

# PROSTEP IMP

Solutions for the Mechatronic Development

# PROSTEP IMP – a 100% Subsidiary of the PROSTEP AG



## Facts

- Founded in 1993
- Offices in Berlin, Bexbach, Darmstadt (HQ), Hamburg, Hanover, Munich, Stuttgart, Wolfsburg, Wuppertal, Lyon (France) and Troy (USA)
- Currently 280 employees
- Sales in fiscal 2007: € 21,5 Mio. (\$ 33,8 Mio)

## Organisation



## Shareholders



# PROSTEP IMP Overview



## Scope

- Technology driven Consulting in the Field of automotive Mechatronics System Development Processes, Methods and Tools

## Current Project Topics

- Integration of E/E in Product Data Management
- Variant Management for Mechatronic Product Development
- Formal and non-Formal Requirements Management
- Reliability & Safety Development Methods for Mechatronic System Development

## Customers

**BMW Group**

**DAIMLER**



**VOLKSWAGEN AG**

## Partnerships



Project-  
Coordinator



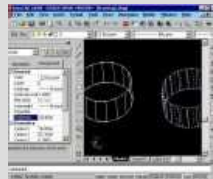
# History of Design Methodologies

## Mechanical Design

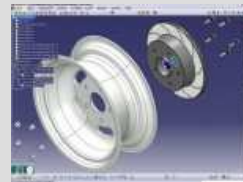
Drawing-Board



Drawings in different CAD-Systems



Harmonized CAD Environment + DMU



Crash-Simulation



1960 — 1980 — 1990 — 2000 — 2010 →

- Has been seen as the only Core Competence of an OEM in the past
- Supplier Integration has been achieved to a wide extend

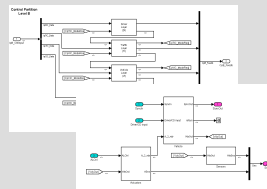
## Electrical/Electronic Design



Drawing-Board



Single Component Specifications



Simulation of Single Functions or Features

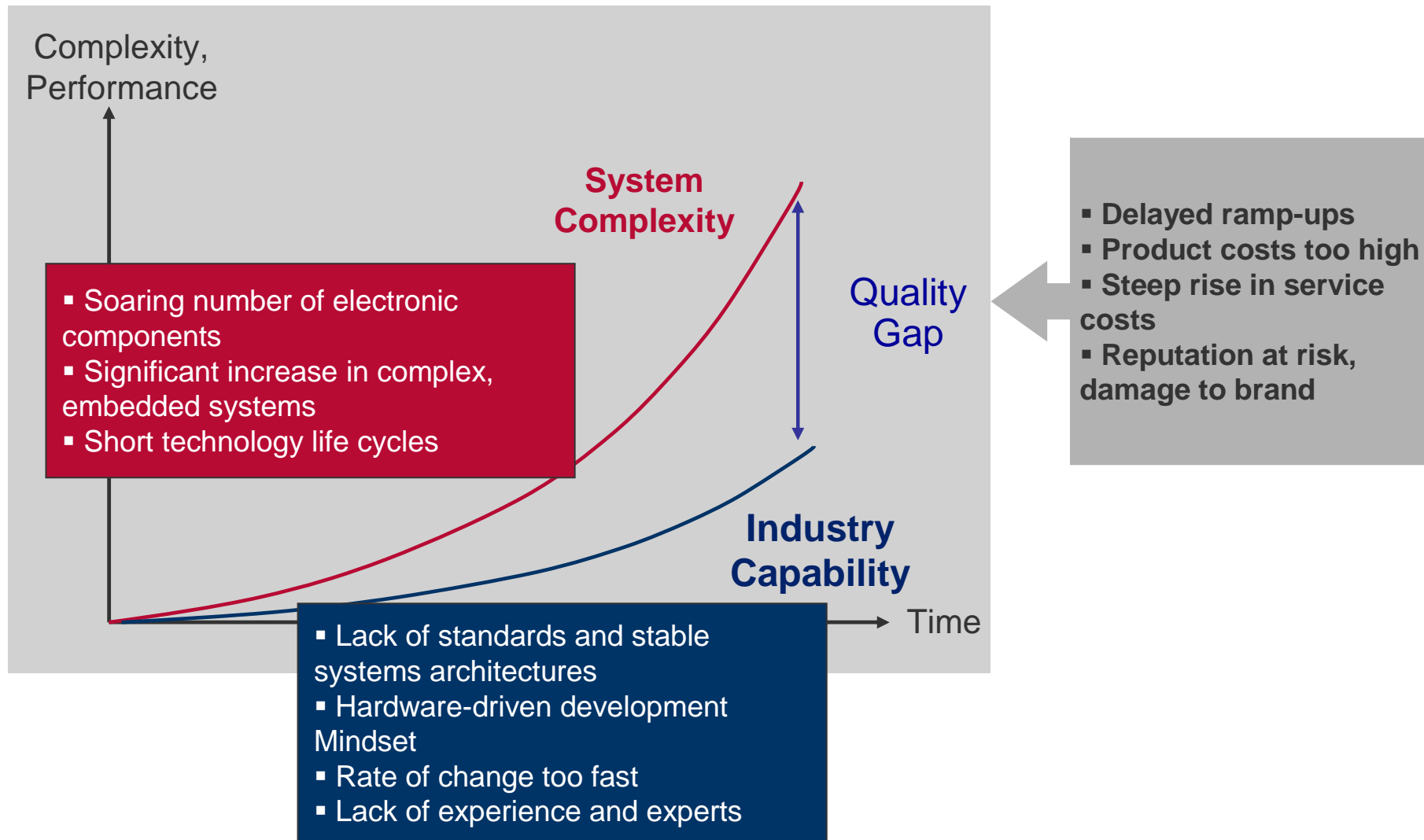


Simulation of entire EE-System ???

