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)
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
Interface Statistics

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What Are You Intending To Do?

- SIMPACK
  - FEMBS/LOADS (54%)
  - SIMAT (24%)
  - BEAM (16%)
- MATSIM
- SIMPACK&go
- SIM BEAM
- LOADS for FEM FAT
- LSS
New Products in 8.6

- MATSIM
- SIMPACK&go
- SIMBEAM
- LOADS for FEM FAT
- WHEEL/RAIL Switch
- DMU-Export
- CODE EXPORT
- CONTACT
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, ...)

![MATSIM Diagram]
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
5th SIMPACK User Meeting 2003
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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
SIM BEAM

- 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
- Free/Free Mode Shape + Freq. Resp. Modes + Bushings
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
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
What Are You Intending To Do?

- 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
Code Export
(with licensed DLL SIMPACK Libraries)

- 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
**Code Export**
(with SIMPACK Libraries as Source Code)

- Code Export (with SIMPACK Libraries as Source Code)
- Code Export

**SIMPACK Model**
- Fortran Code
- Copyright at Customer

**SIMPACK Libraries**
- Fortran Code
- (Company Specific Pricing)

**Exported SIMPACK Model**
- Usage e.g. on Realtime Simulation Boards

- 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 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

- ...

What Are You Intending To Do?
Conclusions

- SIMPACK continues to enter strong Market Postition
- 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