



What Are You  
Intending To Do?

## SIMPACK 8.6, New Products to Meet the Requirements of its Expanded Market Position

### Overview

- Market Review November 01 – March 03
- New Products in 8.6  
SIMBEAM, MATSIM, LOADS for FEMFAT, WHEEL/RAIL Switch,  
DMU-Export, CODE EXPORT, SIMPACK&go (Preview)



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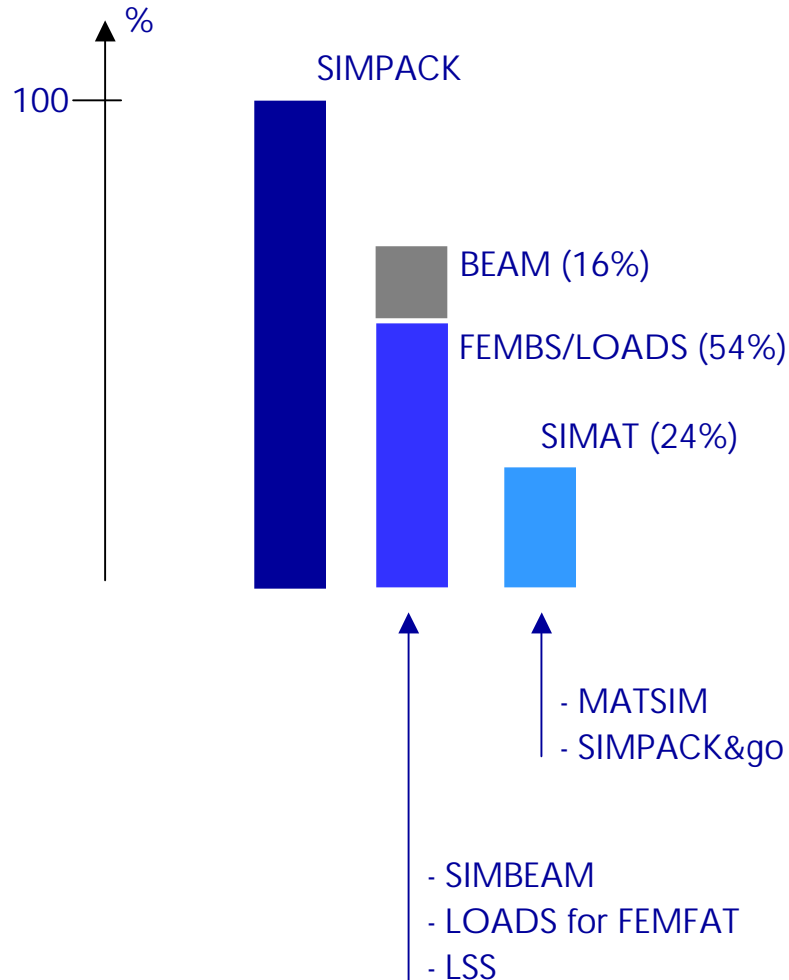
## ▶ Market Review April 01 – March 03

- Strongly Improved Market Share in Railway Area
  - > SIMPACK is dominant World Wide Market Leader
- Extension of Business in the Automotive Area
- Ongoing Internationalisation



