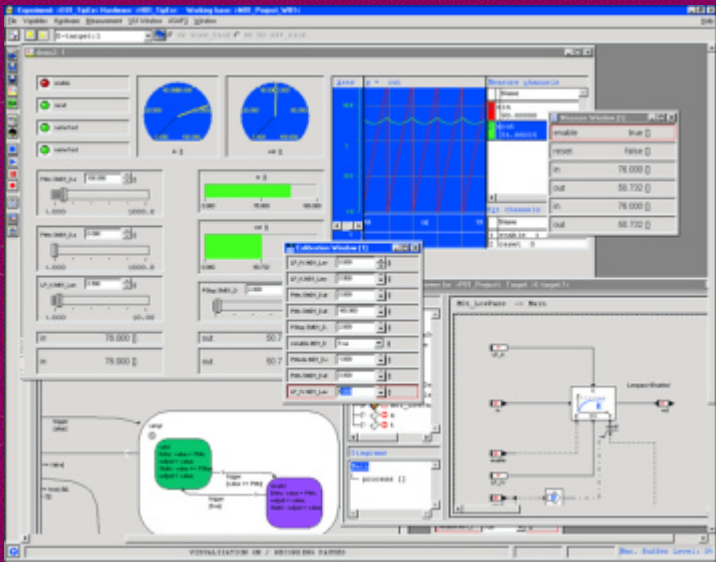
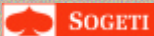
System Complexity. Exponential growth.



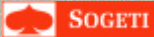
Mil,Sil,HiL



Model Testing (MT)

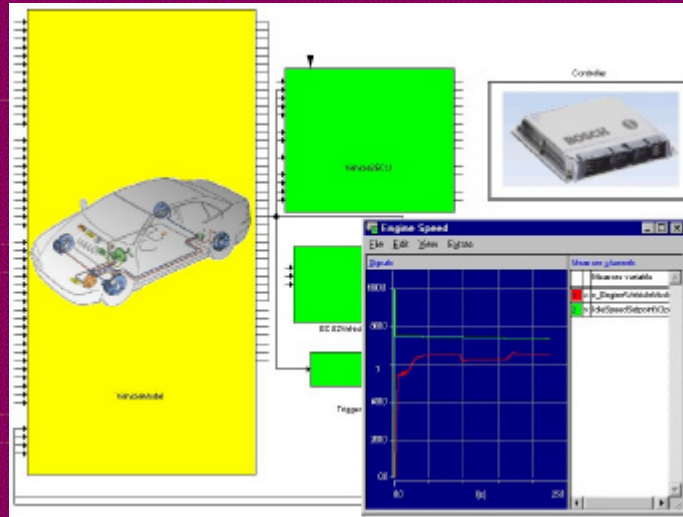


Rapid Prototyping (RP)



courtesy ETAS

Software in the Loop (SiL)



courtesy ETAS

Hardware in the Loop (HiL)



courtesy ETAS

Oplossing?



- Minder ambitieus zijn
- Requirements goed beschrijven en op tijd bevroren
- Riskbased teststrategie invoeren
- Integratiestrategie vaststellen en als uitgangspunt voor planning gebruiken
- Technische knowhow gericht inzetten
- **Leren denken als een tester!!!**

Weemoed?



Operation Iraqi Freedom

(Gulf War II)

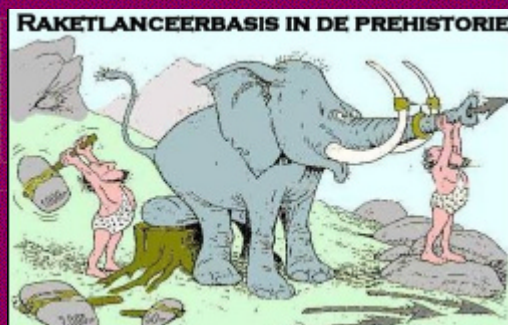
Opdrachtgever



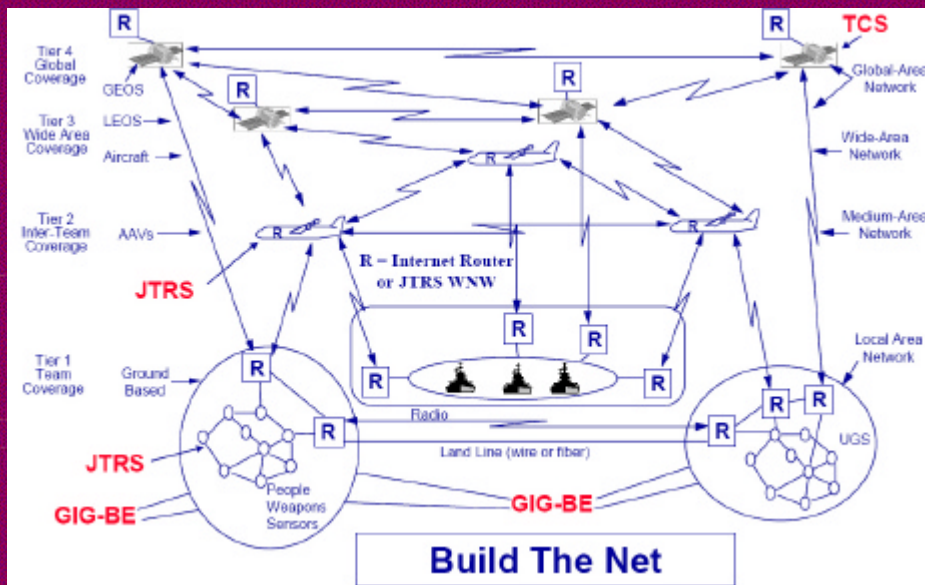
Testmanager

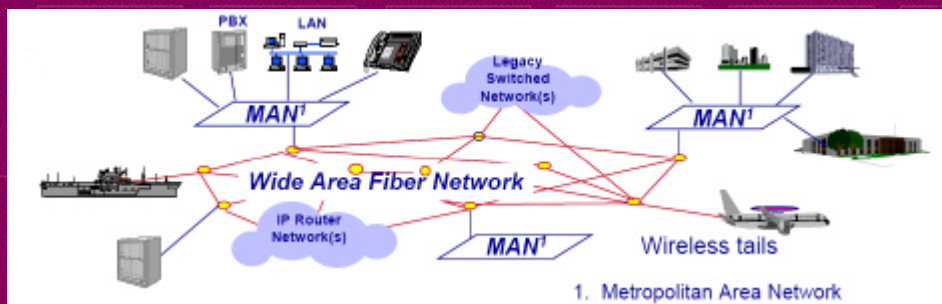


In de oudheid



Network Centric Warfare





Operation Freedom

Real Life Test Network Centric Warfare???

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