From Lifecycle Modelling to Lifecycle Analysis –
A Framework for Interactive Visualisation of Lifecycle Information

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Current research topics:

- Visualisation of technical data
- User interaction design
- Agile methods
- Usability
Full Vehicle Competence

Area A  Information & Process Management
- Flexible Information Network
- Development System Support
- Information Visualisation
- Model-based Systems Engineering

Area B  Thermo & Fluid Dynamics
- Aerodynamics & 3D Simulation
- Thermal Management & 1D Simulation
- Mobile Air Conditioning and Heating System
- Exhaust Gas Aftertreatment
- 2D Coupling & Thermal Radiation

Area C  NVH & Friction
- NVH Material and Technology
- Friction Loss & Vibration Reduction
- Vehicle Noise Reduction
- Flow Acoustics
- Testing and Measurement Center

Area D  Mechanics & Materials
- Vehicle Safety
- Materials & Forming Technologies
- Vehicle Dynamics - Automotive
- Vehicle Dynamics – Rail Systems
- Composite Mat. & Lightweight Structures

Area E  E/E & Software
- Mixed Criticality Embedded Systems
- Co-Simulation und Software
- Advanced Model-based Control
- Energy Storage Systems
- Validation and Verification

Area X  Integrated Vehicle Development
- Interdisciplinary Development Methods
- Electrification of the Drive Train
- Lightweight Construction – Safety and Comfort
- Active Safety and Driver Assistance Systems
Agenda

- Background
- Approach
- Prototypical implementation
- Live demonstration
Background

Steering mechatronic products
Background

Product Management
Background

Product Manager

Ensure further development, in contact with software developers

Support

Assist customer in case of a problem, collect requested features, in contact with customer

Sales

Sell the product, collect requested features, in contact with customer

Portfolio Management

Long term planning of product portfolio, in contact with all product managers of all products, sales and support

Goal: collect all information relevant for planning
Background

Excel sheets
- open office
- Microsoft Excel

Databases
- Oracle
- mySQL
- Wikis
- DMS

SysML models
- Artisan Studio
- Enterprise Architect

Minutes of meeting
- Text
- Word
- PDF
- ...

Portfolio Management

Heterogeneous sources!

Sources consistent?

Are there dependencies?
The plan

Import the relevant data into a single knowledge base, e.g.: an ontology

Database import: OK
Spreadsheet import: OK

Currently not possible: SysML models
Tool-chain: From modelling to analysis

1. System lifecycle modelling

2. Transformation / import of the model

3. An accessible knowledge base

4. Queries create data responses taken as input for visualisations
Detail: Transformation software

1. Reader
2. Parser
3. Container
4. Factory Elements
5. Processor
6. Main

- init Container
- read Document
- parse IntoOne List
- add Element
- categorize
- init Processor List
- process List
- gather Info
- store Info
- process next List

System modelling
Transformation
Knowledge base
Visualisation
Response
Query
User interaction process

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MuC 2014 presentation: lifecycle modelling to lifecycle analysis
Detail: Knowledge base architecture