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## Interface Statistics





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## ▶ New Products in 8.6

- MATSIM
- SIMPACK&go
- SIMBEAM
- LOADS for FEMFAT
  
- WHEEL/RAIL Switch
- DMU-Export
- CODE EXPORT
- CONTACT

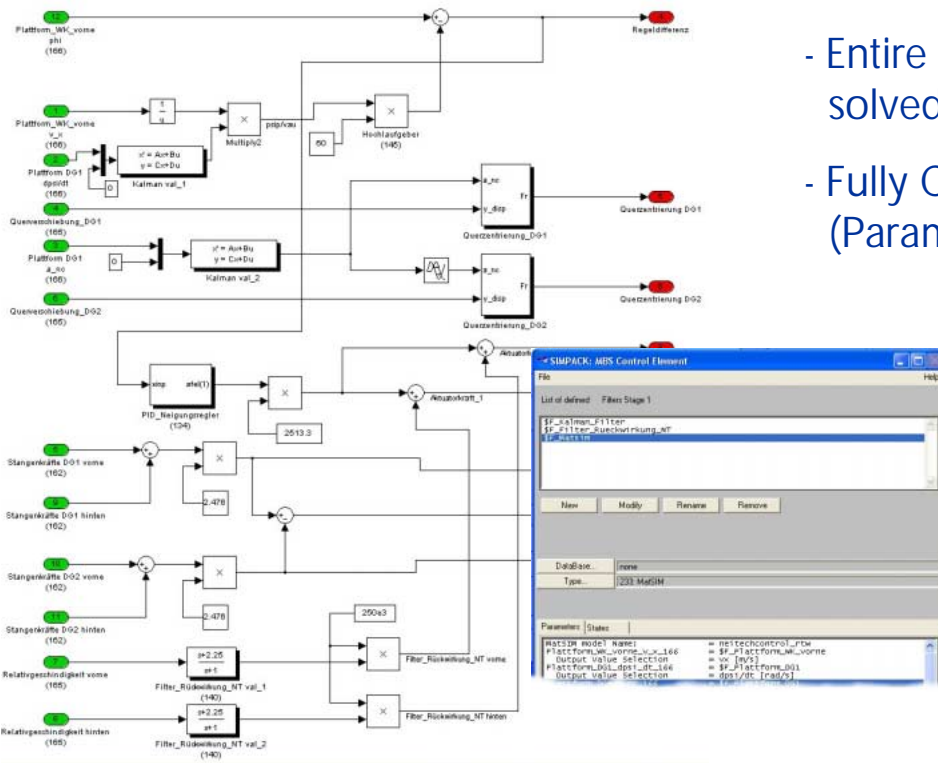


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## MATSIM

Simulink Models Exported to SIMPACK

- Simulink Model exported with MATLAB Realtime Workshop as C-Code
- Automatic Transfer to SIMPACK User Routine
- Entire System (Mechanics, Control) solved by SIMPACK
- Fully Compatible with any SIMPACK Feature (Parameter Variation, Linear System Analysis, ...)



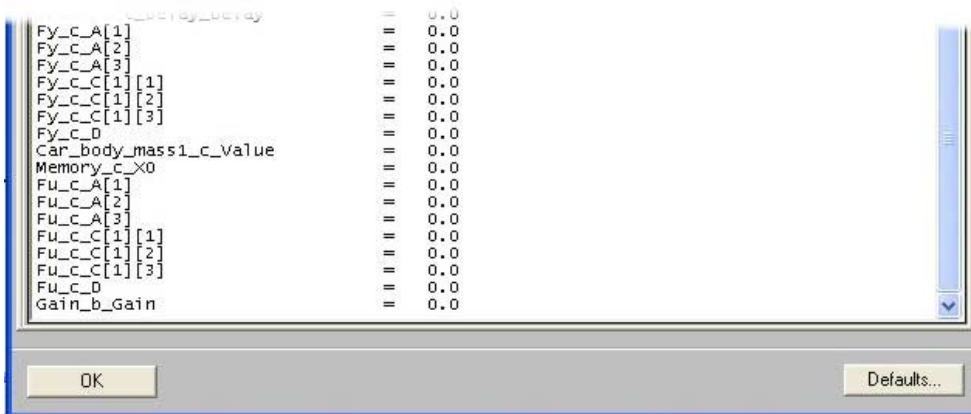


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## MATSIM

### Simulink Models Exported to SIMPACK

- Parameters of the Simulink Model can be accessed from SIMPACK
- No more MATLAB license required when running in SIMPACK





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## Mechanics by SIMPACK in Matlab Simulink

- Export of SIMPACK-Model and Solver
- Models fully parameterised
- Very simple Handling
- Internal Co-Simulation in Simulink
- Attractive Price

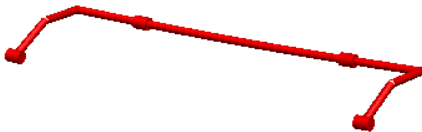
to be released in summer 2003



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## SIMBEAM

- Beam Element Based FE-Tool
- Fully Integrated in SIMPACK
- Supports Load Stiffening Effects
- Extension towards Geometrical Non Linearity
- Fully Parametrisable Beam Description
- Support of FEMBS Technology: Frequency Response Modes