- Outsourcing of EE-Organisation in the `90s led to a Brain Drain for some OEMs
- Today EE is accepted as a mandatory Core Competence of an OEM
- Supplier Integration has been achieved only to a minor extend

The Development Methodologies in the EE-Domain are behind the CAE-Domain

# Result of this Development



# How the Problem is addressed by PROSTEP

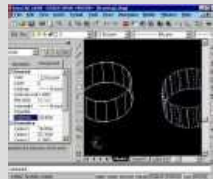


## Mechanical Design

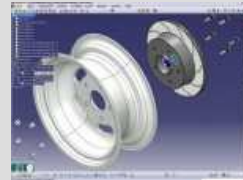
Drawing-Board



Drawings in different CAD-Systems



Harmonized CAD Environment + DMU



Crash-Simulation



1960 — 1980 — 1990 — 2000 — 2010 →



- Accompanied this Development
- Is recognized as an Expert in this Field
- Supports the Supplier-Integration by its Solutions

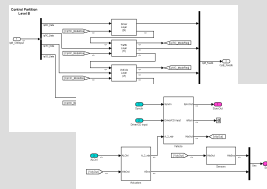
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Simulation of Single Functions or Features

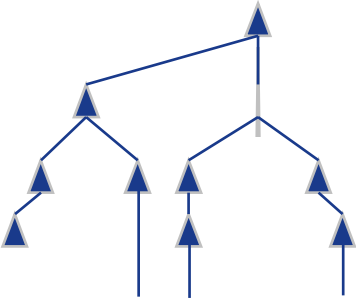
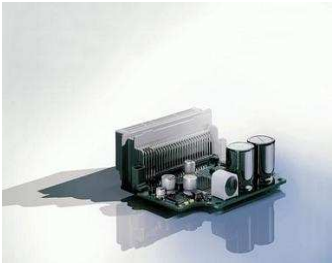
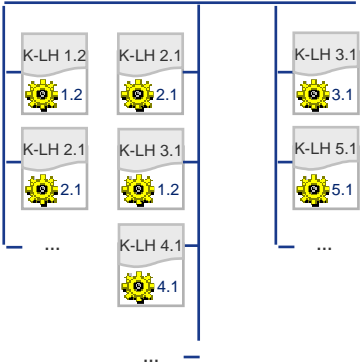



Simulation of entire EE-System ???



- Accompanies the Conception of new Design Methodologies in the Industry
- Utilize Analogies with the CAE-Domain
- Provide Solutions for Supplier-Integration

# The EE Development can be separated into 4 Areas

Functions	Components	Communication	Wiring Harness
 <ul style="list-style-type: none"> <li>■ Customer Fct.</li> <li>■ Functional Requirements</li> <li>■ Non-Functional Requirements</li> </ul>	 <ul style="list-style-type: none"> <li>■ ECU</li> <li>■ Actuators</li> <li>■ Sensors</li> </ul>	 <ul style="list-style-type: none"> <li>■ Signals</li> <li>■ Messages</li> <li>■ Bus-Systems</li> </ul>	 <ul style="list-style-type: none"> <li>■ Cables</li> <li>■ Connectors</li> <li>■ Pins</li> </ul>

## Description

- In order to net the EE Domain unambiguous relations have to be defined among the 4 areas
- e.g. the relation between Function and Component is realised via different models

## Product Data Management

### EE-PDM-Systems

- Process Analysis & Modelling
- Definition of Process Data Models
- Analysis of IT-Infrastructure
- Specification of the IT-Implementation
- Conduction of the IT-Implementation
- Perform Pilot & Roll-Out

### Supplier-Integration

- Definition of the Cooperation Process
- Specification of the IT-Solution
- Pilot + Roll-Out

## Management Processes

### Process Definition and Improvement

- Analysis of PIAs
- Definition of PIAs + Implementation

### Processes in Scope

- Requirements Management
- Release Management
- Variant Management
- Change Management
- Risk Management
- Subcontractor Management
- Quality Management
- Project Management

### Process Models

- CMMI
- Automotive SPICE

## Development Methods + Tools

### Selection of Methods & Tools

- Definition of seamless Development Environments
- Execution of Tool Evaluations
- Support of Pilot Projects + Roll-Out

### Harmonisation of MTs

- Company wide standardisation
- Consideration of Domain-& Stakeholder-Specifics

### MT-Scope

- Req.-Engineering
- Model-Based-Design
- AUTOSAR
- Validation & Verification

PIA = Process Improvement Action

MT = Methods+Tools

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