Stabilisor Bar:  
Free/Free Mode Shape



Stabilisor Bar:  
Free/Free Mode Shape + Freq.  
Resp. Modes + Bushings

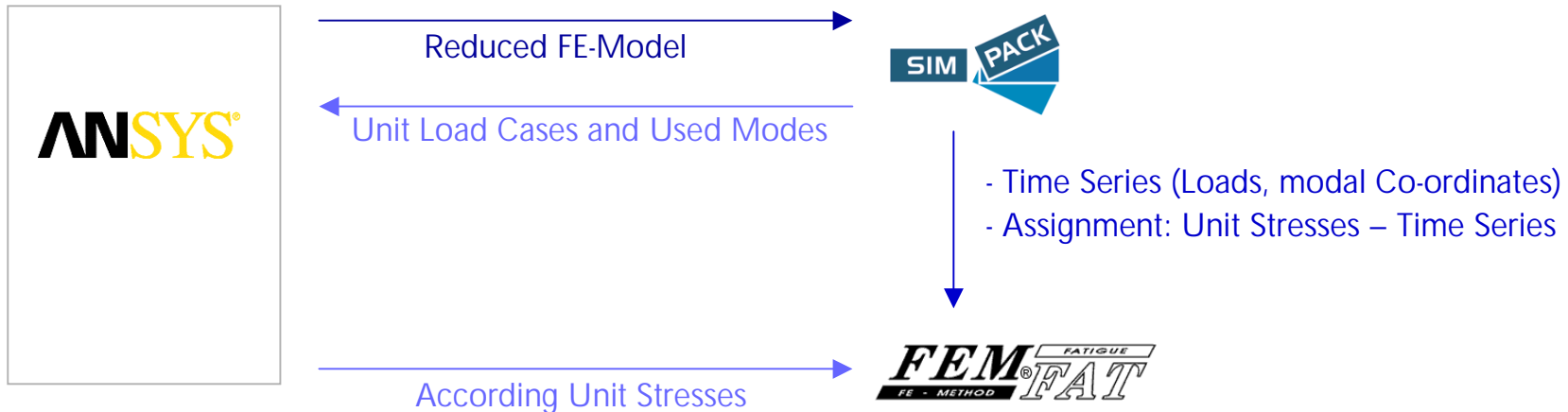




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## LOADS for FEMFAT-Max

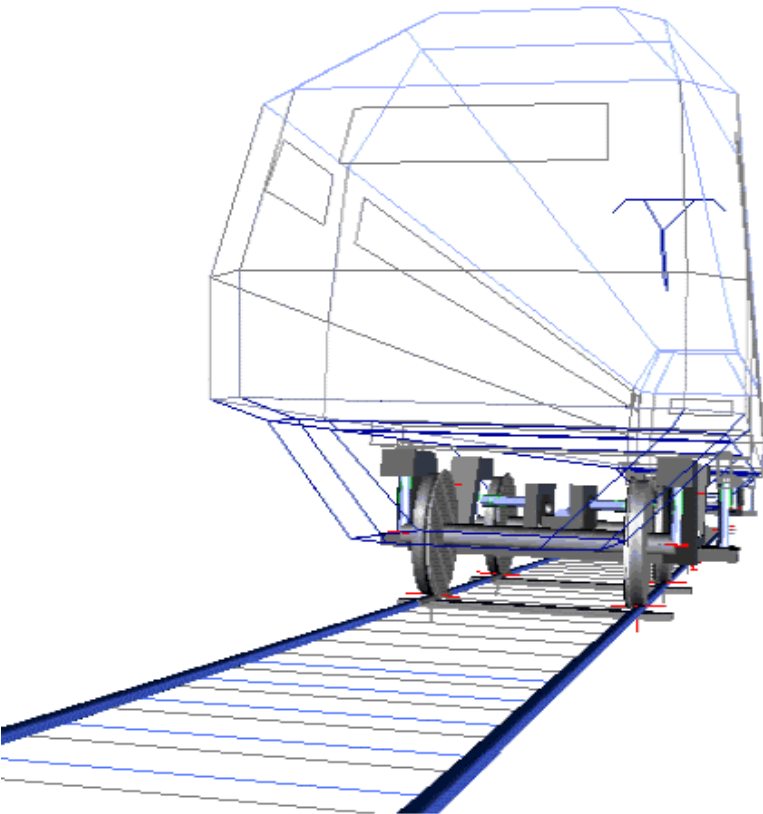
- Flexible Body imported to SIMPACK with FEMBS
- SIMPACK writes out Time Series of Applied Forces (to FEMFAT) and Unit Load Cases and used Modes (to FE-Tool)
- FE-Tool creates Unit Stresses for FEMFAT
- FEMFAT does Durability Calculation





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## ► SIMPACK Rail Switches

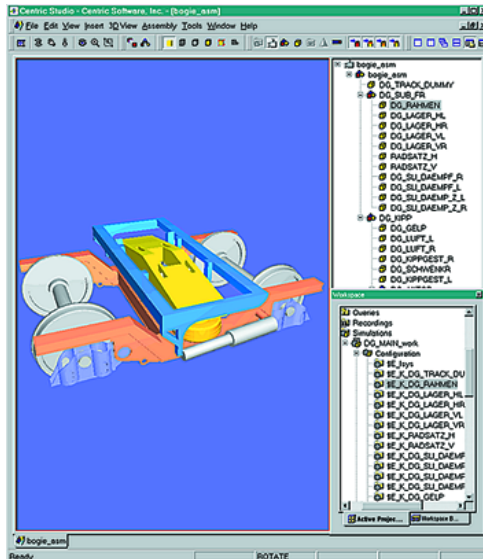


New SIMPACK Module, which contains:

- Example Switch Data set „EW 60-300-1:9“  
(created in CATIA V4)
- One Day Training
- **Back-of-Wheel-Contact License Key**

## DMU-Interface to Centric Innovation

- Motion Data created by SIMPACK is exported to Centric Innovation
- Centric Innovation imports CAD data and maps them to SIMPACK Results
  - > Collaborative Functional Prototyping
  - > Collision Detection

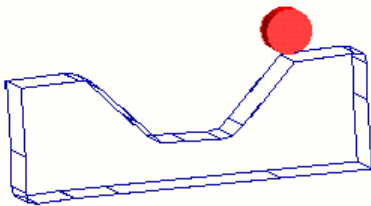




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## CONTACT

- New SIMPACK Contact released with 8.6
- No longer Marker-based, but Intersection-based
- No restrictions towards Contact Shapes  
(compared to Moved Marker 98)
- Somewhat less performant

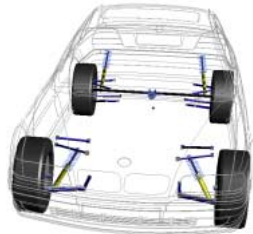




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# Code Export

(with licensed DLL SIMPACK Libraries)



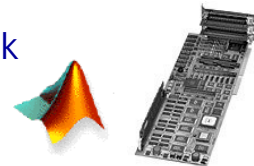
- + Drives and (Semi)Active Elements
- + Gearboxes
- + Tyres
- + Wheel-Rail Friction and Sleeper Forces
- + Contact
- + Friction
- + General
- + User-Elements
- + Contribute ODEs and Roots only, Vehicle
- + Miscellaneous

SIMPACK Model  
- Fortran Code  
- Copyright at Customer

SIMPACK Libraries  
- Licensed DLL  
(According to List Prices)  
- Copyright at INTEC



Exported SIMPACK Model  
- Usage e.g. in Matlab Simulink  
and HIL Boards

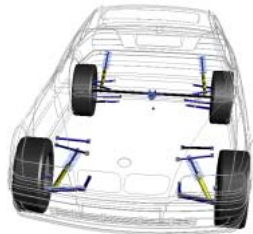




What Are You  
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## Code Export

(with SIMPACK Libraries as Source Code)



SIMPACK Model

- Fortran Code
- Copyright at Customer

- + Drives and (Semi)Active Elements
- + Gearboxes
- + Tyres
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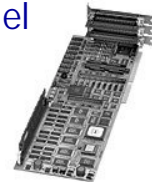
SIMPACK Libraries

- Fortran Code
- (Company Specific Pricing)



Exported SIMPACK Model

- Usage e.g. on Realtime  
Simulation Boards





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## SIMPACK Code Export Multi-Stage Concept

- Stage 0: Range of Function like „Symbolic Code“  
(SIMPACK 8.0 and below)
- Stage 1: Extended Parameterisation, Supports Databases  
New Realtime specific Modelling Elements, ...
- Stage 2: To be defined
- ...



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## ▶ Conclusions

- SIMPACK continues to enter strong Market Position
- 8 new Products coming with SIMPACK 8.6
- Extended Technology Leadership in FE-Interfacing
- Best Simulink Integration of Mechanical Systems on the Market
- Code Export ready to go